

**HALAMAN PENGESAHAN**

**TUGAS AKHIR  
EVALUASI KINERJA  
ANGKUTAN UMUM BIS KOTA JALUR 04  
KOTA JOGJAKARTA**

Diajukan kepada Universitas Islam Indonesia  
untuk memenuhi persyaratan memperoleh derajat Sarjana Teknik Sipil

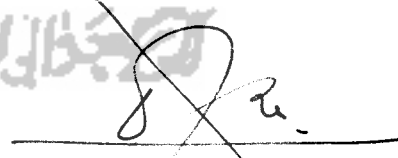
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## KATA PENGANTAR

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## ABSTRAKSI

Jogjakarta sebagai sebuah kota pelajar mempunyai angka kenaikan jumlah penduduk yang cukup tinggi, terutama kalangan pendatang. Sebagai kota pelajar, Jogjakarta juga membutuhkan sarana pelayanan transportasi bagi masyarakatnya untuk menghantarkan ketujuan masing-masing. Salah satu jasa transportasi yaitu bis kota.

Penelitian ini bertujuan untuk mengevaluasi kinerja angkutan umum bis kota jalur 04 di kota Jogjakarta. Jalur 04 merupakan salah satu rute bis kota yang melewati daerah CBD atau daerah pusat bisnis seperti Malioboro, daerah kampus dan sekolah-sekolah. Pelaksanaan penelitian ini dengan cara pengamatan langsung dilapangan untuk memperoleh data primer, dan pengambilan data dari instansi pemerintah maupun swasta sebagai data penunjang atau data sekunder.

Penelitian yang dilaksanakan adalah pengamatan jumlah penumpang dalam bis kota, waktu antara atau *headway*, *load factor*, waktu sirkulasi bis kota atau *travel time*, tata letak tempat henti bis kota, dan biaya operasi kendaraan.

Hasil perhitungan yang diperoleh dari data-data primer maupun sekunder didapatkan jumlah rata-rata penumpang per bis per rute per hari sebanyak 60 orang. Waktu sirkulasi yang dibutuhkan bis kota untuk menyelesaikan satu rute penuh adalah berkisar 93 menit sampai dengan 139 menit. Jumlah armada hasil perhitungan sebanyak 22 unit bis kota, ini lebih besar dibandingkan dengan jumlah armada yang tersedia dilapangan saat ini sebanyak 16 unit bis kota. *Headway* yang dibutuhkan sebesar 6 menit. Sedangkan *load factor* tertinggi sebesar 120 % terdapat pada ruas jalan Kusuma Negara. Secara keseluruhan tata letak dan jarak antar tempat henti sepanjang jalur rute 04 sudah memenuhi persyaratan, hanya ada beberapa tempat yang perlu penambahan dan perbaikan tempat henti. Biaya operasi kendaraan dihitung dengan menggunakan metode DLLAJ. Biaya operasi kendaraan per kilometer per bis sebesar Rp. 1.783,33.



# BAB I

## PENDAHULUAN

### 1.1 Latar Belakang

Daerah Istimewa Jogjakarta memiliki jumlah penduduk yang cukup besar dengan laju pertumbuhan yang tinggi, hal ini disebabkan kota Jogjakarta merupakan kota pelajar yang banyak penduduk pendatang untuk melanjutkan sekolah di kota Jogjakarta. Hal ini secara langsung maupun tidak langsung saling mempengaruhi terhadap perkembangan kebutuhan transportasi khususnya sarana angkutan umum (bis kota). Salah satu permasalahan yang timbul adalah bagaimana menciptakan sarana dan prasarana angkutan umum (bis kota) yang baik untuk masyarakat sesuai dengan perkembangan kota yang terjadi.

Sarana angkutan umum (bis kota) harus dapat mengimbangi tingkat mobilitas barang dan manusia yang semakin meningkat karena pertumbuhan ekonomi dan perkembangan wilayah atau perubahan tata guna lahan. Hal ini menuntut sarana dan prasarana angkutan umum (bis kota) harus selalu ditingkatkan baik dari segi kualitas maupun kuantitasnya.

Bagi daerah perkotaan angkutan umum memegang peranan yang cukup penting. Kota yang baik dapat ditandai dengan melihat kondisi perangkutanannya. Angkutan umum yang aman dan lancar, selain mencerminkan keteraturan kota, juga mencerminkan kelancaran kegiatan perekonomian kota. Perwujudan kegiatan angkutan umum yang baik adalah dalam bentuk sarana dan prasarana yang baik.

Melihat pentingnya peran angkutan umum (bis kota) sebagai sarana pendukung dari segi ekonomi dan sosial masyarakat, maka perlu dilakukan evaluasi sarana dan prasarana angkutan umum bis kota yang selama ini kurang diperhatikan terutama oleh pihak penyedia angkutan umum bis kota dan pihak departemen yang terkait.

## 1.2 Tujuan Penelitian

Tujuan dari penelitian ini adalah untuk mengevaluasi kinerja angkutan umum bis kota jalur 04 kota Jogjakarta dengan cara :

1. Menganalisis waktu tempuh bis kota jalur 04 untuk satu rute keberangkatan dari terminal Umbul Harjo sampai kembali lagi ke terminal Umbul Harjo.
2. Menentukan jumlah armada bis kota sesuai dengan kebutuhan masyarakat pemakai jalur 04 dalam satu rute.
3. Menentukan jadwal keberangkatan antara satu bis dengan bis lainnya pada jalur 04.
4. Menentukan biaya operasi kendaraan angkutan umum Bis Kota jalur 04.

## 1.3 Manfaat Penelitian

Manfaat dari penelitian ini adalah memberikan gambaran pelayanan angkutan umum khususnya bis kota jalur 04 Jogjakarta.

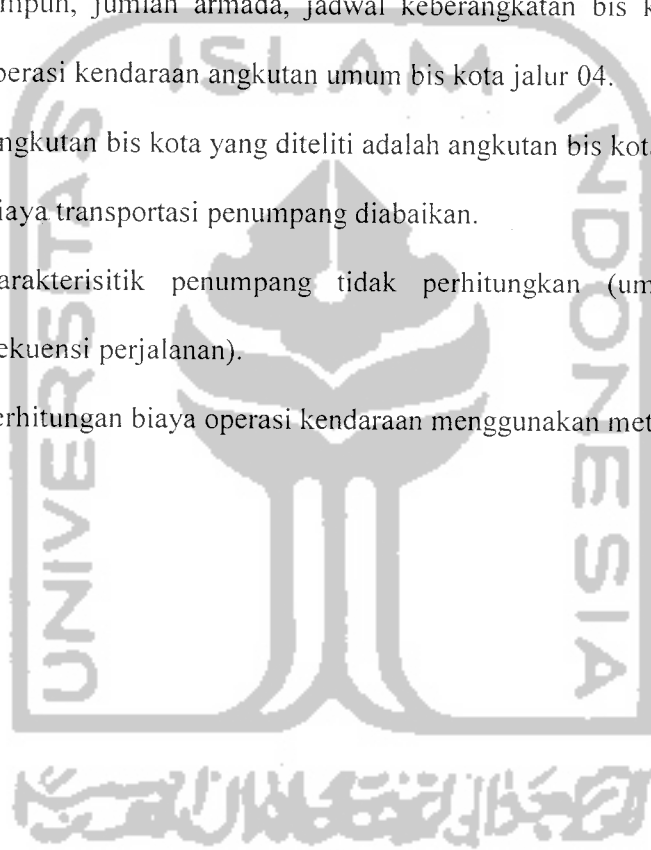
Diharapkan dari hasil penelitian ini dapat memberikan masukan (usulan) kepada Pemda Jogjakarta khususnya DLLAJ unit Angkutan Umum guna

menertibkan dan meningkatkan pelayanan kepada masyarakat khususnya bagi pihak penyedia angkutan umum bis kota jalur 04.

#### 1.4 Batasan Masalah

Penelitian ini dibatasi dengan batasan-batasan sebagai berikut :

1. Kinerja angkutan umum yang dievaluasi hanya jarak tempuh, waktu tempuh, jumlah armada, jadwal keberangkatan bis kota, dan biaya operasi kendaraan angkutan umum bis kota jalur 04.
2. Angkutan bis kota yang diteliti adalah angkutan bis kota jalur 04.
3. Biaya transportasi penumpang diabaikan.
4. Karakteristik penumpang tidak perhitungkan (umur, pekerjaan, frekuensi perjalanan).
5. Perhitungan biaya operasi kendaraan menggunakan metode DLLAJ .



## BAB II

### TINJAUAN PUSTAKA

Angkutan umum adalah suatu proses pemindahan manusia dan barang dari suatu tempat ke tempat lain. Tujuannya untuk membantu orang menjangkau berbagai tempat yang dikehendaki. Prosesnya dapat dengan menggunakan sarana angkutan berupa kendaraan atau tanpa kendaraan (Warpani, S, 1990).

Bis kota merupakan salah satu angkutan umum yang melayani penumpang suatu tempat asal ke tujuan dalam wilayah kota dengan menggunakan mobil bis umum dan / atau mobil penumpang umum yang terikat dalam trayek tetap dan teratur. Penggunaan bis kota atau mobil penumpang umum sebagai sarana angkutan umum perlu memperhatikan beberapa parameter kinerja angkutan umum agar pelayanan kepada masyarakat lebih baik dan teratur.

Jasa angkutan umum pada lalu lintas lokal khususnya Jogjakarta digunakan bis berkapasitas tempat duduk 24 orang dan usaha angkutan ini dikelola oleh beberapa badan usaha dan koperasi yaitu : KOPATA, ASPADA, PUSKOPKAR, DAMRI, dan KOBUTRI.

Pemilihan bis dengan kapasitas tempat duduk 24 orang ini mengingat sempitnya jalan-jalan didalam kota dan kendaraan yang beroperasi didalam kota merupakan campuran antara kendaraan bermotor dengan kendaraan tidak bermotor.

Bis dengan kapasitas tempat duduk 24 orang merupakan kelompok midi bus, berdasarkan tipe dan kelompok bis menurut kapasitas penumpang dan dimensi panjang, antara lain (Baerwold, J. E, Hubber J. M and Keefer, L. E. 1976) :

1. Mini bis, bis berkapasitas penumpang kecil antara 12 sampai dengan 17 penumpang dengan ukuran panjang 4 – 6 m (13 – 20 ft).
2. Midi bis, bis berkapasitas kecil sampai sedang antara 20 sampai dengan 30 penumpang dengan ukuran panjang 6 – 8 m (20 – 26 ft).
3. Kabin tunggal, bis berkapasitas penumpang sedang antara 40 sampai dengan 60 penumpang dengan ukuran panjang 10 – 12 m (33 – 39 ft).
4. Kabin ganda, bis berkapasitas penumpang besar antara 70 sampai dengan 100 penumpang dengan ukuran panjang 9,5 – 10 m (31–33 ft).
5. Kabin tunggal besar, bis berkapasitas penumpang besar antara 75 sampai dengan 150 penumpang dengan ukuran panjang 16 – 18 m (52–59 ft).

Pengelompokan ini terdapat di negara Inggris, sedangkan untuk kota Jogjakarta pemilihan bis kota sudah disesuaikan dengan jalan dan lalu lintas yang ada.

Tujuan utama keberadaan angkutan umum adalah menyelenggarakan pelayanan angkutan yang baik dan layak bagi masyarakat (Warpani, S, 1990). Ukuran pelayanan yang baik adalah pelayanan yang aman, cepat, murah, dan nyaman serta sesuai dengan parameter kinerja angkutan bis kota yang ditetapkan oleh pemerintah.

Berikut ini adalah kinerja angkutan umum bis kota dapat dilihat pada table 2.1 dibawah ini.

Tabel 2.1 Standar Kinerja Angkutan Umum

| Aspek |                                       | Parameter   | Standar                         |
|-------|---------------------------------------|---|---------------------------------|
| 1     | Tingkat operasi/ketersedian kendaraan | Rasio antara jumlah kendaraan yang beroperasi dengan jumlah kendaraan yang direncanakan (dalam %)   | 80 – 90                         |
| 2     | Utilitas kendaraan                    | Rata-rata jarak perjalan yang ditempuh (km/hari)  | 230 – 260                       |
| 3     | Jumlah penumpang                      | Jumlah penumpang yang diangkut per bis per hari (orang/bis/hari)  | 300 – 400                       |
| 4     | Produktivitas pegawai                 | <ul style="list-style-type: none"> <li>▪ Jumlah staf administrasi/bis</li> <li>▪ Jumlah pegawai bngkel/bis</li> <li>▪ Jumlah pegawai total/bis</li> </ul> | 0,3 – 0,4<br>0,5 – 1,5<br>3 – 8 |
| 5     | Tingkat kecelakaan                    | Jumlah kecelakaan per 100.000 km perjalanan (ACC/100.000 bis – km)  | 1,5 – 3                         |
| 6     | Tingkat kerusakan                     | Prosentase jumlah bis dalam pemeliharaan terhadap total bis yang dioperasikan (dalam %)   | 8 – 10                          |
| 7     | Konsumsi bahan bakar                  | Volume bahan bakar per bis per 100 km perjalanan (liter/bis – 100 km)   | 30 – 50                         |
| 8     | Operating ratio                       | Rasio antara pendapatan dengan biaya operasi (termasuk depresiasi)  | 1,05 – 1,08                     |
| 9     | Load factor                           | Perbandingan jumlah penumpang dengan kapasitas per satuan waktu tertentu (dalam %)  | 70                              |
| 10    | Jumlah penumpang transfer             | <ul style="list-style-type: none"> <li>▪ Tidak transfer per transit</li> <li>▪ Transfer dua kali</li> </ul>   | > 50 %<br>< 10 %                |

(Sumber : Departemen Perhubungan Darat, 1999)

## 2.1 Perencanaan dan Kebutuhan Angkutan Umum

Perencanaan angkutan umum sangat dibutuhkan sebagai konsekuensi dari (Overgaard, 1966) :

### 1. Pertumbuhan

Perlu direncanakan jika diketahui atau diharapkan bahwa penduduk disuatu tempat akan bertambah dan berkembang dengan pesat, juga jika tingkat pendapatan penduduk meningkat. Hal ini mengakibatkan meningkatnya jumlah kendaraan.

### 2. Keadaan lalu lintas

Perlu ditinjau kembali bila kesesakan dan kemacetan di jalan meningkat, serta bila sistem pemindahan massa tidak ekonomis lagi sehingga perlu dikoordinasi.

### 3. Perluasan kota

Perluasan kota perlu dikendalikan bila pemerintah kota menghendaki agar perencanaan angkutan umum mempengaruhi perluasan kota.

Di daerah yang tingkat kepemilikan kendaraan yang tinggi sekalipun, tetap terdapat orang yang ternyata membutuhkan dan menggunakan sarana angkutan umum penumpang. Pada saat ini perkembangan kepemilikan kendaraan yang pesat akibat meningkatnya kesejahteraan masyarakat, yang tidak mungkin diikuti terus-menerus dengan pembangunan jaringan jalan, telah mendorong banyak kota menggalakkan penggunaan angkutan umum. Masa peralihan dari teknologi masa kini ke teknologi

masa depan menyebabkan ketergantungan pada sarana angkutan umum bertambah besar karena angkutan umum terbukti lebih efisien dalam menggunakan energi (Hinton S, 1981).

Beberapa faktor yang mempengaruhi permintaan dari angkutan umum antara lain dapat dilihat dari segi ekonomi, sosial, dan lingkungan dari pengguna jasa angkutan umum tersebut (Servant, 1978). Permintaan akan angkutan umum ini pada dasarnya diturunkan dari :

1. Kebutuhan seseorang untuk berjalan dari suatu lokasi ke lokasi lainnya untuk mengikuti suatu kegiatan (misalnya bekerja, berbelanja, sekolah, dan lain-lain).
2. Kebutuhan dalam mengangkut barang tertentu untuk membuat tersedianya barang tadi pada tempat dimana ia dapat digunakan atau dikonsumsi.

## 2.2 Terminal

Terminal adalah sarana pendukung sistem transportasi yaitu sebagai tempat penumpang dan barang yang keluar masuk dari sistem transportasi (Morlok, E.K, 1985). Fungsi utama terminal juga untuk penyediaan sarana masuk dan keluar dari obyek-obyek yang akan digerakkan, penumpang atau barang, menuju dan dari sistem transportasi. Selain itu terminal juga merupakan tempat pengendalian, pengawasan,



pengaturan dan pengoperasian lalu lintas, dan juga merupakan prasarana angkutan yang merupakan bagian dari sistem transportasi untuk melancarkan arus penumpang.

Beberapa fungsi terminal yang lain dapat digambarkan seperti dibawah ini :

1. Menaikkan penumpang atau barang serta menurunkan atau membongkarnya.
2. Sebagai tempat penyimpanan barang dan tempat bis menunggu penumpang sampai waktu berangkat.
3. Penyedia sarana kenyamanan penumpang misalnya tempat beribadah, tempat tunggu, restoran, dan sebagainya.

Di dalam Peraturan Pemerintah No. 43 Tahun 1993, Tentang Prasarana dan Sarana Lalu Lintas Jalan, mengklasifikasikan terminal menjadi tiga bagian yaitu :

1. Terminal penumpang tipe A, berfungsi melayani kendaraan umum untuk Angkutan Antar Kota Antar Propinsi (AKAP), dan / atau Angkutan Lintas Batas Antar Negara, Angkutan Antar Kota Dalam Propinsi (AKDP), Angkutan Kota (AK), dan Angkutan Pedesaan (ADES).
2. Terminal penumpang tipe B, berfungsi melayani kendaraan umum untuk Angkutan Antar Kota Dalam Propinsi (AKDP), Angkutan Kota (AK), dan Angkutan Pedesaan (ADES).
3. Terminal penumpang tipe C, berfungsi melayani kendaraan umum untuk Angkutan Pedesaan (ADES).

### 2.3 Tempat Henti (*Shelter*)

Tempat henti (*shelter*) adalah tempat berhentinya angkutan umum bis kota yang dilengkapi dengan konstruksi pelindung bagi penumpang / calon penumpangnya, sehingga terhindar dari sengatan matahari maupun terpaan hujan (Technical Assistance to Support Development and Training of Dinas LLAJ TK II Within Surip Cities, 1999).

Beberapa bentuk fasilitas perhentian bis kota yang sering dijumpai adalah :

#### 1. *Kerb Side*

Merupakan tempat perhentian bis kota dengan memanfaatkan trotoar yang ada disisi jalan sebagai tempat menampung penumpang yang akan naik atau turun dan dipasang rambu perhentian bis kota. Bentuk ini banyak digunakan pada kondisi lahan trotoar atau lebar jalan yang sempit, sehingga tidak memungkinkan bis berhenti terlalu lama.

#### 2. *Lay – bys*

Digunakan pada lahan atau trotoar yang cukup lebar sehingga dibuat suatu lekukan yang memungkinkan bis berhenti didalam lekukan tersebut diluar badan jalan. Bentuk ini memiliki keuntungan mengurangi gangguan terhadap lalu lintas pada saat bis menaikkan atau menurunkan penumpang dan juga memungkinkan bis berhenti lebih lama.

### 3. *Bus Shelter*

Calon penumpang yang menunggu bis kota mendapat fasilitas tempat tunggu beratap yang memungkinkan terhindar dari sengatan matahari dan terpaan hujan.

#### 2.4 *Headway*

*Headway* dari dua kendaraan didefinisikan sebagai interval waktu antara saat bagian depan kendaraan melewati suatu titik dengan saat dimana bagian depan kendaraan berikutnya melewati titik yang sama. *Headway* untuk sepasang kendaraan yang beriringan, secara umum akan berbeda. Ini menimbulkan suatu konsep *headway* rata-rata. *Headway* rata-rata adalah rata-rata interval waktu antara sepasang kendaraan yang berurutan, dan diukur pada suatu periode waktu dan pada suatu lokasi tertentu (Morlok, E. K, 1985).

#### 2.5 *Waktu Perjalanan dan Waktu Jalan (Travel Time and Running Time)*

Waktu perjalanan adalah waktu yang diperlukan oleh bis untuk melakukan perjalanan dari satu ujung permulaan rute ke ujung akhir (Nasution, H. M. N, 1996).

Menurut L. R. Kadiyali dalam buku *Traffic Engineering and Transport Planning*, *travel time* adalah waktu rata-rata yang dibutuhkan untuk menempuh jarak antara dua tempat dibagi dengan total waktu yang dibutuhkan termasuk waktu penundaan atau keterlambatannya.

Sedangkan running time adalah waktu pada saat kendaraan berjalan, yaitu waktu yang dibutuhkan untuk menempuh jarak tertentu pada saat kendaraan sedang bergerak, tidak termasuk delay atau penundaannya.

## **2.6 Faktor Muat (*Load Factor*)**

Faktor muat merupakan perbandingan antara kapasitas terjual dengan kapasitas tersedia untuk satu perjalanan yang biasanya dinyatakan dalam persen. Sesuai dengan Peraturan Pemerintah No. 14 Tahun 1993 tentang Angkutan Jalan pasal 28, yang menetapkan bahwa faktor muat standar sebesar 70 %.

## **2.7 Biaya Operasi Kendaraan (BOK)**

Biaya operasi kendaraan adalah biaya yang dikeluarkan oleh penyedia jasa atau pengusaha angkutan untuk mengoperasikan armadanya per hari atau per kilometer. Perhitungan atas biaya yang dilakukan dalam kegiatan produksi jasa angkutan, sesuai dengan hasil studi ITB dalam buku Laporan Konsep Dasar Perhitungan Biaya Pokok Angkutan Penumpang Angkutan Jalan dilakukan dan SK Dirjen Perhubungan Darat No. 274/HK.105/DRJD/96 dengan pendekatan sebagai berikut :

1. Penggolongan biaya menurut fungsi pokok kegiatan :
  - a. Biaya produksi

Biaya produksi adalah biaya yang berhubungan dengan fungsi produksi atau kegiatan dalam proses produksi.

b. Biaya organisasi

Biaya organisasi adalah semua biaya yang berhubungan dengan fungsi administrasi umum perusahaan.

c. Biaya pemasaran

Biaya pemasaran adalah biaya yang dikeluarkan untuk kegiatan-kegiatan pemasaran dari produksi jasa.

2. Penggolongan biaya berdasarkan perubahan volume produksi jasa :

a. Biaya tetap

Biaya tetap adalah biaya yang tidak berubah walaupun terjadi perubahan pada volume produksi jasa sampai tingkat tertentu. Biaya ini secara rutin harus dikeluarkan meskipun kendaraan yang bersangkutan tidak beroperasi.

b. Biaya tidak tetap

Biaya tidak tetap adalah biaya yang berubah apabila terjadi perubahan pada volume produksi jasa.

3. Penggolongan biaya berdasarkan hubungannya dengan produksi jasa yang dihasilkan :

a. Biaya langsung

Biaya langsung adalah biaya yang berkaitan langsung dengan produk jasa yang dihasilkan, misalnya biaya penyusutan kendaraan, bahan bakar, bunga modal, gaji dan tunjangan awak bis, konsumsi ban, service, general overhoul, konsumsi olie, pajak kendaraan, dan biaya suku cadang.

b. Biaya tak langsung

Biaya tak langsung adalah biaya yang secara tidak langsung berhubungan dengan produk jasa yang dihasilkan, misalnya akutansi, administrasi kantor, dan sebagainya.



## BAB III

### LANDASAN TEORI

#### 3.1 Faktor Muat (*Load Factor*)

Faktor muat merupakan perbandingan antara kapasitas terjual dan kapasitas tersedia untuk satu perjalanan yang biasa dinyatakan dalam persen. Faktor muat ini sangat tergantung dari kapasitas kendaraan yang digunakan. Kapasitas kendaraan adalah daya muat penumpang kendaraan baik yang duduk maupun berdiri. Daya muat kendaraan tergantung dari jenis kendaraan / angkutan umum yang digunakan, untuk lebih jelasnya dapat dilihat dalam table 3.1 dibawah ini :

Tabel 3.1 Kapasitas Kendaraan

| Jenis Angkutan           | Kapasitas Kendaraan |         |       | Kapasitas Penumpang Per hari / kendaraan |
|--------------------------|---------------------|---------|-------|--|
|                          | Duduk               | Berdiri | Total |  |
| Mobil Penumpang Umum     | 11                  | -       | 11    | 250 – 300                                |
| Bus Kecil                | 14                  | -       | 14    | 300 – 400                                |
| Bis Sedang               | 20                  | 10      | 30    | 500 – 600                                |
| Bis Besar Lantai Tunggal | 49                  | 30      | 79    | 1000 – 1200                              |
| Bis Besar Lantai Ganda   | 85                  | 35      | 120   | 1500 - 1800                              |

(Sumber : Departemen Perhubungan Direktorat Jendral Perhubungan Darat, 1999)

Berdasarkan table 3.1 diatas, jenis kendaraan yang digunakan pada angkutan umum bis kota jalur 04 yaitu bis sedang, merupakan jenis kendaraan yang mengizinkan penumpang untuk berdiri, sehingga perhitungan *load factor* berdasarkan jumlah tempat duduk penumpang ditambah dengan 30%-nya.

### 3.2 Waktu Antara (*Headway*)

Pada waktu berhenti di terminal, angkutan umum bis kota membutuhkan waktu untuk memulai perjalanannya. Waktu antara atau waktu tunggu di terminal dihitung dengan menggunakan persamaan 3.1.

$$H = \frac{60 \times C \times L_f}{P} \dots\dots\dots(3.1)$$

Dengan :

H = Waktu antara (menit)

P = Jumlah penumpang per jam pada seksi terpadat

C = Kapasitas kendaraan

L<sub>f</sub> = Faktor muat, diambil 70% (pada kondisi dinamis)

### 3.3 Waktu Sirkulasi (*Travel Time*)

Waktu sirkulasi merupakan waktu total yang dibutuhkan satu bis angkutan umum untuk menyelesaikan satu putaran trayek termasuk menaikkan atau menurunkan penumpang serta waktu untuk menunggu penumpang. Waktu sirkulasi dihitung dengan menggunakan persamaan 3.2 dibawah ini :

$$CT_{ABA} = (T_{AB} + T_{BA}) + (\sigma AB^2 + \sigma BA^2) + (T_{TA} + T_{TB}) \dots\dots\dots(3.2)$$

Dengan :

CT<sub>ABA</sub> = Waktu sirkulasi dari A ke B, kembali ke A (menit)



$T_{AB}$  = Waktu perjalanan rata-rata dari A ke B (menit)

$T_{BA}$  = Waktu perjalanan rata-rata dari B ke A (menit)

$\sigma_{AB}$  = Deviasi waktu perjalanan dari A ke B (menit)

$\sigma_{BA}$  = Deviasi waktu perjalanan dari B ke A (menit)

$T_{TA}$  = Waktu henti kendaraan di A (menit)

$T_{TB}$  = Waktu henti kendaraan di B (menit)

(waktu henti kendaraan di A dan B ditetapkan sesar 10 % dari waktu perjalanan antara A dan B)

### 3.4 Jumlah Armada Bis

Jumlah armada yang dibutuhkan per waktu sirkulasi dihitung dengan menggunakan persamaan 3.3 berikut:

$$K = \frac{CT}{H \times f_A} \quad \dots\dots(3.3)$$

Dengan :

$K$  = Jumlah armada

$CT$  = Waktu sirkulasi (menit)

$H$  = Waktu antara / *Headway* (menit)

$f_A$  = Faktor ketersediaan kendaraan (90 %)

### 3.5 Jumlah Armada pada Waktu Sibuk

Jumlah armada yang dibutuhkan per waktu sirkulasi pada jam-jam sibuk dihitung dengan menggunakan persamaan 3.4 :

$$K' = K \times \frac{W}{CT_{ABA}} \dots\dots\dots(3.4)$$

Dengan :

$K'$  = Jumlah kendaraan yang dibutuhkan pada waktu jam sibuk

$K$  = Jumlah kendaraan yang dibutuhkan per waktu sirkulasi

$W$  = Periode jam sibuk (menit)

$CT_{ABA}$  = Waktu sirkulasi dari A ke B kembali ke A (menit)

### 3.6 Rata – Rata Waktu Tempuh

Untuk menghitung rata-rata waktu tempuh bis kota jalur 04 digunakan formula rata-rata harmonik sebagai berikut :

$$HM = \frac{N}{F_1/X_1 + F_2/X_2 + F_3/X_3 + \dots F_n/X_n} \dots\dots\dots(3.5)$$

$HM$  = rata – rata harmonik waktu tempuh (menit)

$F$  = frekuensi, yaitu jumlah bis kota yang mempunyai waktu tempuh  $X_i$

$X_i$  = data waktu tempuh

### 3.7 Tempat Henti (*Bus Shelter*)

Fasilitas angkutan umum secara umum dibedakan menjadi dua yaitu terminal dan tempat henti (*shelter*). Fasilitas ini sangat diperlukan dan mendukung kelancaran dan keselamatan operasional bus. Keselamatan dan kenyamanan penumpang bus merupakan tujuan perencanaan fasilitas angkutan umum yang harus terpenuhi.

Lokasi dan perencanaan tempat henti angkutan umum sangat mempengaruhi efisiensi kinerja pengangkutan yaitu kecepatan dan keandalan pelayanan kendaraan yang sedang beroperasi serta kenyamanan penumpang yang berorientasi pada jangkauan pelayanan dan kecepatan perjalanan yang akan ditempuh (Departemen Perhubungan Dirjen Perhubungan Darat, 1999).

Jarak tempat henti yang disarankan oleh Vuchic berkisar antara 400 dan 600 meter, namun jarak 300 meter masih dimungkinkan. Jarak tempat henti yang kurang dari 300 meter akan mengakibatkan terganggunya kualitas pelayanan dan akan menimbulkan kemacetan atau keruwetan pada lalu lintas.

*Confederation of British Road Passenger Transport* memberikan batasan rata-rata 2 sampai 3 tempat henti per km. Tetapi jarak ini sebenarnya kondisional melihat kondisi dilapangan. Pada tingkat kegiatan rendah dapat diatur jarak antar tempat henti lebih berjauhan daripada tempat yang mempunyai tingkat kegiatan tinggi, sehingga jarak antar tempat henti angkutan umum ini dapat diatur sesuai kebutuhan.

Institute of Transport Engineering memberikan standar jarak antar tempat henti seperti tabel 3.2 dibawah ini :

Tabel 3.2 Standar Jarak Tempat Henti Bis

| Tipe Bis            | Jarak Tempat Henti (m) |             |            |
|---------------------|------------------------|-------------|------------|
|                     | CBD                    | Non CBD     |            |
|                     |                        | Lama        | Baru       |
| <i>Local</i>        | 120 – 240              | 150 – 240   | 300 – 450  |
| <i>Limited Stop</i> | 120 – 240              | 360 – 900   | 600 – 1500 |
| <i>Express</i>      | 120 – 300              | 1200 – 9000 | 1 – 30 mil |

CBD = *Central Business District*

(Sumber : Departemen Perhubungan Direktorat Jendral Perhubungan Darat, 1999)

### 3.8 Penyusunan Jadwal

Dasar penyusunan jadwal angkutan umum adalah :

- a. Waktu antara (*headway*)
- b. Jumlah armada
- c. Waktu sirkulasi

### 3.9 Biaya Operasi Kendaraan (BOK)

Perhitungan biaya operasi kendaraan menurut DLLAJ

1. Biaya langsung

- a. Biaya penyusutan kendaraan/bis – km

Harga kendaraan (d) – nilai residu (20 % x d)

----- (3.6)

Produksi bis – km/thn x masa penyusutan

b. Biaya bunga modal/bis – km

$$\frac{\text{Bunga modal/thn}}{\text{Produksi bis km/thn}} \dots\dots\dots(3.7)$$

c. Gaji dan tunjangan awak bis/bis – km

$$\frac{\text{Biaya awak bis/thn}}{\text{Produksi bis km/thn}} \dots\dots\dots(3.8)$$

d. Biaya bahan bakar minyak/bis – km

$$\frac{\text{Biaya BBM/bis/hari}}{\text{Km tempuh/hari}} \dots\dots\dots(3.9)$$

e. Pemakaian ban/bis – km

$$\frac{\text{Jumlah pemakaian ban}}{\text{Km daya tahan ban}} \dots\dots\dots(3.10)$$

f. Biaya service kecil/bis – km

$$\frac{\text{Jumlah biaya service kecil}}{\text{Km service kecil}} \dots\dots\dots(3.11)$$

g. Biaya service besar/bis – km

$$\frac{\text{Jumlah biaya service besar}}{\text{Km service besar}} \dots\dots\dots(3.12)$$

h. Biaya general overhoul/bis – km

$$\frac{\text{Jumlah biaya overhoul}}{\text{Km overhoul}} \dots\dots\dots(3.13)$$

i. Biaya penambahan olie mesin/bis – km

$$\frac{\text{Penambahan olie mesin x harga olie/lt}}{\text{Km tempuh/hari}} \dots\dots\dots(3.14)$$

j. Biaya kir/bis – km

$$\frac{\text{Biaya kir/thn}}{\text{Produksi km bis/thn}} \dots\dots\dots(3.15)$$

k. Biaya STNK (pajak) kendaraan/bis – km

$$\frac{\text{Biaya STNK/bis}}{\text{Produksi km/thn}} \dots\dots\dots(3.16)$$

2. Biaya tidak langsung

Biaya tidak langsung ini hanya mencakup biaya iuran koperasi per tahun.

Biaya operasional kendaraan total/biaya pokok =

$$\text{Biaya langsung} + \text{biaya tidak langsung} \dots\dots\dots(3.17)$$

## BAB IV

### METODE PENELITIAN

#### 4.1 Lokasi Penelitian

Penelitian mengambil kota Jogjakarta sebagai lokasi penelitian. rute bis kota yang diambil adalah jalur 04, yaitu melalui :

TERMINAL UMBUL HARJO – JL. VETERAN – JL. WARUNG BOTO – JL. PERINTIS KEMERDEKAAN – JL. NGEKSIDONO – JL. GEDONG KUNING – JL. KUSUMA NEGARA – JL. SULTAN AGUNG – JL. MAYOR SURYOTOMO – JL. MATARAM – JL. ABUBAKAR ALI – JL. KOM YOS SUDARSO – JL. SUROTO – JL. CIK DI TIRO – JL. COLOMBO – JL. LINGKAR UGM PENUH – JL. KALIURANG – JL. C. SIMANJUNTAK – JL. JEND. SUDIRMAN – JL. P. MANGKUUMI – JL. KLERINGAN – JL. TAMAN GARUDA – JL. MALIOBORO – JL. JEND. A. YANI – JL. PANEMBAHAN SENOPATI – JL. SULTAN AGUNG – JL. KUSUMA NEGARA – JL. GEDONG KUNING – JL. NGEKSIDONO – JL. PERINTIS KEMERDEKAAN – JL. VETERAN – TERMINAL UMBUL HARJO

#### 4.2 Peralatan

Peralatan yang digunakan dalam penelitian ini adalah :

1. Pengukur waktu (Stop Watch)
2. Alat tulis
3. Pengukur panjang
4. Formulir survei, yang terdiri dari :
  - a. formulir survei dalam bis kota
  - b. formulir survei di terminal

Formulir survei terdiri dari Formulir Jumlah Penumpang dan Waktu Tempuh, Formulir Headway, dan Formulir Letak Halte Bis Kota dapat dilihat pada lampiran 4, lampiran 2, dan lampiran 6.

### 4.3 Tenaga Survei

Dalam penelitian ini dibutuhkan sedikitnya 10 orang surveyor, yang terdiri dari :

1. Dua orang dalam bis untuk mencatat jumlah penumpang naik dan turun, satu orang duduk di dekat pintu depan dan satu orang lainnya duduk di dekat pintu belakang.
2. Dua orang mencatat waktu headway diruas jalan yang ditentukan.
3. Dua orang mengukur panjang rute bis kota dari terminal asal sampai ke terminal tujuan.
4. Dua orang mencatat waktu perjalanan dari terminal asal ke terminal tujuan dan waktu henti bis di tempat-tempat perhentian bis.
5. Dua orang mencatat lokasi dan jarak antar halte pada ruas-ruas jalan dalam rute bis kota jalur 04.

### 4.4 Waktu Penelitian

Penelitian dilaksanakan dalam 3 hari, yaitu hari Senin dan Selasa mewakili hari kerja dan hari Minggu mewakili hari libur. Penelitian dilaksanakan mulai jam 06.00 WIB sampai dengan jam 18.00 WIB.



## 4.5 Rencana Jalannya Penelitian

Jalannya penelitian dapat dilihat pada bagan alir halaman 27 dan 28 Gambar 4.1a dan 4.1b.

### 4.5.1 Data primer

Data primer didapatkan dengan menggunakan penelitian langsung dilapangan. Data primer dibutuhkan apabila data sekunder tidak mencukupi. Data primer yang dibutuhkan adalah jumlah penumpang dalam satu rute perjalanan, waktu yang dibutuhkan untuk menempuh perjalanan satu rute, waktu tunggu bis kota pada tempat henti baik yang legal maupun illegal, waktu antara bis kota (headway), lokasi penempatan halte bis kota, dan jarak antar halte dalam satu rute bis kota jalur 04.

#### 1. Survei jumlah penumpang

Pelaksanaan survei jumlah penumpang dilakukan dengan cara mencatat jumlah penumpang yang naik dan yang turun dalam satu putaran penuh dalam satu bis kota jalur 04. Pencatatan dilakukan oleh dua orang surveyor dimana satu orang duduk didekat pintu depan bis kota dan yang lainnya duduk didekat pintu belakang bis kota, dengan menggunakan formulir survei.

#### 2. Survei waktu dan jarak tempuh

Survei dilaksanakan dengan cara mencatat waktu perjalanan (travel time) dan waktu kendaraan berhenti menaikkan atau menurunkan penumpang di tiap ruas jalan. Pencatatan dilakukan oleh surveyor yang

duduk didalam bis kota mulai dari terminal asal sampai terminal tujuan. Pencatatan waktu menggunakan alat ukur waktu *stop watch*.

Pelaksanaan survei jarak tempuh dengan menggunakan speedometer sepeda motor. Jarak yang diukur adalah jarak masing-masing ruas jalan yang dilalui oleh bis kota jalur 04.

### 3. Survei *headway*

Survei *headway* angkutan umum bis kota dilakukan oleh dua orang surveyor dengan cara mencatat waktu keberangkatan dan kedatangan masing-masing bis kota jalur 04 di ruas jalan yang ditentukan.

### 4. Survei lokasi dan jarak halte

Survei dilaksanakan oleh dua orang surveyor dengan cara mencatat lokasi halte dan jumlahnya serta jarak antara halte yang satu dengan halte lainnya dalam satu ruas jalan.

#### **4.5.2 Data sekunder**

Data sekunder diperoleh dari instansi terkait seperti Departemen Perhubungan, dimana data yang diperoleh berupa trayek jalur bis kota dan jumlah armada di D. I. Jogjakarta.

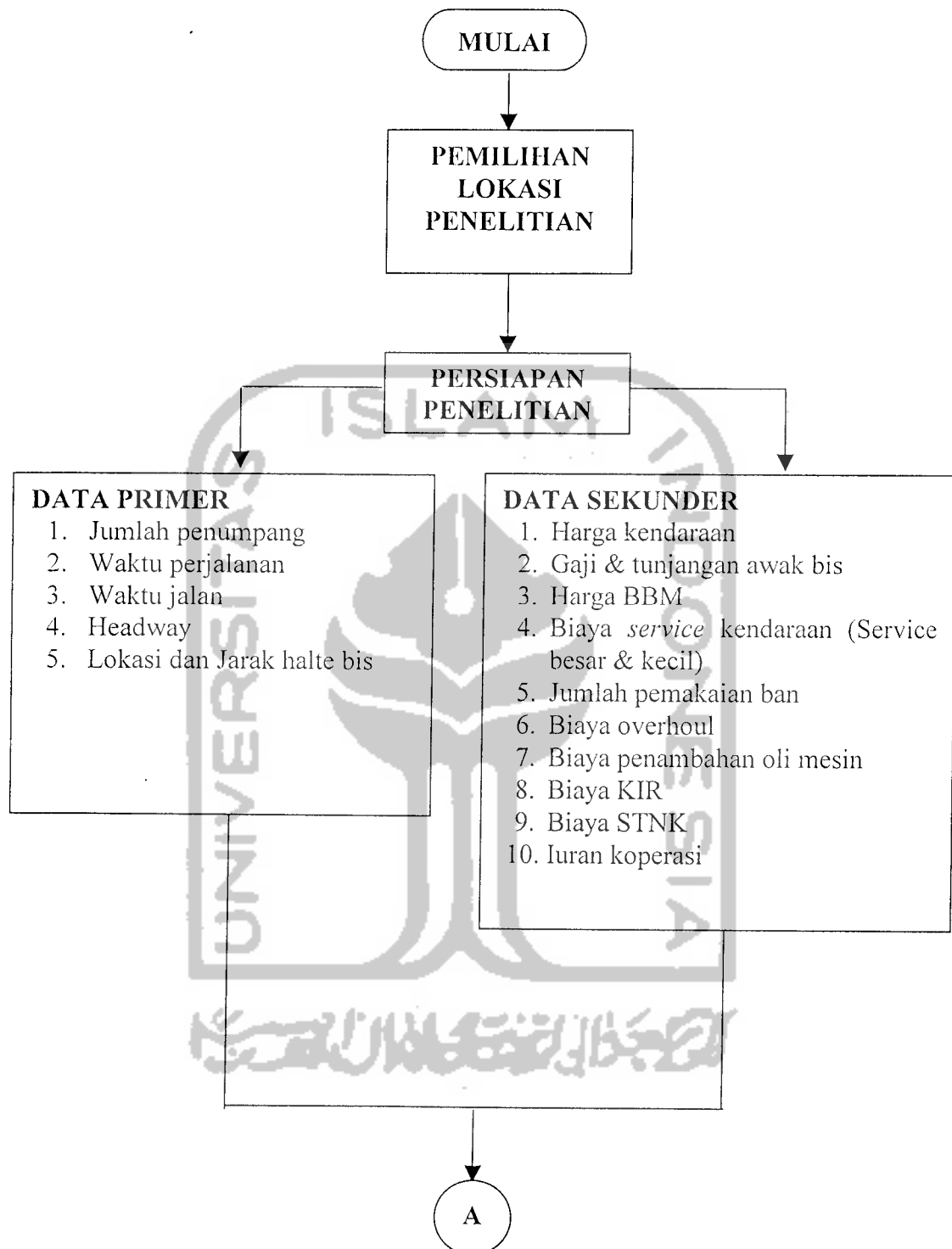
#### **4.6 Analisis Data**

Data primer dan sekunder yang telah diperoleh diteliti kembali dan dilakukan analisis dengan metode statistik dengan menggunakan software Excell.

#### 4.7 Kesimpulan dan Saran

Setelah seluruh data dianalisis dan dibahas, kemudian dapat ditarik kesimpulan dari hasil penelitian ini yang merujuk pada pembahasan materi. Saran disusun untuk memberikan masukan pada Pemda dan Organda serta kepada peneliti-peneliti lain dikemudian hari yang akan melakukan penelitian tentang permasalahan ini.





Gambar 4.1a



Gambar 4.1b

## BAB V

### HASIL PENELITIAN DAN PEMBAHASAN

#### 5.1 Rute Perjalanan

Sistem rute bis kota jalur 04 Jogjakarta diawali dan diakhiri dari terminal Umbulharjo. Rute bis kota di Jogjakarta dilayani oleh semua perusahaan atau koperasi dengan digilir 2 hari sekali. Oleh karena itu sering terjadi persaingan antara angkutan umum bis kota untuk memenuhi target setoran. Adanya persaingan ini membuat jarak headway yang tidak teratur.

Pergerakan bis kota jalur 04 kota Jogjakarta ini mempunyai arti yang penting karena melewati jalur sentral bisnis kota Jogjakarta yaitu pusat perbelanjaan Malioboro dan pusat pasar tradisional Beringharjo. Oleh sebab itu diperlukan peningkatan pelayanan dan kenyamanan bagi para penumpang khususnya penumpang bis kota jalur 04 kota Jogjakarta.

#### 5.2 Pengamatan Operasional di Lapangan

Jenis bis kota yang digunakan untuk angkutan umum semua jurusan di kota Jogjakarta adalah sama yaitu jenis midi bis berkapasitas 24 kursi, dan diperbolehkan penumpang berdiri.

Dari hasil pengamatan survey pada bis kota jalur 04, operasional bis dimulai dari pukul 06.00 WIB sampai pukul 18.00 WIB. Operasional bis ini tidak mutlak, kadang dimulai pagi hari sebelum jam 06.00 waktu berangkat sekolah.

Waktu istirahat awak bis kota juga tidak diatur dengan jadwal tertentu, melihat keadaan penumpang ketika sepi.

Dari hasil penelitian juga terjadi kurang disiplinnya waktu berakhir operasional bis kota, jika para sopir dan kondektur merasa sudah memenuhi setorannya maka operasional bis kota berakhir sebelum pukul 18.00 WIB. Selain itu adanya sistem pergantian rute bis kota jalur 04 ke jalur-jalur lain dalam kurun waktu dua hari sekali, hal ini untuk mengantisipasi ketimpangan antara jalur yang banyak penumpangnya dengan jalur yang kurang penumpangnya.

### 5.3 Kesulitan di Lapangan

Selama melakukan penelitian angkutan umum bis kota jalur 04 Jogjakarta, surveyor mengalami beberapa kesulitan antara lain adalah:

1. Kurang tertibnya para sopir angkutan bis kota dalam melewati trayek yang sudah ditetapkan. Sering kali mengambil jalur singkat dari rute yang seharusnya dilewati karena kurangnya penumpang. Hal ini menyebabkan surveyor susah untuk mendata lamanya waktu perjalanan tiap-tiap ruas jalan.
2. Adanya ketidakdisiplinan awak bis kota dengan mengubah papan trayek jurusan secara tiba-tiba sehingga menyusahakan surveyor untuk mendata dilapangan dengan pasti, khususnya mengamati waktu headway untuk waktu kedatangan dan waktu keberangkatan di terminal bis. Karena pada saat kedatangan

menggunakan jalur 04 dan pada waktu keberangkatan menggunakan jalur lain.

#### **5.4 Kebutuhan Bis Kota**

Penentuan kebutuhan bis kota pada jalur 04 dihitung berdasarkan data primer yang didapat dari hasil penelitian lapangan. Hasil perhitungan tersebut dibandingkan dengan data sekunder dari DLLAJ Propinsi DI. Jogjakarta tentang jumlah bis yang beroperasi pada rute jalur 04.

##### **5.4.1 Jumlah Penumpang**

Data jumlah penumpang diambil dari perhitungan jumlah penumpang selama satu hari. Dalam satu hari penelitian dibagi menjadi empat daerah waktu yaitu pagi hari jam 06.00 – 10.00 WIB, siang hari jam 10.00 – 12.00 WIB, 12.00 – 14.00 WIB, dan sore hari jam 14.00 – 17.00 WIB.

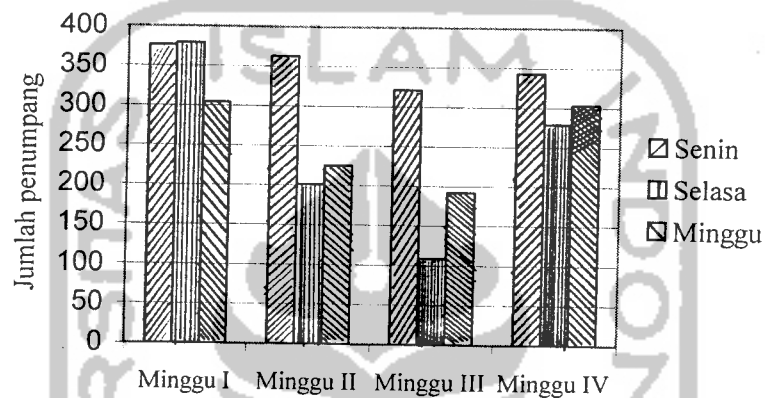
Berdasarkan penelitian didapatkan bahwa rata-rata jumlah penumpang terbanyak adalah pada hari – hari kerja Senin sampai dengan Sabtu, terutama pada ruas jalan Kusumanegara, Sultan Agung dimana terdapat sekolah, kampus, dan perkantoran atau daerah perdagangan. Berikut ini tabel 5.1 dan grafik 5.1 tentang jumlah penumpang rata-rata dalam satu hari, sedangkan data penumpang selengkapnya dapat dilihat di lampiran 4.



Tabel 5.1 Jumlah penumpang dalam satu hari.

| Hari       | Senin  | Selasa | Minggu |
|------------|--------|--------|--------|
| Minggu I   | 376    | 379    | 304    |
| Minggu II  | 363    | 201    | 225    |
| Minggu III | 321    | 109    | 192    |
| Minggu IV  | 343    | 279    | 303    |
| Rata-rata  | 350.75 | 242.00 | 256.00 |

(Sumber : Survey on bus)



Grafik 5.1 Jumlah penumpang bis kota jalur 04 dalam satu hari

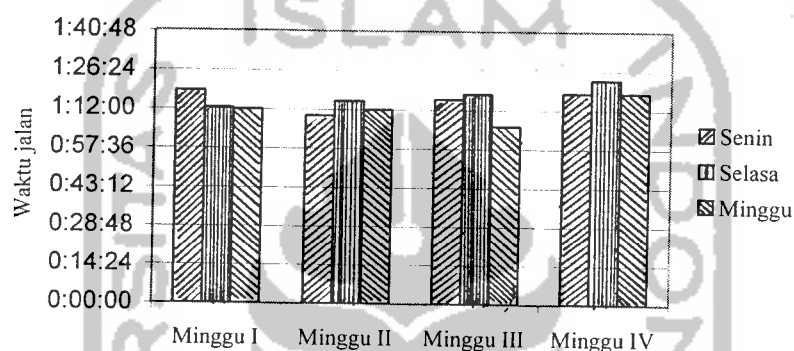
#### 5.4.2 Waktu jalan (*Running time*)

Waktu jalan diperoleh dari waktu yang dibutuhkan oleh angkutan umum bis kota untuk menyelesaikan rute satu putaran penuh dari terminal Umbul Harjo sampai kembali ke terminal Umbul Harjo, tidak termasuk waktu untuk menaikkan atau menurunkan penumpang dan hambatan lalu lintas. Berikut ini tabel 5.2 dan grafik 5.2 tentang *running time* bis kota jalur 04.

Tabel 5.2 *Running time* bis kota jalur 04

| Hari       | <i>Running time</i> |                |                |
|------------|---------------------|----------------|----------------|
|            | Senin               | Selasa         | Minggu         |
| Minggu I   | 1:18:50             | 1:12:40        | 1:12:03        |
| Minggu II  | 1:09:50             | 1:15:16        | 1:12:03        |
| Minggu III | 1:15:55             | 1:17:49        | 1:06:03        |
| Minggu IV  | 1:18:18             | 1:23:07        | 1:18:20        |
| Rata-rata  | <b>1:14:52</b>      | <b>1:17:13</b> | <b>1:12:07</b> |

(Sumber : Perhitungan survey on bus)

Grafik 5.2 *Running time* bis kota jalur 04

#### 5.4.3 Waktu perjalanan (*Travel time*)

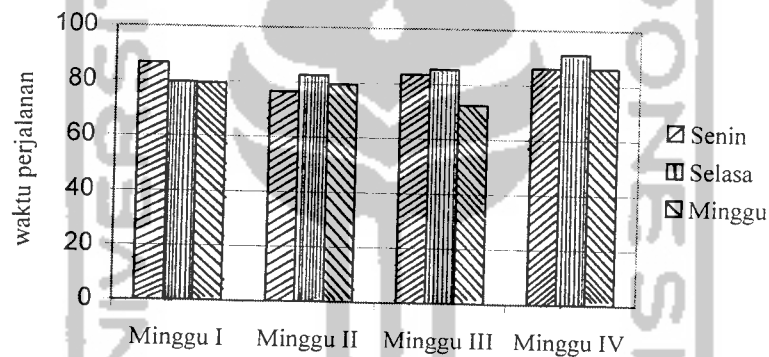
Waktu perjalanan masing-masing bis kota dalam satu rute setiap putaran bervariasi. Waktu perjalanan masing-masing bis kota tergantung dari jumlah penumpang yang diangkut dalam satu rute dan tingkat kepadatan lalu lintas pada rute tersebut. Waktu perjalanan ini dihitung berdasarkan rumus 3.2. Di kota Jogjakarta khususnya rute bis kota jalur 04 tidak terdapat sub terminal untuk bis kota, yang ada adalah subterminal untuk angkutan kota Sleman seperti di sub terminal Condong Catur.

Berikut ini adalah tabel 5.3 dan grafik 5.3 tentang waktu perjalanan rata-rata per hari hasil perhitungan dengan rumus 3.2. Data waktu perjalanan selengkapnya dapat dilihat pada lampiran 2.

Tabel 5.3 Waktu perjalanan angkutan umum bis kota jalur 04

| Hari       | Waktu Perjalanan (menit) |         |         |
|------------|--------------------------|---------|---------|
|            | Senin                    | Selasa  | Minggu  |
| Minggu I   | 86.4400                  | 79.5700 | 79.1600 |
| Minggu II  | 76.5000                  | 82.4800 | 79.1600 |
| Minggu III | 83.3100                  | 85.3700 | 72.4000 |
| Minggu IV  | 86.0800                  | 91.2600 | 86.1100 |
| Rata-rata  | 82.0833                  | 82.4733 | 76.9067 |
| 1/f        | 0.0122                   | 0.0121  | 0.0130  |

(Sumber : Hasil perhitungan survey on bus)



Grafik 5.3 Travel time bis kota jalur 04

$$1/f_{\text{total}} = 0.0122 + 0.0121 + 0.0130 = 0.0373$$

$$\text{Waktu perjalanan} = \frac{3}{0.0373}$$

$$= 80.4289 \text{ menit}$$

#### 5.4.4 Waktu antara (*Headway*)

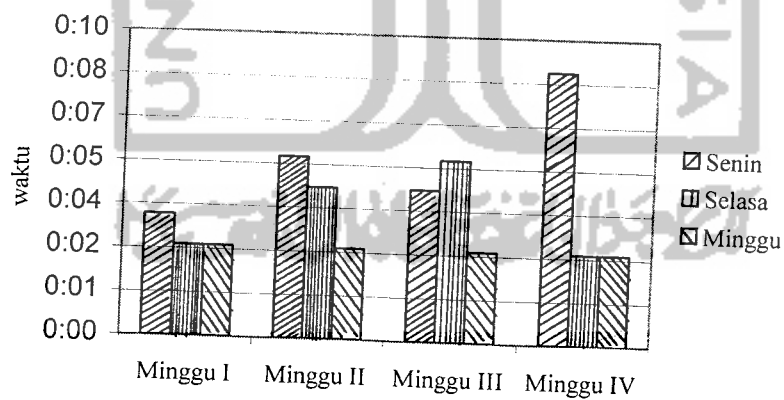
Berdasarkan hasil pengamatan dilapangan pengaturan headway kurang diperhatikan, sehingga jadwal keberangkatan bis kota sesama jalur 04 kadang bersamaan. Begitu juga dengan jadwal kedatangan bis kota jalur 04 masuk ke terminal Umbulharjo bersamaan dua sampai tiga bis.

Waktu antara (headway) di terminal dapat dilihat pada tabel 5.4 dan grafik 5.4 dibawah ini, data selengkapnya dapat dilihat pada lampiran 1.

Tabel 5.4 Headway rata-rata

|            | Senin | Selasa | Minggu |
|------------|-------|--------|--------|
| Minggu I   | 0:04  | 0:03   | 0:03   |
| Minggu II  | 0:06  | 0:05   | 0:03   |
| Minggu III | 0:05  | 0:06   | 0:03   |
| Minggu IV  | 0:09  | 0:03   | 0:03   |
| Rata-rata  | 0:06  | 0:04   | 0:03   |

(Sumber : Survey on bus)



Grafik 5.4 Headway rata-rata bis kota jalur 04

#### 5.4.5 Kebutuhan Bis

Perhitungan kebutuhan bis dimaksudkan untuk membandingkan antara jumlah kebutuhan bis menurut perhitungan data yang diperoleh dilapangan dengan jumlah bis yang saat ini tersedia pada jalur 04. perhitungan jumlah armada bis kota ini menggunakan rumus 3.3 untuk kebutuhan armada dan rumus 3.4 untuk kebutuhan armada pada waktu sibuk.

##### 1. Kebutuhan armada jalur 04 hari Senin

Waktu perjalanan (CT) = 82.0833 menit

Waktu antara (H) = 6 menit

Faktor ketersediaan kendaraan = 90 %

$$K = \frac{CT}{H \times fA}$$

$$= \frac{82.0833}{6 \times 0.9} = 15,2006 \text{ dibulatkan } 15 \text{ bis}$$

##### 2. Kebutuhan armada jalur 04 hari Selasa

Waktu perjalanan (CT) = 82.4733 menit

Waktu antara (H) = 4 menit

Faktor ketersediaan kendaraan = 90%

$$K = \frac{CT}{H \times fA}$$

$$= \frac{82.4733}{4 \times 0.9}$$

$$= 22,8009 \text{ dibulatkan } 23 \text{ bis}$$

3. Kebutuhan armada jalur 04 hari Minggu Pagi

Waktu perjalanan (CT) = 76.9067 menit

Waktu antara (H) = 3 menit

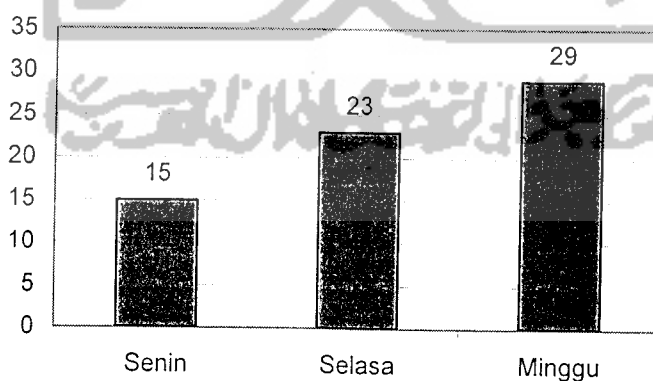
Faktor ketersediaan kendaraan = 90%

$$K = \frac{CT}{H \times fA}$$

$$= \frac{76.9067}{3 \times 0.9}$$

$$= 28.4839 \text{ dibulatkan } 29 \text{ bis}$$

Dari hasil perhitungan diatas dapat diketahui kebutuhan bis kota untuk satu hari sangat bervariasi jumlahnya, sehingga sulit untuk memenuhi jumlah tersebut sesuai dengan hasil hitungan. Untuk itu perlu diambil nilai rata-rata jumlah bis kota yang diperlukan untuk semua hari. Berdasarkan perhitungan diatas dapat kita tentukan kebutuhan bis tiap hari dengan cara mengambil rata-rata dari kebutuhan bis hari Senin, Selasa, dan Minggu yaitu 22 bis. Berikut ini grafik 5.5 tentang jumlah kebutuhan bis kota jalur 04 hasil perhitungan.



Grafik 5.5 Jumlah kebutuhan bis kota jalur 04

### 5.5 Load Factor

Load factor (faktor muat) dihitung berdasarkan jumlah penumpang yang tertampung di dalam bis dibagi dengan kapasitas bis tersebut. Untuk armada bis kota jalur 04 kota Jogjakarta, digunakan bis dengan kapasitas tempat duduk 24 orang (midi bis/bis sedang).

Untuk mempermudah perhitungan load factor, dalam satu hari dibagi menjadi 4 waktu, yaitu jam 06.00 – 10.00 WIB (pagi hari), jam 10.00 – 12.00 WIB dan 12.00 – 14.00 WIB (siang hari), dan jam 14.00 – 18.00 WIB (sore hari)

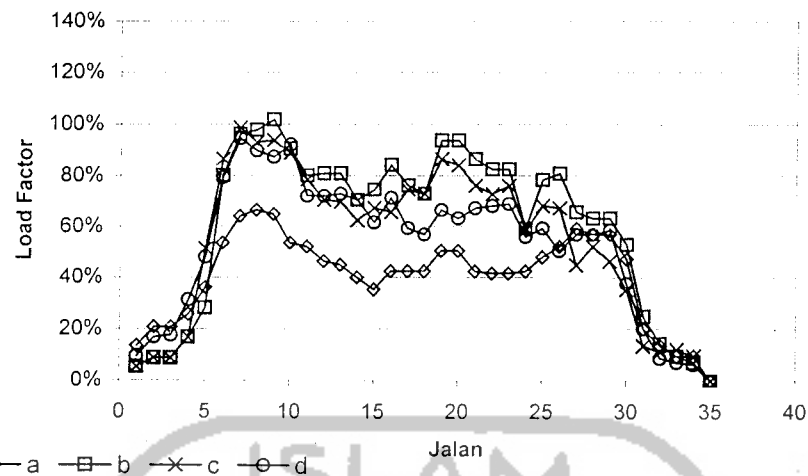
Menurut Peraturan Pemerintah No. 14 Tahun 1993 tentang Angkutan Jalan pasal 28, yang menetapkan bahwa faktor muat standar sebesar 70 %. Hal ini menunjukkan bahwa kondisi load factor melebihi 70 % berarti tingkat kenyamanan dan pelayanan yang diterima penumpang bis kota kurang baik. Berdasarkan penelitian di lapangan, banyak ditemui pada ruas jalan tertentu yang mempunyai angka *load factor* lebih dari 70 %, seperti pada ruas jalan Kusuma negara, Sultan Agung, Gedong Kuning, Panembahan Senopati, Mayor Suryotomo, Mataram, Malioboro, C. Simanjuntak, dan Jl. Sudirman. Kondisi *load factor* diatas 70 % ini terjadi pada hari-hari kerja Senin sampai dengan Sabtu, sedangkan untuk hari Minggu *load factor* rata-rata dibawah nilai 70 %. Load factor hari Senin cenderung tinggi (didas 70%) pada siang dan sore hari, hal ini dapat dilihat pada tabel 5.5 dan grafik 5.6 di bawah ini.

Tabel 5.5 Load factor hari Senin

| No | Ruas Jalan              | Load Factor    |                |                |                |
|----|-------------------------|----------------|----------------|----------------|----------------|
|    |                         | 06.00<br>10.00 | 10.00<br>12.00 | 12.00<br>14.00 | 14.00<br>17.00 |
| 1  | Terminal                | 13.62%         | 5.61%          | 5.61%          | 9.62%          |
| 2  | Jl.Veteran              | 20.83%         | 8.81%          | 8.81%          | 16.83%         |
| 3  | Jl.Warung boto          | 20.83%         | 12.02%         | 8.81%          | 17.63%         |
| 4  | Jl.Perintis Kemerdekaan | 25.64%         | 17.63%         | 16.83%         | 31.25%         |
| 5  | Jl.Ngeksidono           | 36.06%         | 28.85%         | 51.28%         | 48.08%         |
| 6  | Jl.Gedong Kuning        | 53.69%         | 80.93%         | 86.54%         | 79.33%         |
| 7  | Jl.Kusuma Negara        | 64.10%         | 96.96%         | 98.56%         | 94.55%         |
| 8  | Jl.Sultan Agung         | 66.51%         | 98.56%         | 92.95%         | 89.74%         |
| 9  | Jl.Senopati             | 64.90%         | 102.56%        | 93.75%         | 87.34%         |
| 10 | Jl.Mayor Suryotomo      | 53.69%         | 91.35%         | 88.94%         | 92.15%         |
| 11 | Jl.Mataram              | 52.08%         | 80.93%         | 78.53%         | 72.12%         |
| 12 | Jl.Abubakar Ali         | 46.47%         | 81.73%         | 70.51%         | 72.12%         |
| 13 | Jl.Kom Yos Sudarso      | 44.87%         | 81.73%         | 69.71%         | 72.92%         |
| 14 | Jl.Suroto               | 40.06%         | 71.31%         | 62.50%         | 70.51%         |
| 15 | Jl.Cik Di Tiro          | 35.26%         | 75.32%         | 67.31%         | 61.70%         |
| 16 | Jl.Colombo              | 42.47%         | 84.94%         | 65.71%         | 71.31%         |
| 17 | Jl.Lingkar UGM Penuh    | 42.47%         | 76.92%         | 74.52%         | 59.29%         |
| 18 | Jl. Kaliurang           | 42.47%         | 73.72%         | 72.92%         | 56.89%         |
| 19 | Jl.C.Simajuntak         | 50.48%         | 94.55%         | 86.54%         | 66.51%         |
| 20 | Jl. Jend.Sudirman       | 50.48%         | 93.75%         | 84.13%         | 63.30%         |
| 21 | Jl. P.Mangkubumi        | 42.47%         | 86.54%         | 76.12%         | 67.31%         |
| 22 | Jl.Kleringan            | 41.67%         | 82.53%         | 72.92%         | 68.11%         |
| 23 | Jl.Taman Garuda         | 41.67%         | 82.53%         | 76.12%         | 68.91%         |
| 24 | Jl.Malioboro            | 42.47%         | 59.29%         | 58.49%         | 56.09%         |
| 25 | Jl. Jend.A.Yani         | 48.08%         | 78.53%         | 68.11%         | 59.29%         |
| 26 | Jl. P.Senopati          | 52.08%         | 80.93%         | 67.31%         | 50.48%         |
| 27 | Jl. Sultan Agung        | 59.29%         | 65.71%         | 44.87%         | 56.89%         |
| 28 | Jl.Suryopranoto         | 56.89%         | 63.30%         | 52.08%         | 56.89%         |
| 29 | Jl.Sukonandi            | 56.89%         | 63.30%         | 46.47%         | 58.49%         |
| 30 | Jl.Kusuma Negara        | 47.28%         | 52.88%         | 35.26%         | 37.66%         |
| 31 | Jl.Gedong Kuning        | 20.03%         | 24.84%         | 13.62%         | 20.03%         |
| 32 | Jl.Ngeksidono           | 13.62%         | 14.42%         | 11.22%         | 8.81%          |
| 33 | Jl.P.Kemerdekaan        | 9.62%          | 9.62%          | 12.02%         | 7.21%          |
| 34 | Jl.Veteran              | 9.62%          | 7.21%          | 9.62%          | 6.41%          |
| 35 | Terminal                | 0.00%          | 0.00%          | 0.00%          | 0.00%          |

(Sumber : Survey on bus)





Ket : a : jam 06.00 – 10.00 ; b : jam 10.00 – 12.00 ; c : jam 12.00 – 14.00 ; d : jam 14.00 – 17.00

Grafik 5.6 Hubungan load factor dengan ruas jalan yang dilalui pada hari Senin.

Dari grafik terlihat bahwa load factor tertinggi pada siang hari yaitu pada waktu siswa pulang sekolah dan jam istirahat kantor yaitu antara jam 12.00 sampai dengan jam 14.00. Load factor tertinggi pada siang hari seperti terlihat pada grafik adalah pada ruas jalan Senopati yaitu pada waktu siswa pulang sekolah, sedangkan untuk sore hari adalah pada ruas jalan Kusuma Negara. Pada pagi hari load factor tertinggi pada ruas jalan Sultan Agung dimana banyak terdapat sekolah di ruas jalan tersebut. Nilai load factor pada pagi hari ini masih dibawah 70 %, sehingga tingkat kenyamanan masih terpenuhi.

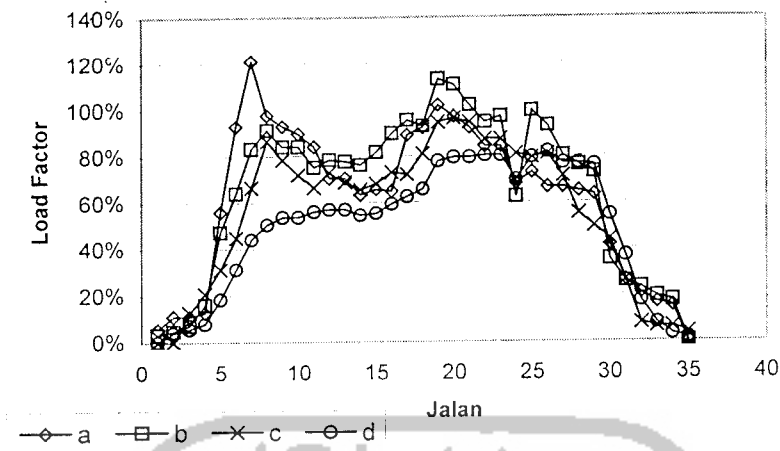
Pada penelitian hari Selasa, load factor tertinggi terjadi pada pagi pada ruas jalan Kusuma Negara mencapai 120 %. Pada ruas jalan ini terdapat beberapa kampus dan daerah pertokoan. Untuk siang hari load factor tertinggi pada ruas jalan C. Simanjuntak dimana terdapat daerah pertokoan dan beberapa sekolah. Sedangkan pada sore hari, tingkat load factor tertinggi juga terdapat pada ruas

jalan C. Simanjuntak. Untuk lebih jelas dapat dilihat pada tabel 5.6 dan grafik 5.7 berikut.

Tabel 5.6 Load Factor pada hari Selasa

| No | Ruas Jalan              | Load Factor    |                |                |                |
|----|-------------------------|----------------|----------------|----------------|----------------|
|    |                         | 06.00<br>10.00 | 10.00<br>12.00 | 12.00<br>14.00 | 14.00<br>17.00 |
| 1  | Terminal                | 5.61%          | 3.21%          | 12.02%         | 4.01%          |
| 2  | Jl.Veteran              | 11.22%         | 4.81%          | 14.42%         | 4.81%          |
| 3  | Jl.Warung boto          | 11.22%         | 7.21%          | 12.82%         | 5.61%          |
| 4  | Jl.Perintis Kemerdekaan | 12.82%         | 16.03%         | 23.24%         | 9.62%          |
| 5  | Jl.Ngeksidono           | 56.09%         | 47.28%         | 40.06%         | 20.83%         |
| 6  | Jl.Gedong Kuning        | 92.95%         | 64.10%         | 68.11%         | 32.05%         |
| 7  | Jl.Kusuma Negara        | 120.99%        | 83.33%         | 83.33%         | 48.88%         |
| 8  | Jl.Sultan Agung         | 97.76%         | 91.35%         | 80.93%         | 50.48%         |
| 9  | Jl.Senopati             | 92.95%         | 84.13%         | 71.31%         | 51.28%         |
| 10 | Jl.Mayor Suryotomo      | 89.74%         | 84.13%         | 71.31%         | 53.69%         |
| 11 | Jl.Mataram              | 84.13%         | 75.32%         | 68.11%         | 56.09%         |
| 12 | Jl.Abubakar Ali         | 70.51%         | 78.53%         | 68.91%         | 56.09%         |
| 13 | Jl.Kom Yos Sudarso      | 70.51%         | 77.72%         | 68.91%         | 56.89%         |
| 14 | Jl.Suroto               | 63.30%         | 76.12%         | 63.30%         | 52.88%         |
| 15 | Jl.Cik Di Tiro          | 65.71%         | 81.73%         | 74.52%         | 56.09%         |
| 16 | Jl.Colombo              | 64.90%         | 89.74%         | 84.13%         | 59.29%         |
| 17 | Jl.Lingkar UGM Penuh    | 88.94%         | 95.35%         | 90.54%         | 62.50%         |
| 18 | Jl. Kaliurang           | 92.15%         | 92.95%         | 84.94%         | 65.71%         |
| 19 | Jl.C.Simajuntak         | 101.76%        | 112.98%        | 96.96%         | 84.13%         |
| 20 | Jl. Jend.Sudirman       | 96.96%         | 110.58%        | 96.15%         | 80.93%         |
| 21 | Jl. P.Mangkubumi        | 92.15%         | 101.76%        | 87.34%         | 79.33%         |
| 22 | Jl.Kleringan            | 84.13%         | 94.55%         | 87.34%         | 79.33%         |
| 23 | Jl.Taman Garuda         | 84.13%         | 96.96%         | 87.34%         | 80.13%         |
| 24 | Jl.Malioboro            | 68.11%         | 62.50%         | 68.11%         | 65.71%         |
| 25 | Jl. Jend.A.Yani         | 72.92%         | 99.36%         | 77.72%         | 83.33%         |
| 26 | Jl. P.Senopati          | 66.51%         | 92.95%         | 77.72%         | 82.53%         |
| 27 | Jl. Sultan Agung        | 66.51%         | 80.13%         | 54.49%         | 78.53%         |
| 28 | Jl.Suryopranoto         | 64.90%         | 76.12%         | 46.47%         | 74.52%         |
| 29 | Jl.Sukonandi            | 63.30%         | 72.92%         | 49.68%         | 73.72%         |
| 30 | Jl.Kusuma Negara        | 41.67%         | 35.26%         | 28.85%         | 48.08%         |
| 31 | Jl.Gedong Kuning        | 26.44%         | 25.64%         | 18.43%         | 34.46%         |
| 32 | Jl.Ngeksidono           | 20.83%         | 23.24%         | 4.81%          | 17.63%         |
| 33 | Jl.P.Kemerdekaan        | 16.83%         | 19.23%         | 6.41%          | 7.21%          |
| 34 | Jl.Veteran              | 15.22%         | 17.63%         | 6.41%          | 3.21%          |
| 35 | Terminal                | 0.00%          | 0.00%          | 0.00%          | 0.00%          |

(Sumber : Survey on bus)



Ket : a : jam 06.00 – 10.00 ; b : jam 10.00 – 12.00 ; c : jam 12.00 – 14.00 ; d : jam 14.00 – 17.00

Grafik 5.7 Hubungan Load Factor dengan Ruas jalan yang dilalui pada hari Selasa.

Untuk hari Minggu kondisi load factor pada pagi dan siang hari terdapat pada ruas jalan Kusuma Negara, dan P. Mangkubumi. Kebanyakan dari penumpang tersebut menuju ke Malioboro untuk berekreasi dan jalan-jalan. Hal ini dapat dilihat pada grafik 5.3 nilai load factor pada ruas jalan Malioboro turun dari 89,74 % menjadi 63,31 %. Sedangkan untuk kondisi sore hari load factor rata-rata dibawah standar untuk semua ruas jalan. Untuk lebih jelas dapat dilihat pada tabel 5.7 dan grafik 5.8.

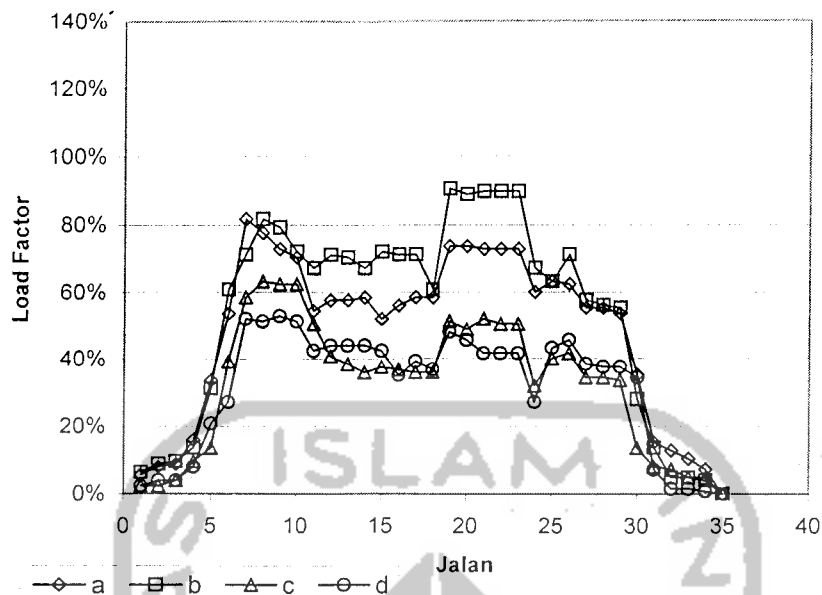
Tabel 5.7 Load Factor hari Minggu

| No | Ruas Jalan              | Load Factor    |                |                |                |
|----|-------------------------|----------------|----------------|----------------|----------------|
|    |                         | 06.00<br>10.00 | 10.00<br>12.00 | 12.00<br>14.00 | 14.00<br>17.00 |
| 1  | Terminal                | 5.61%          | 6.41%          | 2.40%          | 2.40%          |
| 2  | Jl.Veteran              | 8.01%          | 8.81%          | 2.40%          | 4.01%          |
| 3  | Jl.Warung boto          | 8.81%          | 9.62%          | 4.01%          | 4.01%          |
| 4  | Jl.Perintis Kemerdekaan | 16.03%         | 13.62%         | 9.62%          | 8.01%          |
| 5  | Jl.Ngeksidono           | 33.65%         | 31.25%         | 13.62%         | 20.83%         |
| 6  | Jl.Gedong Kuning        | 53.69%         | 60.90%         | 39.26%         | 27.24%         |
| 7  | Jl.Kusuma Negara        | 81.73%         | 71.31%         | 58.49%         | 52.08%         |

Lanjutan tabel 5.7

| No | Ruas Jalan           | Load Factor    |                |                |                |
|----|----------------------|----------------|----------------|----------------|----------------|
|    |                      | 06.00<br>10.00 | 10.00<br>12.00 | 12.00<br>14.00 | 14.00<br>17.00 |
| 8  | Jl.Sultan Agung      | 77.72%         | 81.73%         | 63.30%         | 51.28%         |
| 9  | Jl.Senopati          | 72.92%         | 79.33%         | 62.50%         | 52.88%         |
| 10 | Jl.Mayor Suryotomo   | 70.51%         | 72.12%         | 62.50%         | 51.28%         |
| 11 | Jl.Mataram           | 54.49%         | 67.31%         | 50.48%         | 42.47%         |
| 12 | Jl.Abubakar Ali      | 57.69%         | 71.31%         | 40.87%         | 44.07%         |
| 13 | Jl.Kom Yos Sudarso   | 57.69%         | 70.51%         | 38.46%         | 44.07%         |
| 14 | Jl.Suroto            | 58.49%         | 67.31%         | 36.06%         | 44.07%         |
| 15 | Jl.Cik Di Tiro       | 52.08%         | 72.12%         | 37.66%         | 42.47%         |
| 16 | Jl.Colombo           | 56.09%         | 71.31%         | 36.86%         | 35.26%         |
| 17 | Jl.Lingkar UGM Penuh | 58.49%         | 71.31%         | 36.06%         | 39.26%         |
| 18 | Jl. Kaliurang        | 58.49%         | 60.90%         | 36.06%         | 36.86%         |
| 19 | Jl.C.Simajuntak      | 73.72%         | 90.54%         | 51.28%         | 48.08%         |
| 20 | Jl. Jend.Sudirman    | 73.72%         | 88.94%         | 48.88%         | 45.67%         |
| 21 | Jl. P.Mangkubumi     | 72.92%         | 89.74%         | 52.08%         | 41.67%         |
| 22 | Jl.Kleringan         | 72.92%         | 89.74%         | 50.48%         | 41.67%         |
| 23 | Jl.Taman Garuda      | 72.92%         | 89.74%         | 50.48%         | 41.67%         |
| 24 | Jl.Malioboro         | 60.10%         | 67.31%         | 32.05%         | 27.24%         |
| 25 | Jl. Jend.A.Yani      | 63.30%         | 63.30%         | 40.06%         | 43.27%         |
| 26 | Jl. P.Senopati       | 62.50%         | 71.31%         | 41.67%         | 45.67%         |
| 27 | Jl. Sultan Agung     | 55.29%         | 57.69%         | 34.46%         | 38.46%         |
| 28 | Jl.Suryopranoto      | 55.29%         | 56.09%         | 34.46%         | 37.66%         |
| 29 | Jl.Sukonandi         | 53.69%         | 55.29%         | 33.65%         | 37.66%         |
| 30 | Jl.Kusuma Negara     | 35.26%         | 28.04%         | 13.62%         | 34.46%         |
| 31 | Jl.Gedong Kuning     | 15.22%         | 13.62%         | 8.01%          | 7.21%          |
| 32 | Jl.Ngeksidono        | 12.82%         | 4.81%          | 7.21%          | 1.60%          |
| 33 | Jl.P.Kemerdekaan     | 10.42%         | 4.81%          | 4.81%          | 1.60%          |
| 34 | Jl.Veteran           | 7.21%          | 4.01%          | 4.81%          | 0.80%          |
| 35 | Terminal             | 0.00%          | 0.00%          | 0.00%          | 0.00%          |

(Sumber : Survey on bus)



Ket : a : jam 06.00 – 10.00 ; b : jam 10.00 – 12.00 ; c : jam 12.00 – 14.00 ; d : jam 14.00 – 17.00

Grafik 5.8 Hubungan load factor dengan ruas jalan yang dilalui pada hari Minggu.

### 5.6 Kebutuhan Bis Kota pada Jam Sibuk

Kebutuhan jumlah bis kota pada waktu sibuk dihitung berdasarkan data load factor yang lebih dari 100%. Berdasarkan data load faktor diatas dapat dilihat bahwa load faktor yang lebih dari 100% terjadi pada hari Selasa antara pukul 06.00 WIB dan pukul 10.00 WIB sebesar 120,99% pada ruas jalan Kusuma Negara. Berikut perhitungan kebutuhan armada pada jam sibuk.

$$L_f = 120,99\%$$

$$L_f \text{ sisa} = 20,99\%$$

$$\text{Periode jam sibuk} = \text{jam } 07.00 \text{ WIB} - 09.00 \text{ WIB} = 120 \text{ menit}$$

$$CT = 82,4733 \text{ menit}$$



$$K' = 22 \times \frac{120}{82.4733}$$

= 32.0103 dibulatkan menjadi 32 bis.

Berdasarkan hitungan diatas didapatkan 32 bis untuk waktu jam sibuk. Perbedaan jumlah bis pada waktu normal dengan waktu jam sibuk cukup besar. Penambahan armada bis yang mencapai 30% ini tidak mungkin dilaksanakan, mengingat kondisi ruas jalan dan kapasitas yang tersedia saat ini, dan load factor diatas 100 % tidak pada semua ruas jalan hanya pada ruas jalan tertentu.

## 5.7 Tempat Henti (Shelter)

### 5.7.1 Pengamatan dilapangan

Hasil pengamatan letak dan jarak tempat henti bis kota di Jogjakarta khususnya jalur 04 memperlihatkan terdapat tiga jenis tempat henti yang digunakan, yaitu jenis *kerb side*, *bus shelter*, dan *lay-bys* atau teluk. Dari ketiga jenis ini yang paling banyak dijumpai adalah jenis *kerb side*. Jenis *kerb side* ini banyak digunakan mengingat praktis dan tidak memakan tempat yang banyak terutama di ruas jalan yang sempit. Untuk lebih jelasnya dapat dilihat pada tabel 5.8 berikut.

Tabel 5.8 Jarak antar Tempat Henti Bis Kota per Ruas Jalan

| No | Nama Ruas Jalan         | Jarak antar tempat henti ( m ) | Jenis tempat henti |
|----|-------------------------|--------------------------------|--------------------|
| 1  | Terminal                | -                              | -                  |
| 2  | Jl.Veteran              | -                              | -                  |
| 3  | Jl.Perintis Kemerdekaan | 1050                           | Kerb Side          |
|    | 2                       | 400                            | Kerb Side          |
|    | 3                       | 450                            | Kerb Side          |
| 4  | Jl.Ngeksidono           | -                              | -                  |
| 5  | Jl.Gedong Kuning        | 1400                           | Ngetem             |
| 6  | Jl.Kusuma Negara        | 1300                           | Kerb Side          |
|    | 2                       | 700                            | Kerb Side          |
|    | 3                       | 400                            | Kerb Side          |
|    | 4                       | 100                            | Shelter            |
|    | 5                       | 560                            | Kerb Side          |
| 7  | Jl.Sultan Agung         | 1400                           | Kerb Side          |
| 8  | Jl.Senopati             | -                              | -                  |
| 9  | Jl.Mayor Suryotomo      | 300                            | Kerb Side          |
|    | 2                       | 100                            | Kerb Side          |
|    | 3                       | 150                            | Kerb Side          |
| 10 | Jl.Mataram              | 200                            | Kerb Side          |
|    | 2                       | 250                            | Kerb Side          |
|    | 3                       | 50                             | Kerb Side          |
|    | 4                       | 150                            | Ngetem             |
|    | 5                       | 200                            | Kerb Side          |
| 11 | Jl.Abubakar Ali         | 600                            | Kerb Side          |
| 12 | Jl.Kom Yos Sudarso      | 600                            | Kerb Side          |
| 13 | Jl.Suroto               | -                              | -                  |
| 14 | Jl.Cik Di Tiro          | 450                            | Kerb Side          |
|    | 2                       | 250                            | Kerb Side          |
|    | 3                       | 200                            | Kerb Side          |
| 15 | Jl.Colombo              | 400                            | Kerb Side          |
| 16 | Jl.Lingkar UGM Penuh    | 1050                           | Kerb Side          |
|    | 2                       | 550                            | Shelter            |
|    | 3                       | 1050                           | Kerb Side          |
|    | 4                       | 250                            | Kerb Side          |
|    | 5                       | 250                            | Kerb Side          |
| 17 | Jl.C.Simajuntak         | 350                            | Kerb Side          |
|    | 2                       | 400                            | Ngetem             |
|    | 3                       | 550                            | Kerb Side          |
| 18 | Jl. Jend.Sudirman       | 550                            | Kerb Side          |
| 19 | Jl. P.Mangkubumi        | 300                            | Lay-bys            |
|    | 2                       | 150                            | Kerb Side          |
|    | 3                       | 300                            | Kerb Side          |
| 20 | Jl.Kleringan            | -                              | -                  |

Lanjutan tabel 5.8

| No | Nama Ruas Jalan    | Jarak antar tempat henti ( m ) | Jenis tempat henti |
|----|--------------------|--------------------------------|--------------------|
| 21 | Jl. Malioboro      | 1550                           | Kerb Side          |
| 22 | Jl. Jend.A.Yani    | 200                            | Kerb Side          |
| 23 | Jl. P.Senopati     | 350                            | Kerb Side          |
| 24 | Jl. Sultan Agung   | 1                              | 450                |
|    |                    | 2                              | 500                |
|    |                    | 3                              | 400                |
| 25 | Jl. Suryopranoto   | 1                              | 150                |
|    |                    | 2                              | 100                |
| 26 | Jl. Sukonandi      | 3                              | -                  |
| 27 | Jl. Kusuma Negara  | 1                              | 2250               |
|    |                    | 2                              | 150                |
|    |                    | 3                              | 150                |
| 28 | Jl. Gedong Kuning  | 1                              | 950                |
|    |                    | 2                              | 1150               |
|    |                    | 3                              | 100                |
|    |                    | 4                              | 600                |
| 29 | Jl. Ngeksidono     | -                              | -                  |
| 30 | Jl. P. Kemerdekaan | -                              | -                  |
| 31 | Jl. Veteran        | -                              | -                  |
| 32 | Terminal           | 2250                           | -                  |

(Sumber : survey lapangan)

Keterangan : Jarak tempat henti dihitung berdasarkan jarak tempat henti ke tempat henti berikutnya.

Berdasarkan pengamatan dilapangan tampak bahwa pada rute jalur 04 banyak menggunakan tempat henti jenis *kerb side*, dan tampak juga bahwa tidak semua ruas jalan mempunyai tempat henti bis kota.

Tidak tersedianya tempat henti bis kota ini menyebabkan tidak tertibnya penumpang naik dan turun bis kota pada sembarang tempat yang mengakibatkan menimbulkan gangguan pada kondisi lalu lintas.

Selain tempat henti bis kota yang resmi, bis kota sering berhenti pada tempat-tempat tertentu (ngetem) dengan waktu yang agak lama untuk menunggu



penumpang. Biasanya bis kota tersebut berhenti ngetem pada ruas Jl. Gedong Kuning, Jl. Mataram, Jl. C. Simanjuntak, dan Jl. Senopati. Bis kota lebih sering berhenti di tempat ngetem ini dari pada berhenti di tempat henti yang telah disediakan.

Berdasarkan pengamatan, beberapa tempat henti bis kota berupa *bus shelter* dalam kondisi rusak dan kurang terawat, sehingga tampak jelek dan tidak nyaman. *Bus shelter* ini antara lain terdapat pada ruas jalan Kusuma Negara dan Lingkar UGM penuh.

Dari hasil pengamatan dilapangan diketahui bahwa penempatan tempat henti bis kota sebagian besar telah memenuhi kriteria yang disyaratkan seperti terlihat pada tabel 3.2.

Jumlah keseluruhan rambu tempat henti bis kota yang terpasangan adalah 3 buah *bus shelter*, 41 *kerb side*, dan 1 buah *lay-bys*.

#### 5.7.2 Penataan ulang tempat henti

Dari tabel 5.8 tampak bahwa ada beberapa ruas jalan yang tidak terdapat tempat henti bis kota, dan ada beberapa ruas jalan yang perlu ditambah jumlah tempat hentinya.

Pada ruas jalan Veteran, Ngeksidono, dan Suroto perlu diberi rambu tempat henti bis karena belum terpasang sama sekali. Sedangkan pada ruas jalan Mataram dan C. Simanjuntak yang sering digunakan tempat ngetem bis kota sebaiknya diberi rambu tempat henti. Untuk ruas jalan C. Simanjuntak perlu diatur sedemikian rupa supaya tempat henti bis kota tidak terlalu dekat dengan

persimpangan jalan sehingga dapat mengurangi kemacetan lalu lintas. Untuk ruas jalan lingkaran UGM penuh dan Kusuma Negara perlu segera perbaikan bus shelter sehingga fasilitas ini dapat dimanfaatkan oleh pengguna jasa bis kota.

Adapun letak pemberhentian bis kota sesuai dengan standar dapat dilihat pada lampiran 6.

#### 5.8 Jadwal Bis Kota Jalur 04

Dari hasil pengamatan dilapangan jadwal keberangkatan bis kota dari terminal Umbulharjo belum diatur secara baik, hal ini dapat dilihat dari waktu keberangkatan dan kedatangan bis kota di terminal secara bersamaan. Oleh karena itu perlu adanya pengawasan yang ketat oleh petugas di terminal dan kedisiplinan supir bis sehingga jadwal keberangkatan dan kedatangan bisa terpenuhi.

Pengaturan jadwal bis kota di terminal dipengaruhi oleh jumlah armada dan *headway* di terminal. Pemberian jadwal bis kota ini penting disediakan sebagai fasilitas bagi masyarakat, sehingga dapat diketahui kepastian keberangkatan dan kedatangan bis setiap saat.

Pengaturan dan pemberian jadwal di terminal dapat melatih kedisiplinan masyarakat untuk menghargai waktu dan kedisiplinan supir untuk tidak menyalip dan memberhentikan bis di sembarang tempat.

##### 5.8.1 Waktu tempuh perjalanan rata-rata

Perhitungan waktu tempuh rata-rata diperoleh dari hasil survey *headway* di terminal Umbulharjo dengan mencatat waktu keberangkatan dan kedatangan bis kota di terminal. Berikut ini tabel 5.9 tentang perhitungan waktu tempuh rata-rata.

Tabel 5.9 Perhitungan waktu tempuh

| No | x<br>(menit) | 1/x    | No | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    |
|----|--------------|--------|----|--------------|--------|-----|--------------|--------|-----|--------------|--------|
| 1  | 95           | 0.0105 | 46 | 109          | 0.0092 | 91  | 97           | 0.0103 | 136 | 106          | 0.0094 |
| 2  | 115          | 0.0087 | 47 | 135          | 0.0074 | 92  | 102          | 0.0098 | 137 | 172          | 0.0058 |
| 3  | 104          | 0.0096 | 48 | 106          | 0.0094 | 93  | 166          | 0.0060 | 138 | 65           | 0.0154 |
| 4  | 90           | 0.0111 | 49 | 101          | 0.0099 | 94  | 112          | 0.0089 | 139 | 84           | 0.0119 |
| 5  | 95           | 0.0105 | 50 | 101          | 0.0099 | 95  | 96           | 0.0104 | 140 | 98           | 0.0102 |
| 6  | 102          | 0.0098 | 51 | 76           | 0.0132 | 96  | 105          | 0.0095 | 141 | 99           | 0.0101 |
| 7  | 104          | 0.0096 | 52 | 133          | 0.0075 | 97  | 116          | 0.0086 | 142 | 177          | 0.0056 |
| 8  | 128          | 0.0078 | 53 | 158          | 0.0063 | 98  | 117          | 0.0085 | 143 | 87           | 0.0115 |
| 9  | 82           | 0.0122 | 54 | 93           | 0.0108 | 99  | 112          | 0.0089 | 144 | 89           | 0.0112 |
| 10 | 100          | 0.0100 | 55 | 122          | 0.0082 | 100 | 97           | 0.0103 | 145 | 108          | 0.0093 |
| 11 | 123          | 0.0081 | 56 | 145          | 0.0069 | 101 | 98           | 0.0102 | 146 | 96           | 0.0104 |
| 12 | 124          | 0.0081 | 57 | 85           | 0.0118 | 102 | 144          | 0.0069 | 147 | 96           | 0.0104 |
| 13 | 87           | 0.0115 | 58 | 93           | 0.0108 | 103 | 89           | 0.0112 | 148 | 102          | 0.0098 |
| 14 | 127          | 0.0079 | 59 | 71           | 0.0141 | 104 | 103          | 0.0097 | 149 | 175          | 0.0057 |
| 15 | 78           | 0.0128 | 60 | 136          | 0.0074 | 105 | 111          | 0.0090 | 150 | 111          | 0.0090 |
| 16 | 104          | 0.0096 | 61 | 121          | 0.0083 | 106 | 163          | 0.0061 | 151 | 96           | 0.0104 |
| 17 | 106          | 0.0094 | 62 | 85           | 0.0118 | 107 | 150          | 0.0067 | 152 | 93           | 0.0108 |
| 18 | 121          | 0.0083 | 63 | 94           | 0.0106 | 108 | 117          | 0.0085 | 153 | 176          | 0.0057 |
| 19 | 88           | 0.0114 | 64 | 84           | 0.0119 | 109 | 91           | 0.0110 | 154 | 102          | 0.0098 |
| 20 | 102          | 0.0098 | 65 | 124          | 0.0081 | 110 | 94           | 0.0106 | 155 | 94           | 0.0106 |
| 21 | 118          | 0.0085 | 66 | 131          | 0.0076 | 111 | 100          | 0.0100 | 156 | 90           | 0.0111 |
| 22 | 129          | 0.0078 | 67 | 88           | 0.0114 | 112 | 114          | 0.0088 | 157 | 163          | 0.0061 |
| 23 | 84           | 0.0119 | 68 | 92           | 0.0109 | 113 | 116          | 0.0086 | 158 | 69           | 0.0145 |
| 24 | 134          | 0.0075 | 69 | 71           | 0.0141 | 114 | 91           | 0.0110 | 159 | 87           | 0.0115 |
| 25 | 77           | 0.0130 | 70 | 91           | 0.0110 | 115 | 96           | 0.0104 | 160 | 94           | 0.0106 |
| 26 | 105          | 0.0095 | 71 | 74           | 0.0135 | 116 | 105          | 0.0095 | 161 | 87           | 0.0115 |
| 27 | 105          | 0.0095 | 72 | 117          | 0.0085 | 117 | 173          | 0.0058 | 162 | 174          | 0.0057 |
| 28 | 135          | 0.0074 | 73 | 142          | 0.0070 | 118 | 98           | 0.0102 | 163 | 103          | 0.0097 |
| 29 | 81           | 0.0123 | 74 | 87           | 0.0115 | 119 | 92           | 0.0109 | 164 | 91           | 0.0110 |
| 30 | 107          | 0.0093 | 75 | 110          | 0.0091 | 120 | 105          | 0.0095 | 165 | 90           | 0.0111 |
| 31 | 105          | 0.0095 | 76 | 127          | 0.0079 | 121 | 156          | 0.0064 | 166 | 162          | 0.0062 |
| 32 | 146          | 0.0068 | 77 | 87           | 0.0115 | 122 | 97           | 0.0103 | 167 | 69           | 0.0145 |
| 33 | 79           | 0.0127 | 78 | 92           | 0.0109 | 123 | 94           | 0.0106 | 168 | 95           | 0.0105 |
| 34 | 140          | 0.0071 | 79 | 92           | 0.0109 | 124 | 105          | 0.0095 | 169 | 97           | 0.0103 |
| 35 | 93           | 0.0108 | 80 | 154          | 0.0065 | 125 | 157          | 0.0064 | 170 | 94           | 0.0106 |
| 36 | 104          | 0.0096 | 81 | 96           | 0.0104 | 126 | 99           | 0.0101 | 171 | 90           | 0.0111 |
| 37 | 119          | 0.0084 | 82 | 97           | 0.0103 | 127 | 88           | 0.0114 | 172 | 96           | 0.0104 |
| 38 | 115          | 0.0087 | 83 | 96           | 0.0104 | 128 | 98           | 0.0102 | 173 | 174          | 0.0057 |
| 39 | 84           | 0.0119 | 84 | 102          | 0.0098 | 129 | 112          | 0.0089 | 174 | 101          | 0.0099 |
| 40 | 104          | 0.0096 | 85 | 155          | 0.0065 | 130 | 111          | 0.0090 | 175 | 94           | 0.0106 |
| 41 | 81           | 0.0123 | 86 | 88           | 0.0114 | 131 | 82           | 0.0122 | 176 | 96           | 0.0104 |
| 42 | 96           | 0.0104 | 87 | 112          | 0.0089 | 132 | 89           | 0.0112 | 177 | 96           | 0.0104 |
| 43 | 95           | 0.0105 | 88 | 85           | 0.0118 | 133 | 104          | 0.0096 | 178 | 88           | 0.0114 |
| 44 | 127          | 0.0079 | 89 | 97           | 0.0103 | 134 | 97           | 0.0103 | 179 | 95           | 0.0105 |
| 45 | 89           | 0.0112 | 90 | 153          | 0.0065 | 135 | 89           | 0.0112 | 180 | 100          | 0.0100 |

Lanjutan tabel 5.9

| No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    |
|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|
| 181 | 96           | 0.0104 | 231 | 112          | 0.0089 | 281 | 75           | 0.0133 | 331 | 92           | 0.0109 |
| 182 | 92           | 0.0109 | 232 | 99           | 0.0101 | 282 | 93           | 0.0108 | 332 | 76           | 0.0132 |
| 183 | 92           | 0.0109 | 233 | 75           | 0.0133 | 283 | 84           | 0.0119 | 333 | 141          | 0.0071 |
| 184 | 95           | 0.0105 | 234 | 99           | 0.0101 | 284 | 95           | 0.0105 | 334 | 110          | 0.0091 |
| 185 | 98           | 0.0102 | 235 | 108          | 0.0093 | 285 | 76           | 0.0132 | 335 | 68           | 0.0147 |
| 186 | 160          | 0.0063 | 236 | 140          | 0.0071 | 286 | 96           | 0.0104 | 336 | 76           | 0.0132 |
| 187 | 96           | 0.0104 | 237 | 98           | 0.0102 | 287 | 152          | 0.0066 | 337 | 144          | 0.0069 |
| 188 | 96           | 0.0104 | 238 | 103          | 0.0097 | 288 | 200          | 0.0050 | 338 | 106          | 0.0094 |
| 189 | 94           | 0.0106 | 239 | 120          | 0.0083 | 289 | 121          | 0.0083 | 339 | 93           | 0.0108 |
| 190 | 149          | 0.0067 | 240 | 94           | 0.0106 | 290 | 155          | 0.0065 | 340 | 86           | 0.0116 |
| 191 | 96           | 0.0104 | 241 | 129          | 0.0078 | 291 | 155          | 0.0065 | 341 | 115          | 0.0087 |
| 193 | 93           | 0.0108 | 243 | 97           | 0.0103 | 293 | 94           | 0.0106 | 343 | 94           | 0.0106 |
| 194 | 94           | 0.0106 | 244 | 101          | 0.0099 | 294 | 92           | 0.0109 | 344 | 75           | 0.0133 |
| 195 | 94           | 0.0106 | 245 | 95           | 0.0105 | 295 | 114          | 0.0088 | 345 | 84           | 0.0119 |
| 196 | 100          | 0.0100 | 246 | 124          | 0.0081 | 296 | 82           | 0.0122 | 346 | 76           | 0.0132 |
| 197 | 131          | 0.0076 | 247 | 92           | 0.0109 | 297 | 165          | 0.0061 | 347 | 93           | 0.0108 |
| 198 | 105          | 0.0095 | 248 | 92           | 0.0109 | 298 | 87           | 0.0115 | 348 | 105          | 0.0095 |
| 199 | 146          | 0.0068 | 249 | 119          | 0.0084 | 299 | 66           | 0.0152 | 349 | 105          | 0.0095 |
| 200 | 99           | 0.0101 | 250 | 101          | 0.0099 | 300 | 134          | 0.0075 | 350 | 109          | 0.0092 |
| 201 | 120          | 0.0083 | 251 | 85           | 0.0118 | 301 | 116          | 0.0086 | 351 | 76           | 0.0132 |
| 202 | 102          | 0.0098 | 252 | 75           | 0.0133 | 302 | 77           | 0.0130 | 352 | 106          | 0.0094 |
| 203 | 163          | 0.0061 | 253 | 138          | 0.0072 | 303 | 91           | 0.0110 | 353 | 108          | 0.0093 |
| 204 | 83           | 0.0120 | 254 | 66           | 0.0152 | 304 | 90           | 0.0111 | 354 | 113          | 0.0088 |
| 205 | 91           | 0.0110 | 255 | 98           | 0.0102 | 305 | 96           | 0.0104 | 355 | 75           | 0.0133 |
| 206 | 133          | 0.0075 | 256 | 157          | 0.0064 | 306 | 128          | 0.0078 | 356 | 109          | 0.0092 |
| 207 | 97           | 0.0103 | 257 | 149          | 0.0067 | 307 | 81           | 0.0123 | 357 | 110          | 0.0091 |
| 208 | 204          | 0.0049 | 258 | 100          | 0.0100 | 308 | 99           | 0.0101 | 358 | 94           | 0.0106 |
| 209 | 87           | 0.0115 | 259 | 70           | 0.0143 | 309 | 86           | 0.0116 | 359 | 110          | 0.0091 |
| 210 | 128          | 0.0078 | 260 | 94           | 0.0106 | 310 | 122          | 0.0082 | 360 | 114          | 0.0088 |
| 211 | 78           | 0.0128 | 261 | 91           | 0.0110 | 311 | 105          | 0.0095 | 361 | 95           | 0.0105 |
| 212 | 124          | 0.0081 | 262 | 122          | 0.0082 | 312 | 102          | 0.0098 | 362 | 104          | 0.0096 |
| 213 | 112          | 0.0089 | 263 | 102          | 0.0098 | 313 | 172          | 0.0058 | 363 | 112          | 0.0089 |
| 214 | 85           | 0.0118 | 264 | 126          | 0.0079 | 314 | 116          | 0.0086 | 364 | 94           | 0.0106 |
| 215 | 77           | 0.0130 | 265 | 108          | 0.0093 | 315 | 103          | 0.0097 | 365 | 77           | 0.0130 |
| 216 | 126          | 0.0079 | 266 | 161          | 0.0062 | 316 | 95           | 0.0105 | 366 | 111          | 0.0090 |
| 217 | 106          | 0.0094 | 267 | 85           | 0.0118 | 317 | 127          | 0.0079 | 367 | 114          | 0.0088 |
| 218 | 118          | 0.0085 | 268 | 97           | 0.0103 | 318 | 90           | 0.0111 | 368 | 114          | 0.0088 |
| 219 | 106          | 0.0094 | 269 | 98           | 0.0102 | 319 | 114          | 0.0088 | 369 | 89           | 0.0112 |
| 220 | 174          | 0.0057 | 270 | 92           | 0.0109 | 320 | 85           | 0.0118 | 370 | 111          | 0.0090 |
| 221 | 85           | 0.0118 | 271 | 86           | 0.0116 | 321 | 129          | 0.0078 | 371 | 117          | 0.0085 |
| 222 | 64           | 0.0156 | 272 | 115          | 0.0087 | 322 | 107          | 0.0093 | 372 | 77           | 0.0130 |
| 223 | 104          | 0.0096 | 273 | 110          | 0.0091 | 323 | 84           | 0.0119 | 373 | 91           | 0.0110 |
| 224 | 90           | 0.0111 | 274 | 94           | 0.0106 | 324 | 84           | 0.0119 | 374 | 103          | 0.0097 |
| 225 | 96           | 0.0104 | 275 | 72           | 0.0139 | 325 | 128          | 0.0078 | 375 | 114          | 0.0088 |
| 226 | 116          | 0.0086 | 276 | 84           | 0.0119 | 326 | 109          | 0.0092 | 376 | 97           | 0.0103 |
| 227 | 125          | 0.0080 | 277 | 128          | 0.0078 | 327 | 98           | 0.0102 | 377 | 111          | 0.0090 |
| 228 | 102          | 0.0098 | 278 | 76           | 0.0132 | 328 | 80           | 0.0125 | 378 | 117          | 0.0085 |
| 229 | 118          | 0.0085 | 279 | 131          | 0.0076 | 329 | 139          | 0.0072 | 379 | 117          | 0.0085 |
| 230 | 120          | 0.0083 | 280 | 92           | 0.0109 | 330 | 77           | 0.0130 | 380 | 96           | 0.0104 |

Lanjutan tabel 5.9

| No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    |
|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|
| 381 | 105          | 0.0095 | 431 | 100          | 0.0100 | 481 | 104          | 0.0096 | 531 | 79           | 0.0127 |
| 382 | 113          | 0.0088 | 432 | 113          | 0.0088 | 482 | 107          | 0.0093 | 532 | 112          | 0.0089 |
| 383 | 101          | 0.0099 | 433 | 98           | 0.0102 | 483 | 150          | 0.0067 | 533 | 72           | 0.0139 |
| 384 | 105          | 0.0095 | 434 | 120          | 0.0083 | 484 | 66           | 0.0152 | 534 | 93           | 0.0108 |
| 385 | 114          | 0.0088 | 435 | 107          | 0.0093 | 485 | 101          | 0.0099 | 535 | 101          | 0.0099 |
| 386 | 92           | 0.0109 | 436 | 136          | 0.0074 | 486 | 118          | 0.0085 | 536 | 77           | 0.0130 |
| 387 | 86           | 0.0116 | 437 | 102          | 0.0098 | 487 | 144          | 0.0069 | 537 | 90           | 0.0111 |
| 388 | 113          | 0.0088 | 438 | 98           | 0.0102 | 488 | 96           | 0.0104 | 538 | 87           | 0.0115 |
| 389 | 97           | 0.0103 | 439 | 114          | 0.0088 | 489 | 100          | 0.0100 | 539 | 101          | 0.0099 |
| 390 | 101          | 0.0099 | 440 | 88           | 0.0114 | 490 | 118          | 0.0085 | 540 | 101          | 0.0099 |
| 391 | 118          | 0.0085 | 441 | 105          | 0.0095 | 491 | 94           | 0.0106 | 541 | 99           | 0.0101 |
| 392 | 97           | 0.0103 | 442 | 101          | 0.0099 | 492 | 98           | 0.0102 | 542 | 79           | 0.0127 |
| 393 | 98           | 0.0102 | 443 | 117          | 0.0085 | 493 | 118          | 0.0085 | 543 | 88           | 0.0114 |
| 394 | 117          | 0.0085 | 444 | 105          | 0.0095 | 494 | 93           | 0.0108 | 544 | 86           | 0.0116 |
| 395 | 87           | 0.0115 | 445 | 135          | 0.0074 | 495 | 96           | 0.0104 | 545 | 80           | 0.0125 |
| 396 | 103          | 0.0097 | 446 | 114          | 0.0088 | 496 | 106          | 0.0094 | 546 | 111          | 0.0090 |
| 397 | 95           | 0.0105 | 447 | 98           | 0.0102 | 497 | 138          | 0.0072 | 547 | 114          | 0.0088 |
| 398 | 69           | 0.0145 | 448 | 114          | 0.0088 | 498 | 90           | 0.0111 | 548 | 104          | 0.0096 |
| 399 | 97           | 0.0103 | 449 | 104          | 0.0096 | 499 | 118          | 0.0085 | 549 | 99           | 0.0101 |
| 400 | 97           | 0.0103 | 450 | 156          | 0.0064 | 500 | 105          | 0.0095 | 550 | 101          | 0.0099 |
| 401 | 107          | 0.0093 | 451 | 98           | 0.0102 | 501 | 81           | 0.0123 | 551 | 102          | 0.0098 |
| 402 | 106          | 0.0094 | 452 | 113          | 0.0088 | 502 | 94           | 0.0106 | 552 | 105          | 0.0095 |
| 403 | 94           | 0.0106 | 453 | 97           | 0.0103 | 503 | 115          | 0.0087 | 553 | 94           | 0.0106 |
| 404 | 110          | 0.0091 | 454 | 154          | 0.0065 | 504 | 120          | 0.0083 | 554 | 100          | 0.0100 |
| 405 | 95           | 0.0105 | 455 | 102          | 0.0098 | 505 | 114          | 0.0088 | 555 | 78           | 0.0128 |
| 406 | 91           | 0.0110 | 456 | 115          | 0.0087 | 506 | 102          | 0.0098 | 556 | 113          | 0.0088 |
| 407 | 94           | 0.0106 | 457 | 106          | 0.0094 | 507 | 90           | 0.0111 | 557 | 64           | 0.0156 |
| 408 | 96           | 0.0104 | 458 | 136          | 0.0074 | 508 | 97           | 0.0103 | 558 | 93           | 0.0108 |
| 409 | 87           | 0.0115 | 459 | 105          | 0.0095 | 509 | 96           | 0.0104 | 559 | 82           | 0.0122 |
| 410 | 103          | 0.0097 | 460 | 115          | 0.0087 | 510 | 94           | 0.0106 | 560 | 91           | 0.0110 |
| 411 | 98           | 0.0102 | 461 | 98           | 0.0102 | 511 | 112          | 0.0089 | 561 | 76           | 0.0132 |
| 412 | 88           | 0.0114 | 462 | 138          | 0.0072 | 512 | 100          | 0.0100 | 562 | 95           | 0.0105 |
| 413 | 110          | 0.0091 | 463 | 107          | 0.0093 | 513 | 91           | 0.0110 | 563 | 119          | 0.0084 |
| 414 | 94           | 0.0106 | 464 | 112          | 0.0089 | 514 | 107          | 0.0093 | 564 | 112          | 0.0089 |
| 415 | 108          | 0.0093 | 465 | 108          | 0.0093 | 515 | 140          | 0.0071 | 565 | 100          | 0.0100 |
| 416 | 66           | 0.0152 | 466 | 134          | 0.0075 | 516 | 91           | 0.0110 | 566 | 96           | 0.0104 |
| 417 | 93           | 0.0108 | 467 | 89           | 0.0112 | 517 | 131          | 0.0076 | 567 | 97           | 0.0103 |
| 418 | 110          | 0.0091 | 468 | 110          | 0.0091 | 518 | 154          | 0.0065 | 568 | 75           | 0.0133 |
| 419 | 93           | 0.0108 | 469 | 100          | 0.0100 | 519 | 110          | 0.0091 | 569 | 115          | 0.0087 |
| 420 | 101          | 0.0099 | 470 | 96           | 0.0104 | 520 | 80           | 0.0125 | 570 | 100          | 0.0100 |
| 421 | 113          | 0.0088 | 471 | 111          | 0.0090 | 521 | 90           | 0.0111 | 571 | 74           | 0.0135 |
| 422 | 119          | 0.0084 | 472 | 114          | 0.0088 | 522 | 99           | 0.0101 | 572 | 106          | 0.0094 |
| 423 | 104          | 0.0096 | 473 | 146          | 0.0068 | 523 | 102          | 0.0098 | 573 | 73           | 0.0137 |
| 424 | 102          | 0.0098 | 474 | 96           | 0.0104 | 524 | 103          | 0.0097 | 574 | 96           | 0.0104 |
| 425 | 100          | 0.0100 | 475 | 108          | 0.0093 | 525 | 101          | 0.0099 | 575 | 83           | 0.0120 |
| 426 | 122          | 0.0082 | 476 | 102          | 0.0098 | 526 | 113          | 0.0088 | 576 | 101          | 0.0099 |
| 427 | 97           | 0.0103 | 477 | 97           | 0.0103 | 527 | 102          | 0.0098 | 577 | 77           | 0.0130 |
| 428 | 99           | 0.0101 | 478 | 107          | 0.0093 | 528 | 104          | 0.0096 | 578 | 109          | 0.0092 |
| 429 | 102          | 0.0098 | 479 | 117          | 0.0085 | 529 | 97           | 0.0103 | 579 | 101          | 0.0099 |
| 430 | 117          | 0.0085 | 480 | 96           | 0.0104 | 530 | 100          | 0.0100 | 580 | 101          | 0.0099 |

Lanjutan tabel 5.9

| No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    |
|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|
| 581 | 107          | 0.0093 | 631 | 76           | 0.0132 | 681 | 88           | 0.0114 | 731 | 157          | 0.0064 |
| 582 | 98           | 0.0102 | 632 | 129          | 0.0078 | 682 | 101          | 0.0099 | 732 | 116          | 0.0086 |
| 583 | 91           | 0.0110 | 633 | 93           | 0.0108 | 683 | 91           | 0.0110 | 733 | 97           | 0.0103 |
| 584 | 78           | 0.0128 | 634 | 91           | 0.0110 | 684 | 97           | 0.0103 | 734 | 87           | 0.0115 |
| 585 | 82           | 0.0122 | 635 | 100          | 0.0100 | 685 | 168          | 0.0060 | 735 | 83           | 0.0120 |
| 586 | 100          | 0.0100 | 636 | 72           | 0.0139 | 686 | 94           | 0.0106 | 736 | 85           | 0.0118 |
| 587 | 96           | 0.0104 | 637 | 170          | 0.0059 | 687 | 91           | 0.0110 | 737 | 94           | 0.0106 |
| 588 | 96           | 0.0104 | 638 | 87           | 0.0115 | 688 | 167          | 0.0060 | 738 | 94           | 0.0106 |
| 589 | 99           | 0.0101 | 639 | 78           | 0.0128 | 689 | 80           | 0.0125 | 739 | 81           | 0.0123 |
| 590 | 77           | 0.0130 | 640 | 108          | 0.0093 | 690 | 78           | 0.0128 | 740 | 101          | 0.0099 |
| 591 | 100          | 0.0100 | 641 | 66           | 0.0152 | 691 | 93           | 0.0108 | 741 | 86           | 0.0116 |
| 592 | 74           | 0.0135 | 642 | 136          | 0.0074 | 692 | 95           | 0.0105 | 742 | 88           | 0.0114 |
| 593 | 107          | 0.0093 | 643 | 123          | 0.0081 | 693 | 120          | 0.0083 | 743 | 93           | 0.0108 |
| 594 | 100          | 0.0100 | 644 | 95           | 0.0105 | 694 | 62           | 0.0161 | 744 | 162          | 0.0062 |
| 595 | 108          | 0.0093 | 645 | 91           | 0.0110 | 695 | 94           | 0.0106 | 745 | 160          | 0.0063 |
| 596 | 96           | 0.0104 | 646 | 105          | 0.0095 | 696 | 132          | 0.0076 | 746 | 161          | 0.0062 |
| 597 | 104          | 0.0096 | 647 | 63           | 0.0159 | 697 | 75           | 0.0133 | 747 | 93           | 0.0108 |
| 598 | 100          | 0.0100 | 648 | 88           | 0.0114 | 698 | 129          | 0.0078 | 748 | 93           | 0.0108 |
| 599 | 101          | 0.0099 | 649 | 101          | 0.0099 | 699 | 78           | 0.0128 | 749 | 163          | 0.0061 |
| 600 | 83           | 0.0120 | 650 | 141          | 0.0071 | 700 | 93           | 0.0108 | 750 | 168          | 0.0060 |
| 601 | 104          | 0.0096 | 651 | 72           | 0.0139 | 701 | 89           | 0.0112 | 751 | 97           | 0.0103 |
| 602 | 110          | 0.0091 | 652 | 95           | 0.0105 | 702 | 87           | 0.0115 | 752 | 92           | 0.0109 |
| 603 | 99           | 0.0101 | 653 | 91           | 0.0110 | 703 | 90           | 0.0111 | 753 | 96           | 0.0104 |
| 604 | 96           | 0.0104 | 654 | 108          | 0.0093 | 704 | 100          | 0.0100 | 754 | 160          | 0.0063 |
| 605 | 105          | 0.0095 | 655 | 122          | 0.0082 | 705 | 95           | 0.0105 | 755 | 114          | 0.0088 |
| 606 | 78           | 0.0128 | 656 | 104          | 0.0096 | 706 | 93           | 0.0108 | 756 | 91           | 0.0110 |
| 607 | 101          | 0.0099 | 657 | 88           | 0.0114 | 707 | 104          | 0.0096 | 757 | 91           | 0.0110 |
| 608 | 104          | 0.0096 | 658 | 94           | 0.0106 | 708 | 88           | 0.0114 | 758 | 101          | 0.0099 |
| 609 | 91           | 0.0110 | 659 | 124          | 0.0081 | 709 | 80           | 0.0125 | 759 | 156          | 0.0064 |
| 610 | 103          | 0.0097 | 660 | 81           | 0.0123 | 710 | 100          | 0.0100 | 760 | 116          | 0.0086 |
| 611 | 87           | 0.0115 | 661 | 88           | 0.0114 | 711 | 77           | 0.0130 | 761 | 91           | 0.0110 |
| 612 | 102          | 0.0098 | 662 | 100          | 0.0100 | 712 | 99           | 0.0101 | 762 | 101          | 0.0099 |
| 613 | 74           | 0.0135 | 663 | 128          | 0.0078 | 713 | 85           | 0.0118 | 763 | 155          | 0.0065 |
| 614 | 87           | 0.0115 | 664 | 90           | 0.0111 | 714 | 91           | 0.0110 | 764 | 117          | 0.0085 |
| 615 | 89           | 0.0112 | 665 | 106          | 0.0094 | 715 | 92           | 0.0109 | 765 | 93           | 0.0108 |
| 616 | 86           | 0.0116 | 666 | 161          | 0.0062 | 716 | 85           | 0.0118 | 766 | 100          | 0.0100 |
| 617 | 82           | 0.0122 | 667 | 85           | 0.0118 | 717 | 132          | 0.0076 | 767 | 155          | 0.0065 |
| 618 | 98           | 0.0102 | 668 | 79           | 0.0127 | 718 | 88           | 0.0114 | 768 | 119          | 0.0084 |
| 619 | 78           | 0.0128 | 669 | 92           | 0.0109 | 719 | 109          | 0.0092 | 769 | 98           | 0.0102 |
| 620 | 114          | 0.0088 | 670 | 115          | 0.0087 | 720 | 88           | 0.0114 | 770 | 102          | 0.0098 |
| 621 | 107          | 0.0093 | 671 | 122          | 0.0082 | 721 | 130          | 0.0077 | 771 | 156          | 0.0064 |
| 622 | 84           | 0.0119 | 672 | 93           | 0.0108 | 722 | 90           | 0.0111 | 772 | 120          | 0.0083 |
| 623 | 112          | 0.0089 | 673 | 81           | 0.0123 | 723 | 85           | 0.0118 | 773 | 91           | 0.0110 |
| 624 | 68           | 0.0147 | 674 | 77           | 0.0130 | 724 | 78           | 0.0128 | 774 | 101          | 0.0099 |
| 625 | 62           | 0.0161 | 675 | 107          | 0.0093 | 725 | 147          | 0.0068 | 775 | 156          | 0.0064 |
| 626 | 79           | 0.0127 | 676 | 160          | 0.0063 | 726 | 99           | 0.0101 | 776 | 120          | 0.0083 |
| 627 | 112          | 0.0089 | 677 | 168          | 0.0060 | 727 | 162          | 0.0062 | 777 | 96           | 0.0104 |
| 628 | 99           | 0.0101 | 678 | 90           | 0.0111 | 728 | 114          | 0.0088 | 778 | 105          | 0.0095 |
| 629 | 87           | 0.0115 | 679 | 117          | 0.0085 | 729 | 132          | 0.0076 | 779 | 158          | 0.0063 |
| 630 | 100          | 0.0100 | 680 | 132          | 0.0076 | 730 | 101          | 0.0099 | 780 | 114          | 0.0088 |

Lanjutan tabel 5.9

| No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    | No  | x<br>(menit) | 1/x    |
|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|-----|--------------|--------|
| 781 | 94           | 0.0106 | 831 | 92           | 0.0109 | 881 | 92           | 0.0109 | 931 | 96           | 0.0104 |
| 782 | 100          | 0.0100 | 832 | 94           | 0.0106 | 882 | 91           | 0.0110 | 932 | 95           | 0.0105 |
| 783 | 146          | 0.0068 | 833 | 95           | 0.0105 | 883 | 96           | 0.0104 | 933 | 95           | 0.0105 |
| 784 | 128          | 0.0078 | 834 | 88           | 0.0114 | 884 | 91           | 0.0110 | 934 | 92           | 0.0109 |
| 785 | 94           | 0.0106 | 835 | 77           | 0.0130 | 885 | 90           | 0.0111 | 935 | 83           | 0.0120 |
| 786 | 104          | 0.0096 | 836 | 80           | 0.0125 | 886 | 97           | 0.0103 | 936 | 105          | 0.0095 |
| 787 | 164          | 0.0061 | 837 | 91           | 0.0110 | 887 | 95           | 0.0105 | 937 | 88           | 0.0114 |
| 788 | 114          | 0.0088 | 838 | 93           | 0.0108 | 888 | 94           | 0.0106 | 938 | 94           | 0.0106 |
| 789 | 103          | 0.0097 | 839 | 95           | 0.0105 | 889 | 95           | 0.0105 | 939 | 92           | 0.0109 |
| 790 | 96           | 0.0104 | 840 | 86           | 0.0116 | 890 | 98           | 0.0102 | 940 | 83           | 0.0120 |
| 791 | 166          | 0.0060 | 841 | 80           | 0.0125 | 891 | 96           | 0.0104 | 941 | 107          | 0.0093 |
| 792 | 115          | 0.0087 | 842 | 92           | 0.0109 | 892 | 98           | 0.0102 | 942 | 88           | 0.0114 |
| 793 | 98           | 0.0102 | 843 | 86           | 0.0116 | 893 | 92           | 0.0109 | 943 | 91           | 0.0110 |
| 794 | 93           | 0.0108 | 844 | 98           | 0.0102 | 894 | 96           | 0.0104 | 944 | 92           | 0.0109 |
| 795 | 168          | 0.0060 | 845 | 94           | 0.0106 | 895 | 99           | 0.0101 | 945 | 87           | 0.0115 |
| 796 | 112          | 0.0089 | 846 | 91           | 0.0110 | 896 | 92           | 0.0109 | 946 | 106          | 0.0094 |
| 797 | 101          | 0.0099 | 847 | 83           | 0.0120 | 897 | 93           | 0.0108 | 947 | 87           | 0.0115 |
| 798 | 95           | 0.0105 | 848 | 70           | 0.0143 | 898 | 99           | 0.0101 | 948 | 89           | 0.0112 |
| 799 | 167          | 0.0060 | 849 | 121          | 0.0083 | 899 | 92           | 0.0109 | 949 | 92           | 0.0109 |
| 800 | 109          | 0.0092 | 850 | 87           | 0.0115 | 900 | 95           | 0.0105 | 950 | 87           | 0.0115 |
| 801 | 104          | 0.0096 | 851 | 84           | 0.0119 | 901 | 98           | 0.0102 | 951 | 105          | 0.0095 |
| 802 | 95           | 0.0105 | 852 | 102          | 0.0098 | 902 | 87           | 0.0115 | 952 | 87           | 0.0115 |
| 803 | 165          | 0.0061 | 853 | 91           | 0.0110 | 903 | 94           | 0.0106 | 953 | 91           | 0.0110 |
| 804 | 107          | 0.0093 | 854 | 86           | 0.0116 | 904 | 98           | 0.0102 | 954 | 90           | 0.0111 |
| 805 | 106          | 0.0094 | 855 | 86           | 0.0116 | 905 | 89           | 0.0112 | 955 | 87           | 0.0115 |
| 806 | 90           | 0.0111 | 856 | 99           | 0.0101 | 906 | 94           | 0.0106 | 956 | 106          | 0.0094 |
| 807 | 167          | 0.0060 | 857 | 89           | 0.0112 | 907 | 98           | 0.0102 | 957 | 89           | 0.0112 |
| 808 | 109          | 0.0092 | 858 | 86           | 0.0116 | 908 | 89           | 0.0112 | 958 | 90           | 0.0111 |
| 809 | 107          | 0.0093 | 859 | 73           | 0.0137 | 909 | 94           | 0.0106 | 959 | 88           | 0.0114 |
| 810 | 94           | 0.0106 | 860 | 91           | 0.0110 | 910 | 98           | 0.0102 | 960 | 88           | 0.0114 |
| 811 | 165          | 0.0061 | 861 | 89           | 0.0112 | 911 | 87           | 0.0115 | 961 | 104          | 0.0096 |
| 812 | 112          | 0.0089 | 862 | 95           | 0.0105 | 912 | 86           | 0.0116 | 962 | 107          | 0.0093 |
| 813 | 113          | 0.0088 | 863 | 88           | 0.0114 | 913 | 97           | 0.0103 | 963 | 90           | 0.0111 |
| 814 | 172          | 0.0058 | 864 | 115          | 0.0087 | 914 | 86           | 0.0116 | 964 | 104          | 0.0096 |
| 815 | 95           | 0.0105 | 865 | 90           | 0.0111 | 915 | 81           | 0.0123 | 965 | 90           | 0.0111 |
| 816 | 95           | 0.0105 | 866 | 85           | 0.0118 | 916 | 105          | 0.0095 | 966 | 90           | 0.0111 |
| 817 | 106          | 0.0094 | 867 | 93           | 0.0108 | 917 | 81           | 0.0123 | 967 | 105          | 0.0095 |
| 818 | 97           | 0.0103 | 868 | 90           | 0.0111 | 918 | 88           | 0.0114 | 968 | 91           | 0.0110 |
| 819 | 165          | 0.0061 | 869 | 911          | 0.0011 | 919 | 102          | 0.0098 | 969 | 88           | 0.0114 |
| 820 | 109          | 0.0092 | 870 | 91           | 0.0110 | 920 | 88           | 0.0114 | 970 | 107          | 0.0093 |
| 821 | 102          | 0.0098 | 871 | 88           | 0.0114 | 921 | 99           | 0.0101 | 971 | 92           | 0.0109 |
| 822 | 99           | 0.0101 | 872 | 96           | 0.0104 | 922 | 100          | 0.0100 | 972 | 88           | 0.0114 |
| 823 | 100          | 0.0100 | 873 | 85           | 0.0118 | 923 | 74           | 0.0135 | 973 | 106          | 0.0094 |
| 824 | 83           | 0.0120 | 874 | 83           | 0.0120 | 924 | 111          | 0.0090 | 974 | 92           | 0.0109 |
| 825 | 78           | 0.0128 | 875 | 99           | 0.0101 | 925 | 89           | 0.0112 | 975 | 88           | 0.0114 |
| 826 | 102          | 0.0098 | 876 | 93           | 0.0108 | 926 | 89           | 0.0112 | 976 | 103          | 0.0097 |
| 827 | 97           | 0.0103 | 877 | 87           | 0.0115 | 927 | 87           | 0.0115 | 977 | 89           | 0.0112 |
| 828 | 90           | 0.0111 | 878 | 95           | 0.0105 | 928 | 92           | 0.0109 | 978 | 89           | 0.0112 |
| 829 | 80           | 0.0125 | 879 | 87           | 0.0115 | 929 | 93           | 0.0108 | 979 | 99           | 0.0101 |
| 830 | 88           | 0.0114 | 880 | 97           | 0.0103 | 930 | 89           | 0.0112 | 980 | 93           | 0.0108 |

Lanjutan tabel 5.9

| No   | x<br>(menit) | 1/x    | No   | x<br>(menit) | 1/x    | No   | x<br>(menit) | 1/x    | No   | x<br>(menit) | 1/x    |
|------|--------------|--------|------|--------------|--------|------|--------------|--------|------|--------------|--------|
| 981  | 85           | 0.0118 | 1013 | 136          | 0.0074 | 1045 | 132          | 0.0076 | 1077 | 148          | 0.0068 |
| 982  | 103          | 0.0097 | 1014 | 73           | 0.0137 | 1046 | 91           | 0.0110 | 1078 | 81           | 0.0123 |
| 983  | 94           | 0.0106 | 1015 | 85           | 0.0118 | 1047 | 82           | 0.0122 | 1079 | 98           | 0.0102 |
| 984  | 87           | 0.0115 | 1016 | 94           | 0.0106 | 1048 | 102          | 0.0098 | 1080 | 105          | 0.0095 |
| 985  | 102          | 0.0098 | 1017 | 91           | 0.0110 | 1049 | 105          | 0.0095 | 1081 | 146          | 0.0068 |
| 986  | 94           | 0.0106 | 1018 | 87           | 0.0115 | 1050 | 105          | 0.0095 | 1082 | 97           | 0.0103 |
| 987  | 87           | 0.0115 | 1019 | 99           | 0.0101 | 1051 | 119          | 0.0084 | 1083 | 104          | 0.0096 |
| 988  | 101          | 0.0099 | 1020 | 144          | 0.0069 | 1052 | 86           | 0.0116 | 1084 | 146          | 0.0068 |
| 989  | 94           | 0.0106 | 1021 | 91           | 0.0110 | 1053 | 101          | 0.0099 | 1085 | 85           | 0.0118 |
| 990  | 88           | 0.0114 | 1022 | 93           | 0.0108 | 1054 | 108          | 0.0093 | 1086 | 98           | 0.0102 |
| 991  | 92           | 0.0109 | 1023 | 143          | 0.0070 | 1055 | 127          | 0.0079 | 1087 | 106          | 0.0094 |
| 992  | 95           | 0.0105 | 1024 | 104          | 0.0096 | 1056 | 100          | 0.0100 | 1088 | 144          | 0.0069 |
| 993  | 86           | 0.0116 | 1025 | 95           | 0.0105 | 1057 | 105          | 0.0095 | 1089 | 88           | 0.0114 |
| 994  | 86           | 0.0116 | 1026 | 93           | 0.0108 | 1058 | 94           | 0.0106 | 1090 | 96           | 0.0104 |
| 995  | 95           | 0.0105 | 1027 | 135          | 0.0074 | 1059 | 98           | 0.0102 | 1091 | 105          | 0.0095 |
| 996  | 83           | 0.0120 | 1028 | 97           | 0.0103 | 1060 | 104          | 0.0096 | 1092 | 143          | 0.0070 |
| 997  | 86           | 0.0116 | 1029 | 79           | 0.0127 | 1061 | 100          | 0.0100 | 1093 | 89           | 0.0112 |
| 998  | 92           | 0.0109 | 1030 | 97           | 0.0103 | 1062 | 95           | 0.0105 | 1094 | 97           | 0.0103 |
| 999  | 90           | 0.0111 | 1031 | 93           | 0.0108 | 1063 | 98           | 0.0102 | 1095 | 163          | 0.0061 |
| 1000 | 83           | 0.0120 | 1032 | 85           | 0.0118 | 1064 | 107          | 0.0093 | 1096 | 87           | 0.0115 |
| 1001 | 90           | 0.0111 | 1033 | 98           | 0.0102 | 1065 | 95           | 0.0105 | 1097 | 88           | 0.0114 |
| 1002 | 97           | 0.0103 | 1034 | 105          | 0.0095 | 1066 | 94           | 0.0106 | 1098 | 91           | 0.0110 |
| 1003 | 90           | 0.0111 | 1035 | 134          | 0.0075 | 1067 | 105          | 0.0095 | 1099 | 87           | 0.0115 |
| 1004 | 88           | 0.0114 | 1036 | 90           | 0.0111 | 1068 | 102          | 0.0098 | 1100 | 101          | 0.0099 |
| 1005 | 88           | 0.0114 | 1037 | 83           | 0.0120 | 1069 | 92           | 0.0109 | 1101 | 88           | 0.0114 |
| 1006 | 80           | 0.0125 | 1038 | 102          | 0.0098 | 1070 | 82           | 0.0122 | 1102 | 95           | 0.0105 |
| 1007 | 92           | 0.0109 | 1039 | 105          | 0.0095 | 1071 | 95           | 0.0105 | 1103 | 89           | 0.0112 |
| 1008 | 95           | 0.0105 | 1040 | 133          | 0.0075 | 1072 | 101          | 0.0099 | 1104 | 109          | 0.0092 |
| 1009 | 83           | 0.0120 | 1041 | 89           | 0.0112 | 1073 | 88           | 0.0114 | 1105 | 86           | 0.0116 |
| 1010 | 97           | 0.0103 | 1042 | 83           | 0.0120 | 1074 | 81           | 0.0123 |      |              |        |
| 1011 | 94           | 0.0106 | 1043 | 103          | 0.0097 | 1075 | 96           | 0.0104 |      |              |        |
| 1012 | 126          | 0.0079 | 1044 | 104          | 0.0096 | 1076 | 105          | 0.0095 |      |              |        |

$$N = 1105$$

$$1/f_{\text{tot}} = 9.5700$$

$$\frac{N}{\text{-----}} = 115.4648$$

$$1/f_{\text{tot}}$$



### 5.8.2 Simpangan waktu tempuh perjalanan rata-rata

Simpangan waktu tempuh perjalanan rata-rata digunakan untuk menentukan kisaran waktu tempuh bis kota dalam satu kali putaran. Perhitungan simpangan waktu tempuh ini didapat dengan menggunakan metode deviasi standar waktu perjalanan rata-rata. Dari hasil perhitungan didapatkan rata-rata waktu perjalanan adalah 116 menit dengan simpangan 22 menit. Berikut ini tabel 5.10 adalah hasil perhitungan simpangan waktu perjalanan rata-rata, dengan  $X_i$  adalah data travel time dan  $X$  adalah travel time rata-rata sebesar 116 menit.

Tabel 5.10 Simpangan waktu perjalanan rata-rata

| No | $X_i$ | $X_i - X$ | No | $X_i$ | $X_i - X$ | No | $X_i$ | $X_i - X$ |
|----|-------|-----------|----|-------|-----------|----|-------|-----------|
| 1  | 95    | 21        | 31 | 105   | 11        | 61 | 121   | 5         |
| 2  | 115   | 1         | 32 | 146   | 30        | 62 | 85    | 31        |
| 3  | 104   | 12        | 33 | 79    | 37        | 63 | 94    | 22        |
| 4  | 90    | 26        | 34 | 140   | 24        | 64 | 84    | 32        |
| 5  | 95    | 21        | 35 | 93    | 23        | 65 | 124   | 8         |
| 6  | 102   | 14        | 36 | 104   | 12        | 66 | 131   | 15        |
| 7  | 104   | 12        | 37 | 119   | 3         | 67 | 88    | 28        |
| 8  | 128   | 12        | 38 | 115   | 1         | 68 | 92    | 24        |
| 9  | 82    | 34        | 39 | 84    | 32        | 69 | 71    | 45        |
| 10 | 100   | 16        | 40 | 104   | 12        | 70 | 91    | 25        |
| 11 | 123   | 7         | 41 | 81    | 35        | 71 | 74    | 42        |
| 12 | 124   | 8         | 42 | 96    | 20        | 72 | 117   | 1         |
| 13 | 87    | 29        | 43 | 95    | 21        | 73 | 142   | 26        |
| 14 | 127   | 11        | 44 | 127   | 11        | 74 | 87    | 29        |
| 15 | 78    | 38        | 45 | 89    | 27        | 75 | 110   | 6         |
| 16 | 104   | 12        | 46 | 109   | 7         | 76 | 127   | 11        |
| 17 | 106   | 10        | 47 | 135   | 19        | 77 | 87    | 29        |
| 18 | 121   | 5         | 48 | 106   | 10        | 78 | 92    | 24        |
| 19 | 88    | 28        | 49 | 101   | 15        | 79 | 92    | 24        |
| 20 | 102   | 14        | 50 | 101   | 15        | 80 | 154   | 38        |
| 21 | 118   | 2         | 51 | 76    | 40        | 81 | 96    | 20        |
| 22 | 129   | 13        | 52 | 133   | 17        | 82 | 97    | 19        |
| 23 | 84    | 32        | 53 | 158   | 42        | 83 | 96    | 20        |
| 24 | 134   | 18        | 54 | 93    | 23        | 84 | 102   | 14        |
| 25 | 77    | 39        | 55 | 122   | 6         | 85 | 155   | 39        |
| 26 | 105   | 11        | 56 | 145   | 29        | 86 | 88    | 28        |
| 27 | 105   | 11        | 57 | 85    | 31        | 87 | 112   | 4         |
| 28 | 135   | 19        | 58 | 93    | 23        | 88 | 85    | 31        |
| 29 | 81    | 35        | 59 | 71    | 45        | 89 | 97    | 19        |
| 30 | 107   | 9         | 60 | 136   | 20        | 90 | 153   | 37        |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 91  | 97    | 19        | 137 | 172   | 56        | 183 | 92    | 24        |
| 92  | 102   | 14        | 138 | 65    | 51        | 184 | 95    | 21        |
| 93  | 166   | 50        | 139 | 84    | 32        | 185 | 98    | 18        |
| 94  | 112   | 4         | 140 | 98    | 18        | 186 | 160   | 44        |
| 95  | 96    | 20        | 141 | 99    | 17        | 187 | 96    | 20        |
| 96  | 105   | 11        | 142 | 177   | 61        | 188 | 96    | 20        |
| 97  | 116   | 0         | 143 | 87    | 29        | 189 | 94    | 22        |
| 98  | 117   | 1         | 144 | 89    | 27        | 190 | 149   | 33        |
| 99  | 112   | 4         | 145 | 108   | 8         | 191 | 96    | 20        |
| 100 | 97    | 19        | 146 | 96    | 20        | 192 | 92    | 24        |
| 101 | 98    | 18        | 147 | 96    | 20        | 193 | 93    | 23        |
| 102 | 144   | 28        | 148 | 102   | 14        | 194 | 94    | 22        |
| 104 | 103   | 13        | 150 | 111   | 5         | 196 | 100   | 16        |
| 105 | 111   | 5         | 151 | 96    | 20        | 197 | 131   | 15        |
| 106 | 163   | 47        | 152 | 93    | 23        | 198 | 105   | 11        |
| 107 | 150   | 34        | 153 | 176   | 60        | 199 | 146   | 30        |
| 108 | 117   | 1         | 154 | 102   | 14        | 200 | 99    | 17        |
| 109 | 91    | 25        | 155 | 94    | 22        | 201 | 120   | 4         |
| 110 | 94    | 22        | 156 | 90    | 26        | 202 | 102   | 14        |
| 111 | 100   | 16        | 157 | 163   | 47        | 203 | 163   | 47        |
| 112 | 114   | 2         | 158 | 69    | 47        | 204 | 83    | 33        |
| 113 | 116   | 0         | 159 | 87    | 29        | 205 | 91    | 25        |
| 114 | 91    | 25        | 160 | 94    | 22        | 206 | 133   | 17        |
| 115 | 96    | 20        | 161 | 87    | 29        | 207 | 97    | 19        |
| 116 | 105   | 11        | 162 | 174   | 58        | 208 | 204   | 88        |
| 117 | 173   | 57        | 163 | 103   | 13        | 209 | 87    | 29        |
| 118 | 98    | 18        | 164 | 91    | 25        | 210 | 128   | 12        |
| 119 | 92    | 24        | 165 | 90    | 26        | 211 | 78    | 38        |
| 120 | 105   | 11        | 166 | 162   | 46        | 212 | 124   | 8         |
| 121 | 156   | 40        | 167 | 69    | 47        | 213 | 112   | 4         |
| 122 | 97    | 19        | 168 | 95    | 21        | 214 | 85    | 31        |
| 123 | 94    | 22        | 169 | 97    | 19        | 215 | 77    | 39        |
| 124 | 105   | 11        | 170 | 94    | 22        | 216 | 126   | 10        |
| 125 | 157   | 41        | 171 | 90    | 26        | 217 | 106   | 10        |
| 126 | 99    | 17        | 172 | 96    | 20        | 218 | 118   | 2         |
| 127 | 88    | 28        | 173 | 174   | 58        | 219 | 106   | 10        |
| 128 | 98    | 18        | 174 | 101   | 15        | 220 | 174   | 58        |
| 129 | 112   | 4         | 175 | 94    | 22        | 221 | 85    | 31        |
| 130 | 111   | 5         | 176 | 96    | 20        | 222 | 64    | 52        |
| 131 | 82    | 34        | 177 | 96    | 20        | 223 | 104   | 12        |
| 132 | 89    | 27        | 178 | 88    | 28        | 224 | 90    | 26        |
| 133 | 104   | 12        | 179 | 95    | 21        | 225 | 96    | 20        |
| 134 | 97    | 19        | 180 | 100   | 16        | 226 | 116   | 0         |
| 135 | 89    | 27        | 181 | 96    | 20        | 227 | 125   | 9         |
| 136 | 106   | 10        | 182 | 92    | 24        | 228 | 102   | 14        |

Lanjutan Tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 229 | 118   | 2         | 271 | 86    | 30        | 313 | 172   | 56        |
| 230 | 120   | 4         | 272 | 115   | 1         | 314 | 116   | 0         |
| 231 | 112   | 4         | 273 | 110   | 6         | 315 | 103   | 13        |
| 232 | 99    | 17        | 274 | 94    | 22        | 316 | 95    | 21        |
| 233 | 75    | 41        | 275 | 72    | 44        | 317 | 127   | 11        |
| 234 | 99    | 17        | 276 | 84    | 32        | 318 | 90    | 26        |
| 235 | 108   | 8         | 277 | 128   | 12        | 319 | 114   | 2         |
| 236 | 140   | 24        | 278 | 76    | 40        | 320 | 85    | 31        |
| 237 | 98    | 18        | 279 | 131   | 15        | 321 | 129   | 13        |
| 238 | 103   | 13        | 280 | 92    | 24        | 322 | 107   | 9         |
| 239 | 120   | 4         | 281 | 75    | 41        | 323 | 84    | 32        |
| 240 | 94    | 22        | 282 | 93    | 23        | 324 | 84    | 32        |
| 241 | 129   | 13        | 283 | 84    | 32        | 325 | 128   | 12        |
| 242 | 93    | 23        | 284 | 95    | 21        | 326 | 109   | 7         |
| 243 | 97    | 19        | 285 | 76    | 40        | 327 | 98    | 18        |
| 244 | 101   | 15        | 286 | 96    | 20        | 328 | 80    | 36        |
| 245 | 95    | 21        | 287 | 152   | 36        | 329 | 139   | 23        |
| 246 | 124   | 8         | 288 | 200   | 84        | 330 | 77    | 39        |
| 247 | 92    | 24        | 289 | 121   | 5         | 331 | 92    | 24        |
| 248 | 92    | 24        | 290 | 155   | 39        | 332 | 76    | 40        |
| 249 | 119   | 3         | 291 | 155   | 39        | 333 | 141   | 25        |
| 250 | 101   | 15        | 292 | 87    | 29        | 334 | 110   | 6         |
| 251 | 85    | 31        | 293 | 94    | 22        | 335 | 68    | 48        |
| 252 | 75    | 41        | 294 | 92    | 24        | 336 | 76    | 40        |
| 253 | 138   | 22        | 295 | 114   | 2         | 337 | 144   | 28        |
| 254 | 66    | 50        | 296 | 82    | 34        | 338 | 106   | 10        |
| 255 | 98    | 18        | 297 | 165   | 49        | 339 | 93    | 23        |
| 256 | 157   | 41        | 298 | 87    | 29        | 340 | 86    | 30        |
| 257 | 149   | 33        | 299 | 66    | 50        | 341 | 115   | 1         |
| 258 | 100   | 16        | 300 | 134   | 18        | 342 | 110   | 6         |
| 259 | 70    | 46        | 301 | 116   | 0         | 343 | 94    | 22        |
| 260 | 94    | 22        | 302 | 77    | 39        | 344 | 75    | 41        |
| 261 | 91    | 25        | 303 | 91    | 25        | 345 | 84    | 32        |
| 262 | 122   | 6         | 304 | 90    | 26        | 346 | 76    | 40        |
| 263 | 102   | 14        | 305 | 96    | 20        | 347 | 93    | 23        |
| 264 | 126   | 10        | 306 | 128   | 12        | 348 | 105   | 11        |
| 265 | 108   | 8         | 307 | 81    | 35        | 349 | 105   | 11        |
| 266 | 161   | 45        | 308 | 99    | 17        | 350 | 109   | 7         |
| 267 | 85    | 31        | 309 | 86    | 30        | 351 | 76    | 40        |
| 268 | 97    | 19        | 310 | 122   | 6         | 352 | 106   | 10        |
| 269 | 98    | 18        | 311 | 105   | 11        | 353 | 108   | 8         |
| 270 | 92    | 24        | 312 | 102   | 14        | 354 | 113   | 3         |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 355 | 75    | 41        | 401 | 107   | 9         | 447 | 98    | 18        |
| 356 | 109   | 7         | 402 | 106   | 10        | 448 | 114   | 2         |
| 357 | 110   | 6         | 403 | 94    | 22        | 449 | 104   | 12        |
| 358 | 94    | 22        | 404 | 110   | 6         | 450 | 156   | 40        |
| 359 | 110   | 6         | 405 | 95    | 21        | 451 | 98    | 18        |
| 360 | 114   | 2         | 406 | 91    | 25        | 452 | 113   | 3         |
| 361 | 95    | 21        | 407 | 94    | 22        | 453 | 97    | 19        |
| 362 | 104   | 12        | 408 | 96    | 20        | 454 | 154   | 38        |
| 363 | 112   | 4         | 409 | 87    | 29        | 455 | 102   | 14        |
| 364 | 94    | 22        | 410 | 103   | 13        | 456 | 115   | 1         |
| 365 | 77    | 39        | 411 | 98    | 18        | 457 | 106   | 10        |
| 366 | 111   | 5         | 412 | 88    | 28        | 458 | 136   | 20        |
| 367 | 114   | 2         | 413 | 110   | 6         | 459 | 105   | 11        |
| 368 | 114   | 2         | 414 | 94    | 22        | 460 | 115   | 1         |
| 369 | 89    | 27        | 415 | 108   | 8         | 461 | 98    | 18        |
| 370 | 111   | 5         | 416 | 66    | 50        | 462 | 138   | 22        |
| 371 | 117   | 1         | 417 | 93    | 23        | 463 | 107   | 9         |
| 372 | 77    | 39        | 418 | 110   | 6         | 464 | 112   | 4         |
| 373 | 91    | 25        | 419 | 93    | 23        | 465 | 108   | 8         |
| 374 | 103   | 13        | 420 | 101   | 15        | 466 | 134   | 18        |
| 375 | 114   | 2         | 421 | 113   | 3         | 467 | 89    | 27        |
| 376 | 97    | 19        | 422 | 119   | 3         | 468 | 110   | 6         |
| 377 | 111   | 5         | 423 | 104   | 12        | 469 | 100   | 16        |
| 378 | 117   | 1         | 424 | 102   | 14        | 470 | 96    | 20        |
| 379 | 117   | 1         | 425 | 100   | 16        | 471 | 111   | 5         |
| 380 | 96    | 20        | 426 | 122   | 6         | 472 | 114   | 2         |
| 381 | 105   | 11        | 427 | 97    | 19        | 473 | 146   | 30        |
| 382 | 113   | 3         | 428 | 99    | 17        | 474 | 96    | 20        |
| 383 | 101   | 15        | 429 | 102   | 14        | 475 | 108   | 8         |
| 384 | 105   | 11        | 430 | 117   | 1         | 476 | 102   | 14        |
| 385 | 114   | 2         | 431 | 100   | 16        | 477 | 97    | 19        |
| 386 | 92    | 24        | 432 | 113   | 3         | 478 | 107   | 9         |
| 387 | 86    | 30        | 433 | 98    | 18        | 479 | 117   | 1         |
| 388 | 113   | 3         | 434 | 120   | 4         | 480 | 96    | 20        |
| 389 | 97    | 19        | 435 | 107   | 9         | 481 | 104   | 12        |
| 390 | 101   | 15        | 436 | 136   | 20        | 482 | 107   | 9         |
| 391 | 118   | 2         | 437 | 102   | 14        | 483 | 150   | 34        |
| 392 | 97    | 19        | 438 | 98    | 18        | 484 | 66    | 50        |
| 393 | 98    | 18        | 439 | 114   | 2         | 485 | 101   | 15        |
| 394 | 117   | 1         | 440 | 88    | 28        | 486 | 118   | 2         |
| 395 | 87    | 29        | 441 | 105   | 11        | 487 | 144   | 28        |
| 396 | 103   | 13        | 442 | 101   | 15        | 488 | 96    | 20        |
| 397 | 95    | 21        | 443 | 117   | 1         | 489 | 100   | 16        |
| 398 | 69    | 47        | 444 | 105   | 11        | 490 | 118   | 2         |
| 399 | 97    | 19        | 445 | 135   | 19        | 491 | 94    | 22        |
| 400 | 97    | 19        | 446 | 114   | 2         | 492 | 98    | 18        |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 493 | 118   | 2         | 539 | 101   | 15        | 585 | 82    | 34        |
| 494 | 93    | 23        | 540 | 101   | 15        | 586 | 100   | 16        |
| 495 | 96    | 20        | 541 | 99    | 17        | 587 | 96    | 20        |
| 496 | 106   | 10        | 542 | 79    | 37        | 588 | 96    | 20        |
| 497 | 138   | 22        | 543 | 88    | 28        | 589 | 99    | 17        |
| 498 | 90    | 26        | 544 | 86    | 30        | 590 | 77    | 39        |
| 499 | 118   | 2         | 545 | 80    | 36        | 591 | 100   | 16        |
| 500 | 105   | 11        | 546 | 111   | 5         | 592 | 74    | 42        |
| 501 | 81    | 35        | 547 | 114   | 2         | 593 | 107   | 9         |
| 502 | 94    | 22        | 548 | 104   | 12        | 594 | 100   | 16        |
| 503 | 115   | 1         | 549 | 99    | 17        | 595 | 108   | 8         |
| 504 | 120   | 4         | 550 | 101   | 15        | 596 | 96    | 20        |
| 505 | 114   | 2         | 551 | 102   | 14        | 597 | 104   | 12        |
| 506 | 102   | 14        | 552 | 105   | 11        | 598 | 100   | 16        |
| 507 | 90    | 26        | 553 | 94    | 22        | 599 | 101   | 15        |
| 508 | 97    | 19        | 554 | 100   | 16        | 600 | 83    | 33        |
| 509 | 96    | 20        | 555 | 78    | 38        | 601 | 104   | 12        |
| 510 | 94    | 22        | 556 | 113   | 3         | 602 | 110   | 6         |
| 511 | 112   | 4         | 557 | 64    | 52        | 603 | 99    | 17        |
| 512 | 100   | 16        | 558 | 93    | 23        | 604 | 96    | 20        |
| 513 | 91    | 25        | 559 | 82    | 34        | 605 | 105   | 11        |
| 514 | 107   | 9         | 560 | 91    | 25        | 606 | 78    | 38        |
| 515 | 140   | 24        | 561 | 76    | 40        | 607 | 101   | 15        |
| 516 | 91    | 25        | 562 | 95    | 21        | 608 | 104   | 12        |
| 517 | 131   | 15        | 563 | 119   | 3         | 609 | 91    | 25        |
| 518 | 154   | 38        | 564 | 112   | 4         | 610 | 103   | 13        |
| 519 | 110   | 6         | 565 | 100   | 16        | 611 | 87    | 29        |
| 520 | 80    | 36        | 566 | 96    | 20        | 612 | 102   | 14        |
| 521 | 90    | 26        | 567 | 97    | 19        | 613 | 74    | 42        |
| 522 | 99    | 17        | 568 | 75    | 41        | 614 | 87    | 29        |
| 523 | 102   | 14        | 569 | 115   | 1         | 615 | 89    | 27        |
| 524 | 103   | 13        | 570 | 100   | 16        | 616 | 86    | 30        |
| 525 | 101   | 15        | 571 | 74    | 42        | 617 | 82    | 34        |
| 526 | 113   | 3         | 572 | 106   | 10        | 618 | 98    | 18        |
| 527 | 102   | 14        | 573 | 73    | 43        | 619 | 78    | 38        |
| 528 | 104   | 12        | 574 | 96    | 20        | 620 | 114   | 2         |
| 529 | 97    | 19        | 575 | 83    | 33        | 621 | 107   | 9         |
| 530 | 100   | 16        | 576 | 101   | 15        | 622 | 84    | 32        |
| 531 | 79    | 37        | 577 | 77    | 39        | 623 | 112   | 4         |
| 532 | 112   | 4         | 578 | 109   | 7         | 624 | 68    | 48        |
| 533 | 72    | 44        | 579 | 101   | 15        | 625 | 62    | 54        |
| 534 | 93    | 23        | 580 | 101   | 15        | 626 | 79    | 37        |
| 535 | 101   | 15        | 581 | 107   | 9         | 627 | 112   | 4         |
| 536 | 77    | 39        | 582 | 98    | 18        | 628 | 99    | 17        |
| 537 | 90    | 26        | 583 | 91    | 25        | 629 | 87    | 29        |
| 538 | 87    | 29        | 584 | 78    | 38        | 630 | 100   | 16        |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 631 | 76    | 40        | 676 | 160   | 44        | 721 | 130   | 14        |
| 632 | 129   | 13        | 677 | 168   | 52        | 722 | 90    | 26        |
| 633 | 93    | 23        | 678 | 90    | 26        | 723 | 85    | 31        |
| 634 | 91    | 25        | 679 | 117   | 1         | 724 | 78    | 38        |
| 635 | 100   | 16        | 680 | 132   | 16        | 725 | 147   | 31        |
| 636 | 72    | 44        | 681 | 88    | 28        | 726 | 99    | 17        |
| 637 | 170   | 54        | 682 | 101   | 15        | 727 | 162   | 46        |
| 638 | 87    | 29        | 683 | 91    | 25        | 728 | 114   | 2         |
| 639 | 78    | 38        | 684 | 97    | 19        | 729 | 132   | 16        |
| 640 | 108   | 8         | 685 | 168   | 52        | 730 | 101   | 15        |
| 641 | 66    | 50        | 686 | 94    | 22        | 731 | 157   | 41        |
| 642 | 136   | 20        | 687 | 91    | 25        | 732 | 116   | 0         |
| 643 | 123   | 7         | 688 | 167   | 51        | 733 | 97    | 19        |
| 644 | 95    | 21        | 689 | 80    | 36        | 734 | 87    | 29        |
| 645 | 91    | 25        | 690 | 78    | 38        | 735 | 83    | 33        |
| 646 | 105   | 11        | 691 | 93    | 23        | 736 | 85    | 31        |
| 647 | 63    | 53        | 692 | 95    | 21        | 737 | 94    | 22        |
| 648 | 88    | 28        | 693 | 120   | 4         | 738 | 94    | 22        |
| 649 | 101   | 15        | 694 | 62    | 54        | 739 | 81    | 35        |
| 650 | 141   | 25        | 695 | 94    | 22        | 740 | 101   | 15        |
| 651 | 72    | 44        | 696 | 132   | 16        | 741 | 86    | 30        |
| 652 | 95    | 21        | 697 | 75    | 41        | 742 | 88    | 28        |
| 653 | 91    | 25        | 698 | 129   | 13        | 743 | 93    | 23        |
| 654 | 108   | 8         | 699 | 78    | 38        | 744 | 162   | 46        |
| 655 | 122   | 6         | 700 | 93    | 23        | 745 | 160   | 44        |
| 656 | 104   | 12        | 701 | 89    | 27        | 746 | 161   | 45        |
| 657 | 88    | 28        | 702 | 87    | 29        | 747 | 93    | 23        |
| 658 | 94    | 22        | 703 | 90    | 26        | 748 | 93    | 23        |
| 659 | 124   | 8         | 704 | 100   | 16        | 749 | 163   | 47        |
| 660 | 81    | 35        | 705 | 95    | 21        | 750 | 168   | 52        |
| 661 | 88    | 28        | 706 | 93    | 23        | 751 | 97    | 19        |
| 662 | 100   | 16        | 707 | 104   | 12        | 752 | 92    | 24        |
| 663 | 128   | 12        | 708 | 88    | 28        | 753 | 96    | 20        |
| 664 | 90    | 26        | 709 | 80    | 36        | 754 | 160   | 44        |
| 665 | 106   | 10        | 710 | 100   | 16        | 755 | 114   | 2         |
| 666 | 161   | 45        | 711 | 77    | 39        | 756 | 91    | 25        |
| 667 | 85    | 31        | 712 | 99    | 17        | 757 | 91    | 25        |
| 668 | 79    | 37        | 713 | 85    | 31        | 758 | 101   | 15        |
| 669 | 92    | 24        | 714 | 91    | 25        | 759 | 156   | 40        |
| 670 | 115   | 1         | 715 | 92    | 24        | 760 | 116   | 0         |
| 671 | 122   | 6         | 716 | 85    | 31        | 761 | 91    | 25        |
| 672 | 93    | 23        | 717 | 132   | 16        | 762 | 101   | 15        |
| 673 | 81    | 35        | 718 | 88    | 28        | 763 | 155   | 39        |
| 674 | 77    | 39        | 719 | 109   | 7         | 764 | 117   | 1         |
| 675 | 107   | 9         | 720 | 88    | 28        | 765 | 93    | 23        |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|-----|-------|-----------|
| 766 | 100   | 16        | 811 | 165   | 49        | 856 | 99    | 17        |
| 767 | 155   | 39        | 812 | 112   | 4         | 857 | 89    | 27        |
| 768 | 119   | 3         | 813 | 113   | 3         | 858 | 86    | 30        |
| 769 | 98    | 18        | 814 | 172   | 56        | 859 | 73    | 43        |
| 770 | 102   | 14        | 815 | 95    | 21        | 860 | 91    | 25        |
| 771 | 156   | 40        | 816 | 95    | 21        | 861 | 89    | 27        |
| 772 | 120   | 4         | 817 | 106   | 10        | 862 | 95    | 21        |
| 773 | 91    | 25        | 818 | 97    | 19        | 863 | 88    | 28        |
| 774 | 101   | 15        | 819 | 165   | 49        | 864 | 115   | 1         |
| 775 | 156   | 40        | 820 | 109   | 7         | 865 | 90    | 26        |
| 776 | 120   | 4         | 821 | 102   | 14        | 866 | 85    | 31        |
| 777 | 96    | 20        | 822 | 99    | 17        | 867 | 93    | 23        |
| 778 | 105   | 11        | 823 | 100   | 16        | 868 | 90    | 26        |
| 779 | 158   | 42        | 824 | 83    | 33        | 869 | 911   | 795       |
| 780 | 114   | 2         | 825 | 78    | 38        | 870 | 91    | 25        |
| 781 | 94    | 22        | 826 | 102   | 14        | 871 | 88    | 28        |
| 782 | 100   | 16        | 827 | 97    | 19        | 872 | 96    | 20        |
| 783 | 146   | 30        | 828 | 90    | 26        | 873 | 85    | 31        |
| 784 | 128   | 12        | 829 | 80    | 36        | 874 | 83    | 33        |
| 785 | 94    | 22        | 830 | 88    | 28        | 875 | 99    | 17        |
| 786 | 104   | 12        | 831 | 92    | 24        | 876 | 93    | 23        |
| 787 | 164   | 48        | 832 | 94    | 22        | 877 | 87    | 29        |
| 788 | 114   | 2         | 833 | 95    | 21        | 878 | 95    | 21        |
| 789 | 103   | 13        | 834 | 88    | 28        | 879 | 87    | 29        |
| 790 | 96    | 20        | 835 | 77    | 39        | 880 | 97    | 19        |
| 791 | 166   | 50        | 836 | 80    | 36        | 881 | 92    | 24        |
| 792 | 115   | 1         | 837 | 91    | 25        | 882 | 91    | 25        |
| 793 | 98    | 18        | 838 | 93    | 23        | 883 | 96    | 20        |
| 794 | 93    | 23        | 839 | 95    | 21        | 884 | 91    | 25        |
| 795 | 168   | 52        | 840 | 86    | 30        | 885 | 90    | 26        |
| 796 | 112   | 4         | 841 | 80    | 36        | 886 | 97    | 19        |
| 797 | 101   | 15        | 842 | 92    | 24        | 887 | 95    | 21        |
| 798 | 95    | 21        | 843 | 86    | 30        | 888 | 94    | 22        |
| 799 | 167   | 51        | 844 | 98    | 18        | 889 | 95    | 21        |
| 800 | 109   | 7         | 845 | 94    | 22        | 890 | 98    | 18        |
| 801 | 104   | 12        | 846 | 91    | 25        | 891 | 96    | 20        |
| 802 | 95    | 21        | 847 | 83    | 33        | 892 | 98    | 18        |
| 803 | 165   | 49        | 848 | 70    | 46        | 893 | 92    | 24        |
| 804 | 107   | 9         | 849 | 121   | 5         | 894 | 96    | 20        |
| 805 | 106   | 10        | 850 | 87    | 29        | 895 | 99    | 17        |
| 806 | 90    | 26        | 851 | 84    | 32        | 896 | 92    | 24        |
| 807 | 167   | 51        | 852 | 102   | 14        | 897 | 93    | 23        |
| 808 | 109   | 7         | 853 | 91    | 25        | 898 | 99    | 17        |
| 809 | 107   | 9         | 854 | 86    | 30        | 899 | 92    | 24        |
| 810 | 94    | 22        | 855 | 86    | 30        | 900 | 95    | 21        |

Lanjutan tabel 5.10

| No  | $X_i$ | $X_i - X$ | No  | $X_i$ | $X_i - X$ | No   | $X_i$ | $X_i - X$ |
|-----|-------|-----------|-----|-------|-----------|------|-------|-----------|
| 901 | 98    | 18        | 946 | 106   | 10        | 991  | 92    | 24        |
| 902 | 87    | 29        | 947 | 87    | 29        | 992  | 95    | 21        |
| 903 | 94    | 22        | 948 | 89    | 27        | 993  | 86    | 30        |
| 904 | 98    | 18        | 949 | 92    | 24        | 994  | 86    | 30        |
| 905 | 89    | 27        | 950 | 87    | 29        | 995  | 95    | 21        |
| 906 | 94    | 22        | 951 | 105   | 11        | 996  | 83    | 33        |
| 907 | 98    | 18        | 952 | 87    | 29        | 997  | 86    | 30        |
| 908 | 89    | 27        | 953 | 91    | 25        | 998  | 92    | 24        |
| 909 | 94    | 22        | 954 | 90    | 26        | 999  | 90    | 26        |
| 910 | 98    | 18        | 955 | 87    | 29        | 1000 | 83    | 33        |
| 911 | 87    | 29        | 956 | 106   | 10        | 1001 | 90    | 26        |
| 912 | 86    | 30        | 957 | 89    | 27        | 1002 | 97    | 19        |
| 913 | 97    | 19        | 958 | 90    | 26        | 1003 | 90    | 26        |
| 914 | 86    | 30        | 959 | 88    | 28        | 1004 | 88    | 28        |
| 915 | 81    | 35        | 960 | 88    | 28        | 1005 | 88    | 28        |
| 916 | 105   | 11        | 961 | 104   | 12        | 1006 | 80    | 36        |
| 917 | 81    | 35        | 962 | 107   | 9         | 1007 | 92    | 24        |
| 918 | 88    | 28        | 963 | 90    | 26        | 1008 | 95    | 21        |
| 919 | 102   | 14        | 964 | 104   | 12        | 1009 | 83    | 33        |
| 920 | 88    | 28        | 965 | 90    | 26        | 1010 | 97    | 19        |
| 921 | 99    | 17        | 966 | 90    | 26        | 1011 | 94    | 22        |
| 922 | 100   | 16        | 967 | 105   | 11        | 1012 | 126   | 10        |
| 923 | 74    | 42        | 968 | 91    | 25        | 1013 | 136   | 20        |
| 924 | 111   | 5         | 969 | 88    | 28        | 1014 | 73    | 43        |
| 925 | 89    | 27        | 970 | 107   | 9         | 1015 | 85    | 31        |
| 926 | 89    | 27        | 971 | 92    | 24        | 1016 | 94    | 22        |
| 927 | 87    | 29        | 972 | 88    | 28        | 1017 | 91    | 25        |
| 928 | 92    | 24        | 973 | 106   | 10        | 1018 | 87    | 29        |
| 929 | 93    | 23        | 974 | 92    | 24        | 1019 | 99    | 17        |
| 930 | 89    | 27        | 975 | 88    | 28        | 1020 | 144   | 28        |
| 931 | 96    | 20        | 976 | 103   | 13        | 1021 | 91    | 25        |
| 932 | 95    | 21        | 977 | 89    | 27        | 1022 | 93    | 23        |
| 933 | 95    | 21        | 978 | 89    | 27        | 1023 | 143   | 27        |
| 934 | 92    | 24        | 979 | 99    | 17        | 1024 | 104   | 12        |
| 935 | 83    | 33        | 980 | 93    | 23        | 1025 | 95    | 21        |
| 936 | 105   | 11        | 981 | 85    | 31        | 1026 | 93    | 23        |
| 937 | 88    | 28        | 982 | 103   | 13        | 1027 | 135   | 19        |
| 938 | 94    | 22        | 983 | 94    | 22        | 1028 | 97    | 19        |
| 939 | 92    | 24        | 984 | 87    | 29        | 1029 | 79    | 37        |
| 940 | 83    | 33        | 985 | 102   | 14        | 1030 | 97    | 19        |
| 941 | 107   | 9         | 986 | 94    | 22        | 1031 | 93    | 23        |
| 942 | 88    | 28        | 987 | 87    | 29        | 1032 | 85    | 31        |
| 943 | 91    | 25        | 988 | 101   | 15        | 1033 | 98    | 18        |
| 944 | 92    | 24        | 989 | 94    | 22        | 1034 | 105   | 11        |
| 945 | 87    | 29        | 990 | 88    | 28        | 1035 | 134   | 18        |



Lanjutan tabel 5.10

| No   | $X_i$ | $X_i - X$ | No   | $X_i$ | $X_i - X$ | No   | $X_i$ | $X_i - X$ |
|------|-------|-----------|------|-------|-----------|------|-------|-----------|
| 1036 | 90    | 26        | 1060 | 104   | 12        | 1084 | 146   | 30        |
| 1037 | 83    | 33        | 1061 | 100   | 16        | 1085 | 85    | 31        |
| 1038 | 102   | 14        | 1062 | 95    | 21        | 1086 | 98    | 18        |
| 1039 | 105   | 11        | 1063 | 98    | 18        | 1087 | 106   | 10        |
| 1040 | 133   | 17        | 1064 | 107   | 9         | 1088 | 144   | 28        |
| 1041 | 89    | 27        | 1065 | 95    | 21        | 1089 | 88    | 28        |
| 1042 | 83    | 33        | 1066 | 94    | 22        | 1090 | 96    | 20        |
| 1043 | 103   | 13        | 1067 | 105   | 11        | 1091 | 105   | 11        |
| 1044 | 104   | 12        | 1068 | 102   | 14        | 1092 | 143   | 27        |
| 1045 | 132   | 16        | 1069 | 92    | 24        | 1093 | 89    | 27        |
| 1046 | 91    | 25        | 1070 | 82    | 34        | 1094 | 97    | 19        |
| 1047 | 82    | 34        | 1071 | 95    | 21        | 1095 | 163   | 47        |
| 1048 | 102   | 14        | 1072 | 101   | 15        | 1096 | 87    | 29        |
| 1049 | 105   | 11        | 1073 | 88    | 28        | 1097 | 88    | 28        |
| 1050 | 105   | 11        | 1074 | 81    | 35        | 1098 | 91    | 25        |
| 1051 | 119   | 3         | 1075 | 96    | 20        | 1099 | 87    | 29        |
| 1052 | 86    | 30        | 1076 | 105   | 11        | 1100 | 101   | 15        |
| 1053 | 101   | 15        | 1077 | 148   | 32        | 1101 | 88    | 28        |
| 1054 | 108   | 8         | 1078 | 81    | 35        | 1102 | 95    | 21        |
| 1055 | 127   | 11        | 1079 | 98    | 18        | 1103 | 89    | 27        |
| 1056 | 100   | 16        | 1080 | 105   | 11        | 1104 | 109   | 7         |
| 1057 | 105   | 11        | 1081 | 146   | 30        | 1105 | 86    | 30        |
| 1058 | 94    | 22        | 1082 | 97    | 19        |      |       |           |
| 1059 | 98    | 18        | 1083 | 104   | 12        |      |       |           |

(sumber : perhitungan survey lapangan)

Dari perhitungan tabel 5.9 dan 5.10 diatas diperoleh hasil-hasil sebagai berikut :

$$N = 1105$$

$$X_{\text{rata-rata}} = 116 \text{ menit}$$

$$\Sigma (X - X_i) = 24860$$

$$\text{Deviasi standar} = \frac{\Sigma (X - X_i)}{N}$$

$$= \frac{24680}{1105}$$

$$= 22,497 \text{ dibulatkan menjadi } 23 \text{ menit}$$

Hasil perhitungan diatas menunjukkan waktu perjalanan rata-rata berkisar antara 93 menit sampai dengan 139 menit untuk satu rute perjalanan.

### 5.8.3 Jadwal bis kota jalur 04

Ada beberapa criteria yang dibutuhkan untuk menentukan jadual keberangkatan bis kota jalur 04 dari terminal, yaitu waktu perjalanan (travel time), headway, dan jumlah armada.

Dari hasil perhitungan tabel 5.9 dan tabel 5.10 didapatkan waktu perjalanan 116 menit dengan kisaran waktu 23 menit. Headway yang digunakan untuk mengatur jadwal ini adalah 6 menit, dan jumlah armada sebanyak 22 unit. Bis kota mulai berangkat dari terminal pukul 06.00 WIB. Rencana jadwal keberangkatan bis kota dari terminal dapat dilihat pada tabel 5.11 berikut.



Tabel 5.11 Jadwal Keberangkatan Bis Kota Jalur 04 dari Terminal Umbulharjo

| No Bis | Kedatangan | Keberangkatan | No Bis | Kedatangan | Keberangkatan |
|--------|------------|---------------|--------|------------|---------------|
| 1      |            | 6:00          | 9      | 11:08      | 11:12         |
| 2      |            | 6:06          | 10     | 11:14      | 11:18         |
| 3      |            | 6:12          | 11     | 11:20      | 11:24         |
| 4      |            | 6:18          | 12     | 11:26      | 11:30         |
| 5      |            | 6:24          | 13     | 11:32      | 11:36         |
| 6      |            | 6:30          | 14     | 11:38      | 11:42         |
| 7      |            | 6:36          | 15     | 11:44      | 11:48         |
| 8      |            | 6:42          | 16     | 11:50      | 11:54         |
| 9      |            | 6:48          | 17     | 11:56      | 12:00         |
| 10     |            | 6:54          | 18     | 12:02      | 12:06         |
| 11     |            | 7:00          | 19     | 12:08      | 12:12         |
| 12     |            | 7:06          | 20     | 12:14      | 12:18         |
| 13     |            | 7:12          | 21     | 12:20      | 12:24         |
| 14     |            | 7:18          | 22     | 12:26      | 12:30         |
| 15     |            | 7:24          | 1      | 12:32      | 12:36         |
| 16     |            | 7:30          | 2      | 12:38      | 12:42         |
| 17     |            | 7:36          | 3      | 12:44      | 12:48         |
| 18     |            | 7:42          | 4      | 12:50      | 12:54         |
| 19     |            | 7:48          | 5      | 12:56      | 13:00         |
| 20     |            | 7:54          | 6      | 13:02      | 13:06         |
| 21     | 7:56       | 8:00          | 7      | 13:08      | 13:12         |
| 22     | 8:02       | 8:06          | 8      | 13:14      | 13:18         |
| 1      | 8:08       | 8:12          | 9      | 13:20      | 13:24         |
| 2      | 8:14       | 8:18          | 10     | 13:26      | 13:30         |
| 3      | 8:20       | 8:24          | 11     | 13:32      | 13:36         |
| 4      | 8:26       | 8:30          | 12     | 13:38      | 13:42         |
| 5      | 8:32       | 8:36          | 13     | 13:44      | 13:48         |
| 6      | 8:38       | 8:42          | 14     | 13:50      | 13:54         |
| 7      | 8:44       | 8:48          | 15     | 13:56      | 14:00         |
| 8      | 8:50       | 8:54          | 16     | 14:02      | 14:06         |
| 9      | 8:56       | 9:00          | 17     | 14:08      | 14:12         |
| 10     | 9:02       | 9:06          | 18     | 14:14      | 14:18         |
| 11     | 9:08       | 9:12          | 19     | 14:20      | 14:24         |
| 12     | 9:14       | 9:18          | 20     | 14:26      | 14:30         |
| 13     | 9:20       | 9:24          | 21     | 14:32      | 14:36         |
| 14     | 9:26       | 9:30          | 22     | 14:38      | 14:42         |
| 15     | 9:32       | 9:36          | 1      | 14:44      | 14:48         |
| 16     | 9:38       | 9:42          | 2      | 14:50      | 14:54         |
| 17     | 9:44       | 9:48          | 3      | 14:56      | 15:00         |
| 18     | 9:50       | 9:54          | 4      | 15:02      | 15:06         |
| 19     | 9:56       | 10:00         | 5      | 15:08      | 15:12         |
| 20     | 10:02      | 10:06         | 6      | 15:14      | 15:18         |
| 21     | 10:08      | 10:12         | 7      | 15:20      | 15:24         |
| 22     | 10:14      | 10:18         | 8      | 15:26      | 15:30         |
| 1      | 10:20      | 10:24         | 9      | 15:32      | 15:36         |
| 2      | 10:26      | 10:30         | 10     | 15:38      | 15:42         |
| 3      | 10:32      | 10:36         | 11     | 15:44      | 15:48         |
| 4      | 10:38      | 10:42         | 12     | 15:50      | 15:54         |
| 5      | 10:44      | 10:48         | 13     | 15:56      | 16:00         |
| 6      | 10:50      | 10:54         | 14     | 16:02      | 16:06         |
| 7      | 10:56      | 11:00         | 15     | 16:08      | 16:12         |
| 8      | 11:02      | 11:06         | 16     | 16:14      | 16:18         |

Lanjutan tabel 5.11

| No Bis | Kedatangan | Keberangkatan |
|--------|------------|---------------|
| 17     | 16:20      | 16:24         |
| 18     | 16:26      | 16:30         |
| 19     | 16:32      | 16:36         |
| 20     | 16:38      | 16:42         |
| 21     | 16:44      | 16:48         |
| 22     | 16:50      | 16:54         |
| 1      | 16:56      | 17:00         |
| 2      | 17:02      | 17:06         |
| 3      | 17:08      | 17:12         |
| 4      | 17:14      | 17:18         |
| 5      | 17:20      | 17:24         |
| 6      | 17:26      | 17:30         |
| 7      | 17:32      | 17:36         |
| 8      | 17:38      | 17:42         |
| 9      | 17:44      | 17:48         |
| 10     | 17:50      | 17:54         |
| 11     | 17:56      | 18:00         |
| 12     | 18:02      | 18:06         |
| 13     | 18:08      | 18:12         |
| 14     | 18:14      | 18:18         |
| 15     | 18:20      | 18:24         |
| 16     | 18:26      | 18:30         |
| 17     | 18:32      | 18:36         |
| 18     | 18:38      | 18:42         |
| 19     | 18:44      | 18:48         |
| 20     | 18:50      | 18:54         |
| 21     | 18:56      | 19:00         |
| 22     | 19:02      | 19:06         |

### 5.9 Biaya Operasi Kendaraan

Penelitian ini bertujuan untuk mengetahui besarnya biaya operasi kendaraan angkutan umum bis kota khususnya bis kota jalur 04 di kota Jogjakarta. Data biaya operasi kendaraan ini diperoleh dari salah satu koperasi angkutan umum yang melayani jalur 04 yaitu Koperasi Aspada sesuai dengan harga pada bulan November 2002. Biaya operasi kendaraan selengkapnya dapat dilihat pada lampiran 5.

#### 1. Biaya Operasi Kendaraan

- |                              |                |
|------------------------------|----------------|
| a. Rata-rata tempuh/rit      | = 28,60 km     |
| b. Frekuensi rute/hari       | = 6 rute       |
| c. Km tempuh/hari            | = 171,60 km    |
| d. Jumlah penumpang/rit      | = 60 orang     |
| e. Jumlah hari operasi/bulan | = 26 hari      |
| f. Km tempuh/bulan           | = 4.461,60 km  |
| g. Km tempuh/tahun           | = 53.539,20 km |
| h. Jumlah penumpang/bulan    | = 1.560 orang  |
| i. Jumlah penumpang/tahun    | = 18.720 orang |

#### 2. Biaya Langsung

##### a. Biaya Penyusutan

- |                    |                      |
|--------------------|----------------------|
| 1) Harga kendaraan | = Rp. 125.000.000,00 |
| 2) Masa Penyusutan | = 5 tahun            |
| 3) Nilai residu    | = 20 %               |

4) Penyusutan per bis-km adalah

$$= \frac{\text{Harga kendaraan} - \text{nilai residu (20 \% x harga kendaraan)}}{\text{Produksi bis selama masa penyusutan}}$$

$$= \frac{\text{Rp. 125.000.000,00} - (20 \% \times \text{Rp. 125.000.000,00})}{53539,20 \times 5}$$

$$= \text{Rp. 457,61 / km}$$

b. Bunga modal per bis-km

1) Bunga modal per tahun

$$= \frac{(n + 1) \times \text{harga kendaraan} \times \text{tingkat suku bunga/thn}}{2 \times 5}$$

$$= \frac{5 + 1}{2} \times \frac{\text{Rp. 125.000.000,00} \times 15 \%}{5}$$

$$= \text{Rp. 11.250.000,00}$$

2) Bunga modal per bis-km

$$= \frac{\text{bunga modal per tahun}}{\text{produksi bis/km}}$$

$$= \frac{\text{Rp. 11.250.000,00}}{53539,20}$$

$$= \text{Rp. 210,13/km}$$

## c. Gaji dan tunjangan awak bis

$$1) \text{ Biaya awak bis/tahun} = \text{Rp. } 18.720.000,00$$

## 2) Biaya per bis-km

$$= \frac{\text{biaya awak bis/tahun}}{\text{produksi bis-km/tahun}}$$

$$= \frac{\text{Rp. } 18.720.000,00}{53539.20}$$

$$= \text{Rp. } 349,65/\text{km}$$

## d. Biaya bahan bakar minyak

$$1) \text{ Harga BBM/liter} = \text{Rp. } 1.360,00$$

$$2) \text{ Perbandingan BBM/liter} = 1 : 4$$

$$3) \text{ Km tempuh/hari} = 171,60 \text{ km}$$

$$4) \text{ Pemakaian BBM/bis/hari} = 42,9 \text{ liter}$$

$$5) \text{ Biaya BBM/bis/hari} = \text{Rp. } 58.344,00$$

## 6) Biaya BBM/bis-km adalah

$$= \frac{\text{Biaya BBM/bis/hari}}{\text{Km tempuh/hari}}$$

$$= \frac{58.344,00}{171,60}$$

$$= \text{Rp. } 340,00/\text{Km}$$

## e. Pemakaian ban

## 1) Jumlah pemakaian ban

Ban baru = 2 buah

Ban vulkanisir = 2 buah

## 2) Daya tahan

Ban baru = 26.769,60 km

Ban vulkanisir = 13.384,80 km

Rata-rata daya tahan ban = 20.077,20 km

## 3) Biaya pemakaian ban adalah

Ban baru = Rp. 400.000,00 x 2 = Rp. 800.000,00

Ban vulkanisir = Rp. 215.000,00 x 2 = Rp. 430.000,00

Jumlah Rp. 1.320.000,00

## 4) Biaya ban/bis-km adalah

=  $\frac{\text{jumlah pemakaian ban}}{\text{km daya tahan ban}}$

=  $\frac{\text{Rp. 1.320.000,00}}{20.077,20}$

= Rp. 65,75/km

## f. Service kecil

## 1) Service kecil dilakukan setiap 1500 km

## 2) Biaya bahan

Olie mesin 7 ltr x Rp. 9.200,00/ltr = Rp. 64.400,00

Gemuk 1 kg x Rp. 25.000,00/kg = Rp. 25.000,00



|                |                          |                        |
|----------------|--------------------------|------------------------|
| Minyak rem     | 1 ltr x Rp. 9.500,00/ltr | = Rp. 9.500,00         |
| Ongkos service |                          | = <u>Rp. 50.000,00</u> |
| Jumlah         |                          | Rp. 148.900,00         |

3) Biaya service kecil/bis-km adalah

= Jumlah biaya service kecil/bis  
km service kecil

=  $\frac{\text{Rp. 148.900,00}}{1500}$

= Rp. 99,27/km

g. Service besar

1) Service besar dilakukan setiap 10.000 km

2) Biaya bahan

Olie mesin 7 ltr x Rp. 9.200,00/ltr = Rp. 64.400,00

Gemuk 1 kg x Rp. 25.000,00/kg = Rp. 25.000,00

Minyak rem 1 ltr x Rp. 9.500,00/ltr = Rp. 9.500,00

Solar 4 ltr x Rp. = Rp. 5.440,00

Olie gardan 4 ltr x Rp. 12.500,00/ltr = Rp. 50.000,00

Olie transmisi 4 ltr x Rp. 11.500,00/ltr = Rp. 46.000,00

Filter solar 2 bh x Rp. 30.000,00/bh = Rp. 60.000,00

Ongkos service = Rp. 500.000,00

Jumlah Rp. 760.340,00

3) Biaya service besar/bis-km adalah

$$= \frac{\text{Biaya service besar}}{\text{km service besar}}$$

$$= \frac{760.340,00}{10.000}$$

$$= \text{Rp. 76,03/Km}$$

h. Biaya Overhaul

1) Overhaul dilakukan setiap 10.000 km

2) Biaya overhaul = Rp. 400.000,00

3) Biaya overhaul/bis-km adalah

$$= \frac{\text{biaya overhaul}}{\text{km overhaul}}$$

$$= \frac{\text{Rp. 400.000,00}}{10.000,00}$$

$$= \text{Rp. 40,00/km}$$

i. Penambahan Olie

1) Penambahan olie mesin per hari = 0,25 liter

2) Harga olie mesin/ltr = Rp. 9.200,00

3) Biaya penambahan olie/bis-km adalah

$$= \frac{\text{Penambahan olie} \times \text{harga olie/ltr}}{\text{km tempuh/hari}}$$

$$= \frac{0,25 \times \text{Rp. 9.200,00}}{171,60}$$

$$= \text{Rp. 13,40/km}$$

## j. Kir bis

- 1) Frekuensi kir bis/tahun = 2 kali
- 2) Biaya kir = Rp. 50.000,00
- 3) Biaya kir/tahun = Rp. 100.000,00

## 4) Biaya kir/bis-km adalah

$$= \frac{\text{Biaya kir bis/tahun}}{\text{produksi bis-km/tahun}}$$

$$= \frac{\text{Rp. 100.000,00}}{53539,20}$$

$$= \text{Rp. 1,87/km}$$

## k. Biaya STNK / Pajak Kendaraan

- 1) Biaya STNK/bis = Rp. 218.600,00

## 2) Biaya STNK/bis-km

$$= \frac{\text{Biaya STNK/bis}}{\text{produksi bis-km/tahun}}$$

$$= \frac{\text{Rp. 218.000,00}}{53539,20}$$

$$= \text{Rp. 4,08/km}$$

Total biaya langsung = biaya penyusutan kendaraan + bunga modal + gaji dan tunjangan awak bis + biaya bahan bakar minyak + pemakaian ban + service kecil + service besar + general overhaul + penambahan olie mesin + kir bis + STNK/pajak kendaraan

$$\begin{aligned}
 &= \text{Rp. } 457,61 + \text{Rp. } 210,13 + \text{Rp. } 349,65 + \text{Rp. } 340 + \\
 &\quad \text{Rp. } 65,75 + \text{Rp. } 99,27 + \text{Rp. } 76,03 + \text{Rp. } 40,00 + \\
 &\quad \text{Rp. } 13,40 + \text{Rp. } 1,87 + \text{Rp. } 4,08 \\
 &= \text{Rp. } 1.657,79/\text{km}
 \end{aligned}$$

### 3. Biaya Tidak Langsung

Biaya tidak langsung terdiri dari :

|                                      |                    |
|--------------------------------------|--------------------|
| a. Iuran koperasi/tahun/bis          | = Rp. 6.708.000,00 |
| b. Iuran asuransi awak bis/orang/thn | = Rp. 13.500,00    |
| Jumlah                               | Rp. 6.721.500,00   |

Biaya tidak langsung/bis-km adalah

$$\begin{aligned}
 &= \frac{\text{Jumlah biaya tidak langsung}}{\text{produksi bis/tahun}} \\
 &= \frac{\text{Rp. } 6.721.500,00}{53539,20} \\
 &= \text{Rp. } 125,54/\text{km}
 \end{aligned}$$

Biaya operasi kendaraan total = biaya langsung + biaya tidak langsung

$$\begin{aligned}
 &= \text{Rp. } 1.657,79 + \text{Rp. } 125,54 \\
 &= \text{Rp. } 1.783,33/\text{bus/Km}
 \end{aligned}$$

## BAB VI

### KESIMPULAN DAN SARAN

#### 6.1 Kesimpulan

Dari hasil penelitian dilapangan dan perhitungan diperoleh :

1. Jumlah penumpang terbanyak terjadi pada hari Senin sebanyak 350 orang pada ruas jalan Kusuma Negara dan Sultan Agung.
2. Waktu perjalanan bis kota jalur 04 dimulai dari terminal Umbulharjo dan diakhiri di terminal Umbulharjo berkisar antara 93 menit dan 139 menit untuk satu rute perjalan.
3. *Load factor* penumpang tertinggi 120 % terjadi pada ruas jalan Kusuma Negara pada pagi hari pukul 06.00 -- 10.00 WIB. Hal ini disebabkan kerana pada ruas jalan tersebut terdapat banyak sekolah dan daerah pertokoan.
4. Jumlah armada yang dibutuhkan sebanyak 22 bis sedangkan pada jam sibuk dibutuhkan armada 32 bis, sedangkan jumlah bis kota jalur 04 yang tersedia berdasarkan SK Gubernur DIY No. 201/KPTS/1993 sebanyak 16 bis.
5. Headway rata-rata yang digunakan untuk jadwal keberangkatan bis kota diambil sebesar 6 menit berdasarkan headway tertinggi dengan jumlah kebutuhan armada 22 bis.

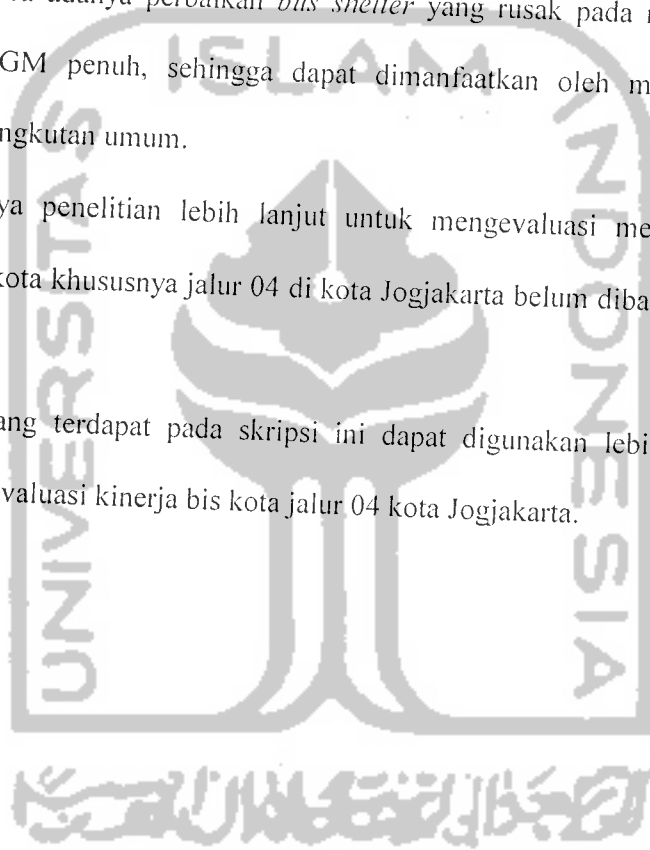
6. Jarak tempat henti sepanjang rute jalur 04 sebagian besar telah memenuhi standar Vuchic 400 – 600 meter, hanya pada ruas jalan Mataram jumlah kerb side yang ada jaraknya sangat dekat sehingga menimbulkan kemacetan lalu lintas. Jumlah tempat henti sepanjang rute jalur 04 sebanyak 3 *bus shelter*, 41 *kerb side*, dan 1 *lay-bys*.
7. Terdapat beberapa tempat henti yang tidak digunakan secara baik dan dalam kondisi memperhatikan, seperti pada ruas jalan Kusuma Negara dan Lingkar UGM penuh.
8. Pada ruas jalan yang sering digunakan ngetem bis kota seperti ruas jalan Gedong Kuning, C. Simanjuntak, dan P. Senopati tidak ada rambu-rambu tempat henti bis kota.
9. Standarisasi DLLAJ dalam konsumsi bahan bakar sudah aman tetapi terlalu rendah rasionya, sehingga akan menimbulkan biaya operasi kendaraan yang tinggi.
10. Biaya operasi kendaraan diperoleh dari Koperasi Aspada. Hasil perhitungan BOK ini berdasarkan atas biaya langsung dan biaya tidak langsung. Dari hasil perhitungan didapatkan biaya operasi kendaraan jalur 04 sebesar Rp. 1.783,3297 / bis / km.

## 6.2 Saran

1. Perlu adanya penambahan jumlah armada bis kota jalur 04 mengingat kurangnya jumlah armada yang tersedia.

2. Diperlukan tingkat kedisiplinan yang tinggi para awak bis kota untuk mengikuti rute bis yang telah ditentukan.
3. Sebaiknya satu rute dilayani oleh satu koperasi angkutan umum, sehingga pelayanan terhadap masyarakat dapat ditingkatkan. Sehingga tidak terjadi seperti dilapangan saat ini satu rute dilayani oleh beberapa koperasi angkutan umum yang mengakibatkan ketidakpastian jumlah armada yang tersedia yang dikarenakan sering berpindahnya rute jalur bis secara sepihak oleh awak bis.
4. Perlu adanya kedisiplinan awak bis kota dan petugas di terminal untuk mendisiplinkan keberangkatan bis kota sesuai dengan jadwal keberangkatan agar tidak terjadi keberangkatan bis kota satu jalur secara bersamaan.
5. Perlu adanya tingkat kesadaran awak bis kota dan penumpang untuk tidak menaikurunkan penumpang disembarang tempat.
6. Untuk menjamin berlakunya aturan dapat diberlakukan sebuah sistem sanksi bagi siapa saja yang melanggar aturan yang telah ditetapkan baik itu awak bis kota maupun petugas di terminal.
7. Dibutuhkan penambahan *kerb side* pada tempat-tempat ngetem bis kota di ruas jalan Mataram dan Gedong Kuning. Untuk ruas jalan C. Simanjuntak yang juga digunakan untuk ngetem sebaiknya diatur agar tidak terlalu dekat dengan persimpangan jalan sehingga tidak mengganggu arus lalu lintas.

8. Pada ruas jalan yan belum ada shelter sebaiknya diberi shelter, yaitu pada ruas jalan Ngeksidono, Komodor Yos Sudarso, Suroto, Sukonandi, dan Perintis Kemerdekaan.
9. Pada ruas jalan Mataram terdapat shelter yang terlalu dekat dengan jarak 50 meter. Keberadaan shelter ini tidak memenuhi persyaratan sehingga lebih baik dihilangkan.
10. Perlu segera adanya perbaikan *bus shelter* yang rusak pada ruas jalan Lingkar UGM penuh, sehingga dapat dimanfaatkan oleh masyarakat pengguna angkutan umum.
11. Perlu adanya penelitian lebih lanjut untuk mengevaluasi menyeluruh kinerja bis kota khususnya jalur 04 di kota Jogjakarta belum dibahas pada skripsi ini.
12. Data-data yang terdapat pada skripsi ini dapat digunakan lebih lanjut untuk mengevaluasi kinerja bis kota jalur 04 kota Jogjakarta.





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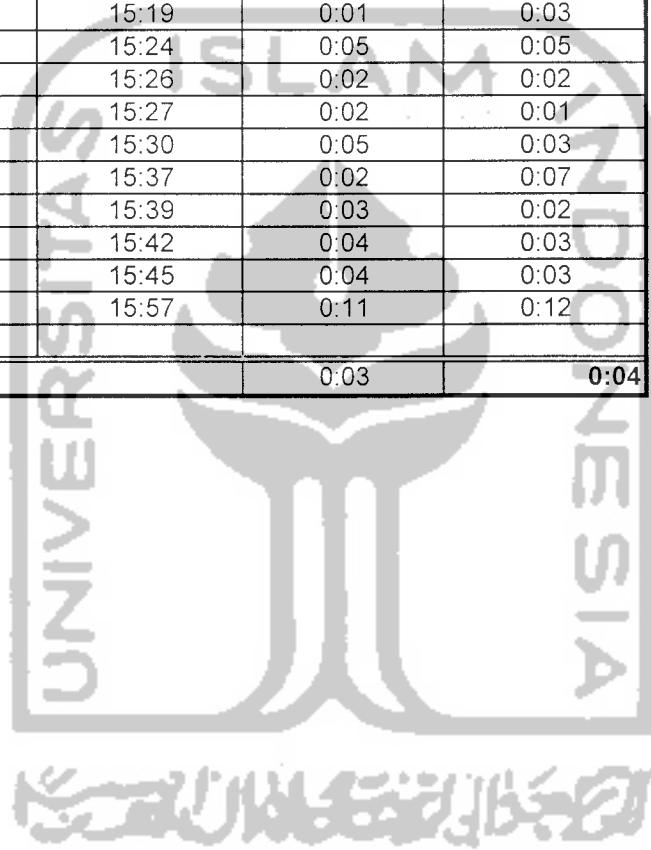
**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|                                       |                                    |
|---------------------------------------|------------------------------------|
| Hari/Tanggal :<br>Senin / 3 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|---------------------------------------|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 115           | 7:38       | 7:48          | 0:10                        |         |
| Kopata 122           | 7:38       | 7:40          | 0:02                        | 0:08    |
| Aspada 81            | 7:40       | 7:42          | 0:02                        | 0:02    |
| Kopata 56            | 7:42       | 7:46          | 0:04                        | 0:04    |
| Kopata 117           | 7:45       | 7:47          | 0:02                        | 0:01    |
| Aspada 56            | 7:45       | 7:47          | 0:02                        | 0:00    |
| Aspada 60            | 7:47       | 7:50          | 0:03                        | 0:03    |
| Kopata 38            | 7:48       | 7:51          | 0:03                        | 0:01    |
| Kopata 20            | 7:49       | 7:51          | 0:02                        | 0:00    |
| Aspada 78            | 7:51       | 7:53          | 0:02                        | 0:02    |
| Kopata 46            | 7:55       | 7:55          | 0:00                        | 0:02    |
| Aspada 100           | 7:56       | 8:00          | 0:04                        | 0:05    |
| Kopata 18            | 8:01       | 8:02          | 0:01                        | 0:02    |
| Aspada 108           | 8:07       | 8:09          | 0:02                        | 0:07    |
| Kopata 35            | 8:08       | 8:11          | 0:03                        | 0:02    |
| Kopata 42            | 8:22       | 8:25          | 0:03                        | 0:14    |
| Aspada 120           | 8:24       | 8:25          | 0:01                        | 0:00    |
| Aspada 87            | 8:26       | 8:30          | 0:04                        | 0:05    |
| Kopata 11            | 8:29       | 8:34          | 0:05                        | 0:04    |
| Aspada 45            | 8:35       | 8:41          | 0:06                        | 0:07    |
| Kopata 3             | 8:44       | 8:46          | 0:02                        | 0:05    |
| Kopata 17            | 8:45       | 8:47          | 0:02                        | 0:01    |
| Aspada 40            | 8:50       | 8:51          | 0:01                        | 0:04    |
| Aspada 30            | 8:54       | 8:57          | 0:03                        | 0:06    |
| Kopata 9             | 8:55       | 9:02          | 0:07                        | 0:05    |
| Aspada 19            | 9:00       | 9:04          | 0:04                        | 0:02    |
| Aspada 7             | 9:09       | 9:12          | 0:03                        | 0:08    |
| Aspada 12            | 9:11       | 9:17          | 0:06                        | 0:05    |
| Kopata 122           | 9:15       | 9:18          | 0:03                        | 0:01    |
| Kopata 115           | 9:23       | 9:25          | 0:02                        | 0:07    |
| Aspada 81            | 9:24       | 9:29          | 0:05                        | 0:04    |
| Kopata 56            | 9:26       | 9:27          | 0:01                        | 0:02    |
| Aspada 56            | 9:31       | 9:35          | 0:04                        | 0:08    |
| Aspada 60            | 9:32       | 9:38          | 0:06                        | 0:03    |
| Kopata 20            | 9:36       | 9:40          | 0:04                        | 0:02    |
| Aspada 78            | 9:40       | 9:44          | 0:04                        | 0:04    |
| Aspada 100           | 9:44       | 9:48          | 0:04                        | 0:04    |
| Aspada 108           | 9:45       | 9:49          | 0:04                        | 0:01    |
| Kopata 18            | 9:46       | 9:51          | 0:05                        | 0:02    |
| Kopata 117           | 9:54       | 9:57          | 0:03                        | 0:06    |
| Kopata 35            | 10:00      | 10:05         | 0:05                        | 0:08    |
| Kopata 38            | 10:05      | 10:07         | 0:02                        | 0:02    |
| Aspada 120           | 10:06      | 10:13         | 0:07                        | 0:06    |
| Aspada 87            | 10:11      | 10:15         | 0:04                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 46            | 10:15      | 10:21         | 0:06                        | 0:06    |
| Kopata 3             | 10:19      | 10:22         | 0:03                        | 0:01    |
| Aspada 40            | 10:25      | 10:27         | 0:02                        | 0:05    |
| Kopata 9             | 10:34      | 10:37         | 0:03                        | 0:10    |
| Aspada 19            | 10:35      | 10:38         | 0:03                        | 0:01    |
| Kopata 42            | 10:40      | 10:45         | 0:05                        | 0:07    |
| Aspada 45            | 10:43      | 10:48         | 0:05                        | 0:03    |
| Kopata 11            | 10:47      | 10:49         | 0:02                        | 0:01    |
| Aspada 30            | 11:01      | 11:05         | 0:04                        | 0:16    |
| Kopata 17            | 11:03      | 11:09         | 0:06                        | 0:04    |
| Aspada 12            | 11:07      | 11:13         | 0:06                        | 0:04    |
| Aspada 7             | 11:09      | 11:11         | 0:02                        | 0:02    |
| Aspada 81            | 11:13      | 11:15         | 0:02                        | 0:04    |
| Kopata 115           | 11:20      | 11:25         | 0:05                        | 0:10    |
| Aspada 56            | 11:21      | 11:24         | 0:03                        | 0:01    |
| Aspada 108           | 11:24      | 11:28         | 0:04                        | 0:04    |
| Kopata 20            | 11:25      | 11:30         | 0:05                        | 0:02    |
| Aspada 78            | 11:29      | 11:33         | 0:04                        | 0:03    |
| Kopata 56            | 11:30      | 11:37         | 0:07                        | 0:04    |
| Aspada 60            | 11:36      | 11:41         | 0:05                        | 0:04    |
| Aspada 100           | 11:47      | 11:51         | 0:04                        | 0:10    |
| Kopata 115           | 13:09      | 13:11         | 0:02                        | 1:20    |
| Kopata 17            | 13:10      | 13:17         | 0:07                        | 0:06    |
| Aspada 45            | 13:13      | 13:18         | 0:05                        | 0:01    |
| Aspada 30            | 13:16      | 13:20         | 0:04                        | 0:02    |
| Aspada 12            | 13:20      | 13:24         | 0:04                        | 0:04    |
| Aspada 81            | 13:23      | 13:27         | 0:04                        | 0:03    |
| Aspada 56            | 13:25      | 13:31         | 0:06                        | 0:04    |
| Kopata 11            | 13:27      | 13:33         | 0:06                        | 0:02    |
| Aspada 7             | 13:33      | 13:38         | 0:05                        | 0:05    |
| Aspada 108           | 13:35      | 13:36         | 0:01                        | 0:02    |
| Kopata 56            | 13:41      | 13:46         | 0:05                        | 0:10    |
| Kopata 20            | 13:45      | 13:49         | 0:04                        | 0:03    |
| Aspada 100           | 13:46      | 13:50         | 0:04                        | 0:01    |
| Aspada 60            | 13:50      | 13:54         | 0:04                        | 0:04    |
| Kopata 18            | 13:53      | 13:57         | 0:04                        | 0:03    |
| Kopata 117           | 13:57      | 14:01         | 0:04                        | 0:04    |
| Aspada 78            | 13:59      | 14:05         | 0:06                        | 0:04    |
| Kopata 38            | 14:03      | 14:08         | 0:05                        | 0:03    |
| Aspada 87            | 14:06      | 14:09         | 0:03                        | 0:01    |
| Kopata 46            | 14:10      | 14:13         | 0:03                        | 0:04    |
| Aspada 40            | 14:12      | 14:17         | 0:05                        | 0:04    |
| Aspada 19            | 14:17      | 14:21         | 0:04                        | 0:04    |
| Kopata 3             | 14:19      | 14:25         | 0:06                        | 0:04    |
| Kopata 9             | 14:22      | 14:27         | 0:05                        | 0:02    |
| Kopata 35            | 14:31      | 14:34         | 0:03                        | 0:07    |
| Aspada 120           | 14:30      | 14:33         | 0:03                        | 0:01    |
| Kopata 42            | 14:31      | 14:37         | 0:06                        | 0:04    |
| Kopata 115           | 14:41      | 14:47         | 0:06                        | 0:10    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway     |
|----------------------|------------|---------------|-----------------------------|-------------|
|                      | Kedatangan | Keberangkatan |                             |             |
| Kopata 17            | 14:42      | 14:46         | 0:04                        | 0:01        |
| Aspada 45            | 14:43      | 14:45         | 0:02                        | 0:01        |
| Aspada 30            | 14:48      | 14:51         | 0:03                        | 0:06        |
| Aspada 81            | 14:49      | 14:54         | 0:05                        | 0:03        |
| Aspada 12            | 14:51      | 14:57         | 0:06                        | 0:03        |
| Aspada 56            | 14:59      | 15:00         | 0:01                        | 0:03        |
| Aspada 7             | 15:05      | 15:07         | 0:02                        | 0:07        |
| Aspada 108           | 15:05      | 15:08         | 0:03                        | 0:01        |
| Kopata 11            | 15:06      | 15:15         | 0:09                        | 0:07        |
| Kopata 20            | 15:10      | 15:12         | 0:02                        | 0:03        |
| Kopata 56            | 15:13      | 15:20         | 0:07                        | 0:08        |
| Aspada 100           | 15:14      | 15:17         | 0:03                        | 0:03        |
| Aspada 60            | 15:18      | 15:22         | 0:04                        | 0:05        |
| Kopata 18            | 15:18      | 15:19         | 0:01                        | 0:03        |
| Kopata 117           | 15:19      | 15:24         | 0:05                        | 0:05        |
| Aspada 78            | 15:24      | 15:26         | 0:02                        | 0:02        |
| Kopata 38            | 15:25      | 15:27         | 0:02                        | 0:01        |
| Aspada 87            | 15:25      | 15:30         | 0:05                        | 0:03        |
| Aspada 19            | 15:35      | 15:37         | 0:02                        | 0:07        |
| Kopata 3             | 15:36      | 15:39         | 0:03                        | 0:02        |
| Kopata 9             | 15:38      | 15:42         | 0:04                        | 0:03        |
| Aspada 40            | 15:41      | 15:45         | 0:04                        | 0:03        |
| Kopata 46            | 15:46      | 15:57         | 0:11                        | 0:12        |
| Aspada 81            | 16:03      |               |                             |             |
| <b>Rata-Rata</b>     |            |               | <b>0:03</b>                 | <b>0:04</b> |



**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

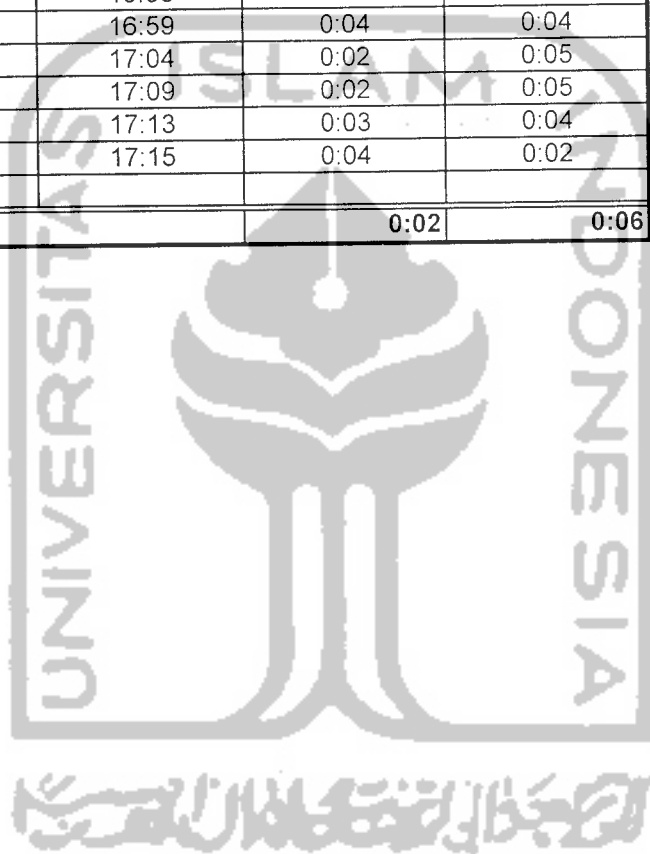
|  |                                    |
|--|------------------------------------|
| Hari/Tanggal :<br>Senin / 10 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|--|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 100           | 7:39       | 7:42          | 0:03                        |         |
| Aspada 111           | 7:41       | 7:45          | 0:04                        | 0:03    |
| Kopata 104           | 7:43       | 7:45          | 0:02                        | 0:00    |
| Aspada 55            | 7:43       | 7:46          | 0:03                        | 0:01    |
| Kopata 109           | 7:47       | 7:49          | 0:02                        | 0:03    |
| Kopata 130           | 7:49       | 7:51          | 0:02                        | 0:02    |
| Aspada 97            | 7:52       | 7:53          | 0:01                        | 0:02    |
| Aspada 106           | 7:54       | 7:55          | 0:01                        | 0:02    |
| Kopata 107           | 7:56       | 7:58          | 0:02                        | 0:03    |
| Aspada 112           | 7:57       | 7:59          | 0:02                        | 0:01    |
| Kopata 210           | 7:58       | 8:00          | 0:02                        | 0:01    |
| Kopata 9             | 8:03       | 8:05          | 0:02                        | 0:05    |
| Kopata 15            | 8:05       | 8:07          | 0:02                        | 0:02    |
| Aspada 123           | 8:07       | 8:09          | 0:02                        | 0:02    |
| Kopata 120           | 8:09       | 8:11          | 0:02                        | 0:02    |
| Aspada 113           | 8:13       | 8:13          | 0:00                        | 0:02    |
| Aspada 115           | 8:14       | 8:17          | 0:03                        | 0:04    |
| Aspada 121           | 8:16       | 8:19          | 0:03                        | 0:02    |
| Kopata 124           | 8:17       | 8:21          | 0:04                        | 0:02    |
| Aspada 64            | 8:21       | 8:23          | 0:02                        | 0:02    |
| Kopata 75            | 8:23       | 8:25          | 0:02                        | 0:02    |
| Aspada 117           | 8:25       | 8:27          | 0:02                        | 0:02    |
| Aspada 100           | 8:26       | 8:29          | 0:03                        | 0:02    |
| Kopata 119           | 8:27       | 8:29          | 0:02                        | 0:00    |
| Kopata 166           | 8:32       | 8:33          | 0:01                        | 0:04    |
| Kopata 132           | 8:35       | 8:37          | 0:02                        | 0:04    |
| Aspada 97            | 8:36       | 8:39          | 0:03                        | 0:02    |
| Kopata 50            | 8:41       | 8:43          | 0:02                        | 0:04    |
| Aspada 52            | 8:43       | 8:45          | 0:02                        | 0:02    |
| Kopata 200           | 8:45       | 8:49          | 0:04                        | 0:04    |
| Aspada 68            | 8:48       | 8:50          | 0:02                        | 0:01    |
| Kopata 17            | 9:02       | 9:04          | 0:02                        | 0:14    |
| Aspada 60            | 9:09       | 9:12          | 0:03                        | 0:08    |
| Kopata 104           | 9:10       | 9:14          | 0:04                        | 0:02    |
| Kopata 100           | 9:14       | 9:17          | 0:03                        | 0:03    |
| Aspada 111           | 9:21       | 9:25          | 0:04                        | 0:08    |
| Aspada 55            | 9:23       | 9:25          | 0:02                        | 0:00    |
| Kopata 109           | 9:25       | 9:27          | 0:02                        | 0:02    |
| kopata 130           | 9:28       | 9:31          | 0:03                        | 0:04    |
| Aspada 106           | 9:29       | 9:33          | 0:04                        | 0:02    |
| Aspada 97            | 9:30       | 9:32          | 0:02                        | 0:01    |
| Aspada 112           | 9:31       | 9:34          | 0:03                        | 0:02    |
| Kopata 9             | 9:33       | 9:36          | 0:03                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 107           | 9:34       | 9:36          | 0:02                        | 0:00    |
| Kopata 210           | 9:34       | 9:37          | 0:03                        | 0:01    |
| Kopata 15            | 9:36       | 9:39          | 0:03                        | 0:02    |
| Aspada 123           | 9:38       | 9:40          | 0:02                        | 0:01    |
| Aspada 113           | 9:42       | 9:44          | 0:02                        | 0:04    |
| Kopata 120           | 9:49       | 9:51          | 0:02                        | 0:07    |
| Aspada 115           | 9:53       | 9:54          | 0:01                        | 0:03    |
| Aspada 121           | 9:55       | 9:56          | 0:01                        | 0:02    |
| Kopata 124           | 9:55       | 9:57          | 0:02                        | 0:01    |
| Kopata 75            | 9:56       | 9:59          | 0:03                        | 0:02    |
| Aspada 64            | 9:57       | 10:00         | 0:03                        | 0:01    |
| Aspada 100           | 9:59       | 10:03         | 0:04                        | 0:03    |
| Kopata 125           | 10:00      | 10:04         | 0:04                        | 0:01    |
| Kopata 119           | 10:03      | 10:05         | 0:02                        | 0:01    |
| Aspada 117           | 10:04      | 10:07         | 0:03                        | 0:02    |
| Kopata 132           | 10:05      | 10:08         | 0:03                        | 0:01    |
| Kopata 166           | 10:09      | 10:12         | 0:03                        | 0:04    |
| Aspada 97            | 10:15      | 10:16         | 0:01                        | 0:04    |
| Aspada 52            | 10:17      | 10:20         | 0:03                        | 0:04    |
| Kopata 50            | 10:19      | 10:23         | 0:04                        | 0:03    |
| Kopata 200           | 10:21      | 10:25         | 0:04                        | 0:02    |
| Aspada 68            | 10:25      | 10:27         | 0:02                        | 0:02    |
| Kopata 17            | 10:42      | 10:43         | 0:01                        | 0:16    |
| Aspada 60            | 10:46      | 10:48         | 0:02                        | 0:05    |
| Kopata 100           | 10:49      | 10:51         | 0:02                        | 0:03    |
| Kopata 104           | 10:51      | 10:54         | 0:03                        | 0:03    |
| Aspada 111           | 11:07      | 11:09         | 0:02                        | 0:15    |
| Aspada 55            | 11:07      | 11:11         | 0:04                        | 0:02    |
| Kopata 130           | 11:09      | 11:12         | 0:03                        | 0:01    |
| Kopata 109           | 11:12      | 11:14         | 0:02                        | 0:02    |
| Aspada 106           | 11:13      | 11:16         | 0:03                        | 0:02    |
| Kopata 9             | 11:14      | 11:19         | 0:05                        | 0:03    |
| Aspada 97            | 11:16      | 11:19         | 0:03                        | 0:00    |
| Aspada 112           | 11:19      | 11:21         | 0:02                        | 0:02    |
| Kopata 107           | 11:21      | 11:23         | 0:02                        | 0:02    |
| Kopata 210           | 11:22      | 11:25         | 0:03                        | 0:02    |
| Kopata 15            | 11:23      | 11:27         | 0:04                        | 0:02    |
| Aspada 123           | 11:26      | 11:29         | 0:03                        | 0:02    |
| Kopata 124           | 11:27      | 11:29         | 0:02                        | 0:00    |
| Aspada 64            | 11:27      | 11:30         | 0:03                        | 0:01    |
| Kopata 75            | 11:29      | 11:31         | 0:02                        | 0:01    |
| Aspada 121           | 11:29      | 11:31         | 0:02                        | 0:00    |
| Kopata 120           | 11:30      | 11:32         | 0:02                        | 0:03    |
| Aspada 113           | 11:32      | 11:34         | 0:02                        | 0:02    |
| Aspada 115           | 11:36      | 11:38         | 0:02                        | 0:04    |
| Aspada 100           | 11:39      | 11:42         | 0:03                        | 0:04    |
| Kopata 125           | 11:40      | 11:43         | 0:03                        | 0:01    |
| Kopata 119           | 11:41      | 11:44         | 0:03                        | 0:01    |
| Aspada 117           | 11:41      | 11:45         | 0:04                        | 0:01    |
| Kopata 132           | 11:43      | 11:46         | 0:03                        | 0:01    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 44            | 13:08      | 13:11         | 0:03                        | 1:25    |
| Kopata 86            | 13:08      | 13:12         | 0:04                        | 0:01    |
| Kopata 109           | 13:10      | 13:14         | 0:04                        | 0:02    |
| Aspada 106           | 13:10      | 13:16         | 0:06                        | 0:02    |
| Kopata 9             | 13:11      | 13:17         | 0:06                        | 0:01    |
| Aspada 97            | 13:12      | 13:17         | 0:05                        | 0:00    |
| Kopata 125           | 13:15      | 13:18         | 0:03                        | 0:01    |
| Aspada 60            | 13:17      | 13:21         | 0:04                        | 0:03    |
| Kopata 17            | 13:23      | 13:25         | 0:02                        | 0:04    |
| Kopata 100           | 13:25      | 13:28         | 0:03                        | 0:03    |
| Kopata 104           | 13:27      | 13:31         | 0:04                        | 0:03    |
| kopata 130           | 13:36      | 13:38         | 0:02                        | 0:07    |
| Aspada 111           | 13:44      | 13:48         | 0:04                        | 0:10    |
| Aspada 97            | 13:56      | 13:59         | 0:03                        | 0:11    |
| Aspada 112           | 13:57      | 13:59         | 0:02                        | 0:00    |
| Aspada 55            | 13:57      | 14:00         | 0:03                        | 0:01    |
| Kopata 210           | 14:02      | 14:04         | 0:02                        | 0:04    |
| Kopata 124           | 14:12      | 14:14         | 0:02                        | 0:10    |
| Kopata 75            | 14:13      | 14:16         | 0:03                        | 0:02    |
| Kopata 107           | 14:16      | 14:18         | 0:02                        | 0:02    |
| Aspada 123           | 14:21      | 14:24         | 0:03                        | 0:06    |
| Aspada 64            | 14:24      | 14:27         | 0:03                        | 0:03    |
| Aspada 121           | 14:27      | 14:29         | 0:02                        | 0:02    |
| Kopata 120           | 14:29      | 14:31         | 0:02                        | 0:02    |
| Aspada 115           | 14:33      | 14:35         | 0:02                        | 0:04    |
| Aspada 100           | 14:36      | 14:38         | 0:02                        | 0:03    |
| Kopata 15            | 14:43      | 14:45         | 0:02                        | 0:07    |
| Aspada 113           | 14:44      | 14:47         | 0:03                        | 0:02    |
| Kopata 86            | 14:46      | 14:50         | 0:04                        | 0:03    |
| Kopata 125           | 14:51      | 14:53         | 0:02                        | 0:03    |
| Kopata 132           | 14:53      | 14:56         | 0:03                        | 0:03    |
| Kopata 17            | 15:01      | 15:03         | 0:02                        | 0:07    |
| Kopata 100           | 15:04      | 15:06         | 0:02                        | 0:03    |
| kopata 130           | 15:07      | 15:10         | 0:03                        | 0:04    |
| Kopata 9             | 15:08      | 15:11         | 0:03                        | 0:01    |
| Kopata 109           | 15:11      | 15:15         | 0:04                        | 0:04    |
| Aspada 106           | 15:12      | 15:16         | 0:04                        | 0:01    |
| Aspada 97            | 15:14      | 15:18         | 0:04                        | 0:02    |
| Aspada 111           | 15:16      | 15:18         | 0:02                        | 0:00    |
| Kopata 124           | 15:23      | 15:25         | 0:02                        | 0:07    |
| Kopata 75            | 15:25      | 15:27         | 0:02                        | 0:02    |
| Aspada 123           | 15:29      | 15:31         | 0:02                        | 0:04    |
| Aspada 112           | 15:36      | 15:39         | 0:03                        | 0:08    |
| Kopata 210           | 15:43      | 15:45         | 0:02                        | 0:06    |
| Aspada 55            | 15:52      | 15:55         | 0:03                        | 0:10    |
| Kopata 107           | 15:56      | 15:59         | 0:03                        | 0:04    |
| Kopata 120           | 15:58      | 16:01         | 0:03                        | 0:02    |
| Aspada 64            | 16:10      | 16:15         | 0:05                        | 0:14    |
| Aspada 121           | 16:11      | 16:14         | 0:03                        | 0:01    |
| Kopata 115           | 16:12      | 16:14         | 0:02                        | 0:00    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 100           | 16:19      | 16:21         | 0:02                        | 0:07    |
| Kopata 15            | 16:22      | 16:25         | 0:03                        | 0:04    |
| Aspada 113           | 16:23      | 16:26         | 0:03                        | 0:01    |
| Aspada 115           | 16:26      | 16:29         | 0:03                        | 0:03    |
| Kopata 125           | 16:27      | 16:30         | 0:03                        | 0:01    |
| Kopata 86            | 16:30      | 16:32         | 0:02                        | 0:02    |
| Kopata 9             | 16:33      | 16:35         | 0:02                        | 0:03    |
| Kopata 132           | 16:36      | 16:37         | 0:01                        | 0:02    |
| Kopata 17            | 16:39      | 16:41         | 0:02                        | 0:04    |
| Kopata 100           | 16:43      | 16:45         | 0:02                        | 0:04    |
| Aspada 106           | 16:47      | 16:49         | 0:02                        | 0:04    |
| Aspada 97            | 16:49      | 16:51         | 0:02                        | 0:02    |
| Kopata 124           | 16:52      | 16:55         | 0:03                        | 0:04    |
| Aspada 123           | 16:55      | 16:59         | 0:04                        | 0:04    |
| Kopata 75            | 17:02      | 17:04         | 0:02                        | 0:05    |
| Kopata 109           | 17:07      | 17:09         | 0:02                        | 0:05    |
| Aspada 111           | 17:10      | 17:13         | 0:03                        | 0:04    |
| Kopata 39            | 17:11      | 17:15         | 0:04                        | 0:02    |
| Aspada 90            | 17:13      |               |                             |         |
| Rata-rata            |            |               | 0:02                        | 0:06    |





**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|  |                                    |
|--|------------------------------------|
| Hari/Tanggal :<br>Senin / 17 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|--|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 115           | 7:17       | 7:19          | 0:02                        |         |
| Kopata 11            | 7:20       | 7:21          | 0:01                        | 0:02    |
| Aspada 150           | 7:21       | 7:23          | 0:02                        | 0:02    |
| Kopata 123           | 7:22       | 7:24          | 0:02                        | 0:01    |
| Aspada 52            | 7:26       | 7:27          | 0:01                        | 0:03    |
| Kopata 38            | 7:30       | 7:33          | 0:03                        | 0:06    |
| Kopata 21            | 7:33       | 7:35          | 0:02                        | 0:02    |
| Aspada 51            | 7:39       | 7:41          | 0:02                        | 0:06    |
| Kopata 17            | 7:42       | 7:45          | 0:03                        | 0:04    |
| Kopata 56            | 7:43       | 7:45          | 0:02                        | 0:00    |
| Kopata 35            | 7:45       | 7:47          | 0:02                        | 0:02    |
| Kopata 20            | 7:50       | 7:53          | 0:03                        | 0:06    |
| Kopata 117           | 8:01       | 8:03          | 0:02                        | 0:10    |
| Aspada 30            | 8:07       | 8:10          | 0:03                        | 0:07    |
| Aspada 7             | 8:12       | 8:14          | 0:02                        | 0:04    |
| Aspada 46            | 8:16       | 8:19          | 0:03                        | 0:05    |
| Aspada 87            | 8:19       | 8:24          | 0:05                        | 0:05    |
| Kopata 42            | 8:29       | 8:31          | 0:02                        | 0:07    |
| Aspada 12            | 8:31       | 8:35          | 0:04                        | 0:04    |
| Aspada 19            | 8:35       | 8:38          | 0:03                        | 0:03    |
| Kopata 21            | 8:39       | 8:43          | 0:04                        | 0:05    |
| Aspada 40            | 8:47       | 8:50          | 0:03                        | 0:07    |
| Kopata 3             | 8:57       | 8:59          | 0:02                        | 0:09    |
| Aspada 20            | 9:06       | 9:09          | 0:03                        | 0:10    |
| Aspada 45            | 9:11       | 9:13          | 0:02                        | 0:04    |
| Aspada 100           | 9:13       | 9:16          | 0:03                        | 0:03    |
| Aspada 51            | 9:17       | 9:20          | 0:03                        | 0:04    |
| Aspada 52            | 9:19       | 9:22          | 0:03                        | 0:02    |
| Kopata 11            | 9:21       | 9:24          | 0:03                        | 0:02    |
| Kopata 115           | 9:30       | 9:32          | 0:02                        | 0:08    |
| Kopata 38            | 9:31       | 9:33          | 0:02                        | 0:01    |
| Kopata 123           | 9:32       | 9:35          | 0:03                        | 0:02    |
| Aspada 150           | 9:36       | 9:38          | 0:02                        | 0:03    |
| Kopata 26            | 9:38       | 9:41          | 0:03                        | 0:03    |
| Kopata 17            | 9:41       | 9:43          | 0:02                        | 0:02    |
| Kopata 35            | 9:45       | 9:47          | 0:02                        | 0:04    |
| Kopata 117           | 9:47       | 9:51          | 0:04                        | 0:04    |
| Aspada 30            | 9:49       | 9:52          | 0:03                        | 0:01    |
| Kopata 56            | 9:50       | 9:53          | 0:03                        | 0:01    |
| Kopata 20            | 9:53       | 9:59          | 0:06                        | 0:06    |
| Aspada 46            | 9:53       | 9:56          | 0:03                        | 0:03    |
| Aspada 7             | 9:57       | 10:00         | 0:03                        | 0:04    |
| Aspada 87            | 10:01      | 10:05         | 0:04                        | 0:05    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 12            | 10:07      | 10:12         | 0:05                        | 0:07    |
| Aspada 40            | 10:15      | 10:18         | 0:03                        | 0:06    |
| Aspada 20            | 10:19      | 10:23         | 0:04                        | 0:05    |
| Kopata 21            | 10:27      | 10:31         | 0:04                        | 0:08    |
| Kopata 42            | 10:35      | 10:39         | 0:04                        | 0:08    |
| Aspada 19            | 10:37      | 10:40         | 0:03                        | 0:01    |
| Kopata 3             | 10:43      | 10:45         | 0:02                        | 0:05    |
| Aspada 45            | 10:44      | 10:48         | 0:04                        | 0:03    |
| Aspada 52            | 10:47      | 10:49         | 0:02                        | 0:01    |
| Kopata 123           | 10:53      | 10:59         | 0:06                        | 0:10    |
| Aspada 100           | 10:58      | 11:03         | 0:05                        | 0:04    |
| Kopata 11            | 11:06      | 11:09         | 0:03                        | 0:06    |
| Aspada 150           | 11:15      | 11:19         | 0:04                        | 0:10    |
| Kopata 115           | 11:17      | 11:23         | 0:06                        | 0:04    |
| Kopata 38            | 11:19      | 11:25         | 0:06                        | 0:02    |
| Kopata 26            | 11:29      | 11:30         | 0:01                        | 0:05    |
| Kopata 117           | 11:30      | 11:32         | 0:02                        | 0:02    |
| Aspada 40            | 11:33      | 11:36         | 0:03                        | 0:04    |
| Kopata 56            | 11:35      | 11:38         | 0:03                        | 0:02    |
| Kopata 3             | 11:36      | 11:39         | 0:03                        | 0:01    |
| Aspada 30            | 11:40      | 11:43         | 0:03                        | 0:04    |
| Kopata 20            | 11:44      | 11:46         | 0:02                        | 0:03    |
| Aspada 87            | 11:46      | 11:49         | 0:03                        | 0:03    |
| Aspada 7             | 12:00      | 12:05         | 0:05                        | 0:16    |
| Aspada 46            | 12:05      | 12:07         | 0:02                        | 0:02    |
| Aspada 52            | 12:06      | 12:09         | 0:03                        | 0:02    |
| Aspada 151           | 13:45      | 13:48         | 0:03                        | 1:39    |
| Kopata 115           | 13:49      | 13:55         | 0:06                        | 0:07    |
| Kopata 11            | 13:52      | 13:54         | 0:02                        | 0:04    |
| Aspada 40            | 13:54      | 13:56         | 0:02                        | 0:02    |
| Aspada 19            | 13:57      | 14:02         | 0:05                        | 0:06    |
| Kopata 21            | 13:57      | 14:03         | 0:06                        | 0:01    |
| Aspada 30            | 14:03      | 14:08         | 0:05                        | 0:05    |
| Kopata 42            | 14:06      | 14:09         | 0:03                        | 0:01    |
| Aspada 20            | 14:07      | 14:11         | 0:04                        | 0:02    |
| Kopata 3             | 14:08      | 14:15         | 0:07                        | 0:04    |
| Kopata 26            | 14:11      | 14:13         | 0:02                        | 0:05    |
| Aspada 52            | 14:15      | 14:18         | 0:03                        | 0:05    |
| Kopata 38            | 14:19      | 14:22         | 0:03                        | 0:04    |
| Kopata 123           | 14:22      | 14:26         | 0:04                        | 0:04    |
| Aspada 100           | 14:25      | 14:27         | 0:02                        | 0:01    |
| Aspada 45            | 14:29      | 14:33         | 0:04                        | 0:06    |
| Aspada 150           | 14:43      | 14:46         | 0:03                        | 0:13    |
| Kopata 117           | 14:46      | 14:49         | 0:03                        | 0:03    |
| Aspada 40            | 15:02      | 15:05         | 0:03                        | 0:16    |
| Kopata 56            | 15:05      | 15:08         | 0:03                        | 0:03    |
| Kopata 20            | 15:12      | 15:15         | 0:03                        | 0:07    |
| Aspada 87            | 15:14      | 15:16         | 0:02                        | 0:01    |
| Kopata 11            | 15:17      | 15:22         | 0:05                        | 0:06    |
| Aspada 46            | 15:19      | 15:24         | 0:05                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 151           | 15:25      | 15:29         | 0:04                        | 0:05    |
| Aspada 7             | 15:27      | 15:29         | 0:02                        | 0:00    |
| Kopata 81            | 15:29      | 15:33         | 0:04                        | 0:04    |
| Kopata 21            | 15:33      | 15:38         | 0:05                        | 0:05    |
| Kopata 115           | 15:34      | 15:38         | 0:04                        | 0:00    |
| Kopata 26            | 15:38      | 15:44         | 0:06                        | 0:06    |
| Kopata 42            | 15:41      | 15:43         | 0:02                        | 0:04    |
| Aspada 19            | 15:43      | 15:46         | 0:03                        | 0:03    |
| Aspada 20            | 15:45      | 15:48         | 0:03                        | 0:02    |
| Aspada 30            | 15:46      | 15:49         | 0:03                        | 0:01    |
| Kopata 38            | 15:47      | 15:50         | 0:03                        | 0:01    |
| Kopata 3             | 15:55      | 15:58         | 0:03                        | 0:08    |
| Aspada 52            | 16:04      | 16:06         | 0:02                        | 0:08    |
| Kopata 117           | 16:04      | 16:09         | 0:05                        | 0:03    |
| Aspada 150           | 16:13      | 16:18         | 0:05                        | 0:09    |
| Kopata 123           | 16:30      | 16:33         | 0:03                        | 0:15    |
| Aspada 100           | 16:33      | 16:35         | 0:02                        | 0:02    |
| Aspada 45            | 16:35      | 16:38         | 0:03                        | 0:03    |
| Aspada 40            | 16:43      | 16:46         | 0:03                        | 0:08    |
| Kopata 56            | 16:44      | 16:46         | 0:02                        | 0:00    |
| Aspada 87            | 16:51      | 16:54         | 0:03                        | 0:08    |
| Kopata 11            | 16:53      | 16:58         | 0:05                        | 0:04    |
| Aspada 46            | 16:57      | 16:58         | 0:01                        | 0:00    |
| Kopata 20            | 17:07      | 17:10         | 0:03                        | 0:12    |
| Kopata 81            | 17:11      |               |                             |         |
| Rata-rata            |            |               | 0:03                        | 0:05    |

**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|  |                                      |
|--|--------------------------------------|
| Hari/Tanggal :<br>Senin / 24 Juni 2002 | Ruas Jalan :<br>Terminal Umbul Harjo |
|--|--------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 150           | 7:39       | 7:41          | 0:02                        |         |
| Kopata 110           | 7:41       | 7:43          | 0:02                        | 0:02    |
| Aspada 56            | 7:41       | 7:45          | 0:04                        | 0:02    |
| Kopata 20            | 7:43       | 7:46          | 0:03                        | 0:01    |
| Aspada 36            | 7:46       | 7:48          | 0:02                        | 0:02    |
| Kopata 122           | 7:48       | 7:53          | 0:05                        | 0:05    |
| Kopata 100           | 7:52       | 7:55          | 0:03                        | 0:02    |
| Kopata 116           | 7:54       | 7:56          | 0:02                        | 0:01    |
| Aspada 62            | 7:54       | 7:58          | 0:04                        | 0:02    |
| Aspada 48            | 7:55       | 7:57          | 0:02                        | 0:01    |
| Kopata 2             | 7:56       | 7:59          | 0:03                        | 0:02    |
| Aspada 73            | 8:11       | 8:15          | 0:04                        | 0:16    |
| Kopata 25            | 8:12       | 8:16          | 0:04                        | 0:01    |
| Kopata 17            | 8:14       | 8:19          | 0:05                        | 0:03    |
| Kopata 80            | 8:16       | 8:18          | 0:02                        | 0:01    |
| Kopata 3             | 8:19       | 8:21          | 0:02                        | 0:03    |
| Aspada 125           | 8:21       | 8:25          | 0:04                        | 0:04    |
| Kopata 125           | 8:23       | 8:26          | 0:03                        | 0:01    |
| Aspada 106           | 8:24       | 8:29          | 0:05                        | 0:03    |
| Aspada 51            | 8:25       | 8:32          | 0:07                        | 0:03    |
| Aspada 22            | 8:27       | 8:29          | 0:02                        | 0:03    |
| Aspada 12            | 8:29       | 8:31          | 0:02                        | 0:02    |
| Kopata 113           | 8:41       | 8:44          | 0:03                        | 0:13    |
| Aspada 10            | 8:47       | 8:52          | 0:05                        | 0:08    |
| Kopata 110           | 8:55       | 8:59          | 0:04                        | 0:07    |
| Aspada 9             | 9:03       | 9:05          | 0:02                        | 0:06    |
| Aspada 17            | 9:06       | 9:10          | 0:04                        | 0:05    |
| Aspada 11            | 9:10       | 9:15          | 0:05                        | 0:05    |
| Kopata 150           | 9:13       | 9:16          | 0:03                        | 0:01    |
| Aspada 56            | 9:17       | 9:21          | 0:04                        | 0:05    |
| Kopata 20            | 9:19       | 9:22          | 0:03                        | 0:01    |
| Aspada 36            | 9:23       | 9:27          | 0:04                        | 0:05    |
| Kopata 122           | 9:29       | 9:31          | 0:02                        | 0:04    |
| Kopata 62            | 9:50       | 9:52          | 0:02                        | 0:21    |
| Aspada 125           | 9:52       | 9:54          | 0:02                        | 0:02    |
| Aspada 106           | 9:56       | 9:58          | 0:02                        | 0:04    |
| Aspada 51            | 10:03      | 10:05         | 0:02                        | 0:07    |
| Aspada 22            | 10:08      | 10:11         | 0:03                        | 0:06    |
| Aspada 12            | 10:13      | 10:15         | 0:02                        | 0:04    |
| Aspada 10            | 10:17      | 10:21         | 0:04                        | 0:06    |
| Kopata 113           | 10:19      | 10:22         | 0:03                        | 0:01    |
| Kopata 110           | 10:23      | 10:28         | 0:05                        | 0:06    |
| Aspada 9             | 10:25      | 10:27         | 0:02                        | 0:01    |
| Aspada 17            | 10:26      | 10:30         | 0:04                        | 0:03    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 11            | 10:31      | 10:33         | 0:02                        | 0:03    |
| Aspada 56            | 10:36      | 10:39         | 0:03                        | 0:06    |
| Kopata 150           | 10:42      | 10:48         | 0:06                        | 0:09    |
| Aspada 36            | 10:43      | 10:46         | 0:03                        | 0:02    |
| Kopata 20            | 10:46      | 10:51         | 0:05                        | 0:05    |
| Kopata 17            | 10:51      | 10:53         | 0:02                        | 0:02    |
| Kopata 80            | 10:53      | 10:56         | 0:03                        | 0:03    |
| Kopata 3             | 10:56      | 10:58         | 0:02                        | 0:02    |
| Aspada 125           | 10:57      | 11:01         | 0:04                        | 0:03    |
| Aspada 106           | 11:04      | 11:10         | 0:06                        | 0:09    |
| Kopata 125           | 11:11      | 11:15         | 0:04                        | 0:05    |
| Kopata 62            | 11:25      | 11:28         | 0:03                        | 0:13    |
| Aspada 125           | 11:28      | 11:30         | 0:02                        | 0:02    |
| Aspada 51            | 11:35      | 11:38         | 0:03                        | 0:08    |
| Aspada 22            | 11:37      | 11:41         | 0:04                        | 0:03    |
| Aspada 12            | 12:26      | 12:30         | 0:04                        |         |
| Kopata 113           | 12:29      | 12:32         | 0:03                        | 0:02    |
| Aspada 10            | 12:30      | 12:36         | 0:06                        | 0:04    |
| Kopata 110           | 12:36      | 12:39         | 0:03                        | 0:03    |
| Kopata 115           | 12:41      | 12:44         | 0:03                        | 0:05    |
| Kopata 150           | 12:43      | 12:46         | 0:03                        | 0:02    |
| Aspada 9             | 12:46      | 12:50         | 0:04                        | 0:04    |
| Aspada 17            | 12:51      | 12:53         | 0:02                        | 0:03    |
| Aspada 11            | 12:57      | 13:01         | 0:04                        | 0:08    |
| Aspada 125           | 13:02      | 13:06         | 0:04                        | 0:05    |
| Aspada 51            | 13:14      | 13:17         | 0:03                        | 0:11    |
| Aspada 106           | 13:24      | 13:31         | 0:07                        | 0:14    |
| Aspada 22            | 13:43      | 13:48         | 0:05                        | 0:17    |
| Aspada 106           | 13:47      | 13:51         | 0:04                        | 0:03    |
| Kopata 110           | 13:55      | 13:58         | 0:03                        | 0:07    |
| Kopata 113           | 14:02      | 14:05         | 0:03                        | 0:07    |
| Aspada 9             | 14:07      | 14:10         | 0:03                        | 0:05    |
| Kopata 17            | 14:13      | 14:15         | 0:02                        | 0:05    |
| Aspada 10            | 14:23      | 14:27         | 0:04                        | 0:12    |
| Aspada 55            | 14:33      | 14:35         | 0:02                        | 0:08    |
| Kopata 150           | 14:36      | 14:39         | 0:03                        | 0:04    |
| Aspada 17            | 14:43      | 14:45         | 0:02                        | 0:06    |
| Aspada 11            | 14:47      | 14:51         | 0:04                        | 0:06    |
| Aspada 125           | 15:00      | 15:05         | 0:05                        | 0:14    |
| Aspada 12            | 15:06      | 15:10         | 0:04                        | 0:05    |
| Aspada 87            | 15:11      | 15:15         | 0:04                        | 0:05    |
| Aspada 51            | 15:25      | 15:29         | 0:04                        | 0:14    |
| Aspada 106           | 15:27      | 15:31         | 0:04                        | 0:02    |
| Aspada 22            | 15:33      | 15:37         | 0:04                        | 0:06    |
| Kopata 113           | 15:39      | 15:41         | 0:02                        | 0:04    |
| Aspada 9             | 15:42      | 15:45         | 0:03                        | 0:04    |
| Aspada 10            | 15:51      | 15:54         | 0:03                        | 0:09    |
| Aspada 17            | 15:53      | 15:56         | 0:03                        | 0:02    |
| Kopata 113           | 15:59      | 16:02         | 0:03                        | 0:06    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 55            | 16:07      | 16:08         | 0:01                        | 0:06    |
| Kopata 110           | 16:09      | 16:12         | 0:03                        | 0:04    |
| Kopata 150           | 16:13      | 16:17         | 0:04                        | 0:05    |
| Kopata 17            | 16:16      | 16:18         | 0:02                        | 0:01    |
| Aspada 11            | 16:24      | 16:30         | 0:06                        | 0:12    |
| Aspada 125           | 16:27      | 16:30         | 0:03                        | 0:00    |
| Kopata 125           | 16:46      | 16:50         | 0:04                        | 0:20    |
| Aspada 106           | 16:48      | 16:52         | 0:04                        | 0:02    |
| Aspada 51            | 16:50      | 16:54         | 0:04                        | 0:02    |
| Aspada 12            | 16:53      | 16:55         | 0:02                        | 0:01    |
| Aspada 87            | 16:55      | 16:58         | 0:03                        | 0:03    |
| Kopata 55            | 17:03      |               |                             |         |
| Rata-rata            |            |               | 0:03                        | 0:09    |



**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|  |                                    |
|--|------------------------------------|
| Hari/Tanggal :<br>Selasa / 4 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|--|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 111           | 7:13       | 7:17          | 0:04                        |         |
| Aspada 25            | 7:14       | 7:19          | 0:05                        | 0:02    |
| Kopata 66            | 7:16       | 7:21          | 0:05                        | 0:02    |
| Aspada 14            | 7:19       | 7:22          | 0:03                        | 0:01    |
| Kopata 87            | 7:23       | 7:26          | 0:03                        | 0:04    |
| Kopata 75            | 7:25       | 7:28          | 0:03                        | 0:02    |
| Kopata 65            | 7:27       | 7:31          | 0:04                        | 0:03    |
| Aspada 11            | 7:28       | 7:32          | 0:04                        | 0:01    |
| Aspada 15            | 7:29       | 7:35          | 0:06                        | 0:03    |
| Kopata 59            | 7:33       | 7:36          | 0:03                        | 0:01    |
| Aspada 19            | 7:36       | 7:38          | 0:02                        | 0:02    |
| Kopata 60            | 7:43       | 7:47          | 0:04                        | 0:09    |
| Kopata 22            | 7:48       | 7:51          | 0:03                        | 0:04    |
| Aspada 65            | 7:51       | 7:55          | 0:04                        | 0:04    |
| Kopata 30            | 7:52       | 7:59          | 0:07                        | 0:04    |
| Aspada 100           | 7:53       | 8:01          | 0:08                        | 0:02    |
| Aspada 85            | 7:55       | 8:00          | 0:05                        | 0:01    |
| Kopata 45            | 8:00       | 8:06          | 0:06                        | 0:06    |
| Kopata 51            | 8:04       | 8:09          | 0:05                        | 0:03    |
| Kopata 23            | 8:11       | 8:13          | 0:02                        | 0:04    |
| Aspada 62            | 8:19       | 8:23          | 0:04                        | 0:10    |
| Kopata 50            | 8:23       | 8:26          | 0:03                        | 0:03    |
| Kopata 19            | 8:27       | 8:31          | 0:04                        | 0:05    |
| Aspada 25            | 8:29       | 8:31          | 0:02                        | 0:00    |
| Aspada 13            | 8:33       | 8:35          | 0:02                        | 0:04    |
| Kopata 65            | 8:39       | 8:41          | 0:02                        | 0:06    |
| Kopata 66            | 8:43       | 8:45          | 0:02                        | 0:04    |
| Aspada 95            | 8:49       | 8:50          | 0:01                        | 0:05    |
| Aspada 120           | 8:51       | 8:56          | 0:05                        | 0:06    |
| Kopata 36            | 8:54       | 8:57          | 0:03                        | 0:01    |
| Aspada 4             | 8:56       | 9:00          | 0:04                        | 0:03    |
| Kopata 111           | 9:02       | 9:04          | 0:02                        | 0:04    |
| Aspada 25            | 9:04       | 9:06          | 0:02                        | 0:02    |
| Kopata 66            | 9:07       | 9:11          | 0:04                        | 0:05    |
| Aspada 14            | 9:11       | 9:14          | 0:03                        | 0:03    |
| Kopata 75            | 9:12       | 9:16          | 0:04                        | 0:02    |
| Kopata 65            | 9:14       | 9:18          | 0:04                        | 0:02    |
| Kopata 87            | 9:16       | 9:21          | 0:05                        | 0:03    |
| Kopata 59            | 9:19       | 9:22          | 0:03                        | 0:01    |
| Aspada 65            | 9:21       | 9:25          | 0:04                        | 0:03    |
| Aspada 11            | 9:23       | 9:27          | 0:04                        | 0:02    |
| Aspada 15            | 9:26       | 9:28          | 0:02                        | 0:01    |
| Aspada 19            | 9:29       | 9:31          | 0:02                        | 0:03    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 60            | 9:32       | 9:36          | 0:04                        | 0:05    |
| Kopata 22            | 9:36       | 9:38          | 0:02                        | 0:02    |
| Aspada 100           | 9:39       | 9:41          | 0:02                        | 0:03    |
| Kopata 30            | 9:40       | 9:43          | 0:03                        | 0:02    |
| Kopata 45            | 9:41       | 9:48          | 0:07                        | 0:05    |
| Aspada 85            | 9:43       | 9:45          | 0:02                        | 0:03    |
| Kopata 51            | 9:46       | 9:50          | 0:04                        | 0:05    |
| Kopata 23            | 9:47       | 9:52          | 0:05                        | 0:02    |
| Aspada 123           | 9:50       | 9:54          | 0:04                        | 0:02    |
| Kopata 50            | 10:01      | 10:03         | 0:02                        | 0:09    |
| Kopata 19            | 10:04      | 10:06         | 0:02                        | 0:03    |
| Aspada 25            | 10:09      | 10:11         | 0:02                        | 0:05    |
| Aspada 13            | 10:11      | 10:15         | 0:04                        | 0:04    |
| Kopata 65            | 10:15      | 10:19         | 0:04                        | 0:04    |
| Aspada 95            | 10:17      | 10:21         | 0:04                        | 0:02    |
| Kopata 36            | 10:25      | 10:27         | 0:02                        | 0:06    |
| Kopata 66            | 10:29      | 10:31         | 0:02                        | 0:04    |
| Aspada 120           | 10:39      | 10:41         | 0:02                        | 0:10    |
| Aspada 4             | 10:48      | 10:52         | 0:04                        | 0:11    |
| Aspada 25            | 10:55      | 10:58         | 0:03                        | 0:06    |
| Kopata 66            | 10:59      | 11:00         | 0:01                        | 0:02    |
| Aspada 14            | 11:04      | 11:09         | 0:05                        | 0:09    |
| Kopata 75            | 11:08      | 11:10         | 0:02                        | 0:01    |
| Kopata 65            | 11:11      | 11:15         | 0:04                        | 0:05    |
| Kopata 87            | 11:15      | 11:18         | 0:03                        | 0:03    |
| Kopata 59            | 11:16      | 11:21         | 0:05                        | 0:03    |
| Aspada 65            | 11:18      | 11:25         | 0:07                        | 0:04    |
| Aspada 11            | 11:21      | 11:25         | 0:04                        | 0:00    |
| Aspada 15            | 11:25      | 11:29         | 0:04                        | 0:04    |
| Aspada 19            | 11:28      | 11:32         | 0:04                        | 0:03    |
| Kopata 60            | 11:29      | 11:35         | 0:06                        | 0:03    |
| Kopata 22            | 11:32      | 11:35         | 0:03                        | 0:00    |
| Aspada 100           | 11:38      | 11:41         | 0:03                        | 0:06    |
| Kopata 30            | 11:41      | 11:43         | 0:02                        | 0:02    |
| Kopata 23            | 11:42      | 11:45         | 0:03                        | 0:02    |
| Aspada 123           | 11:44      | 11:48         | 0:04                        | 0:03    |
| Kopata 45            | 12:49      | 12:51         | 0:02                        |         |
| Aspada 25            | 12:54      | 13:00         | 0:06                        | 0:09    |
| Kopata 50            | 12:59      | 13:04         | 0:05                        | 0:04    |
| Aspada 13            | 13:06      | 13:09         | 0:03                        | 0:05    |
| Kopata 128           | 13:21      | 13:22         | 0:01                        | 0:13    |
| Kopata 51            | 13:17      | 13:19         | 0:05                        | 0:03    |
| Aspada 4             | 13:23      | 13:27         | 0:04                        | 0:05    |
| Kopata 66            | 13:27      | 13:31         | 0:04                        | 0:04    |
| Kopata 36            | 13:31      | 13:35         | 0:04                        | 0:04    |
| Kopata 65            | 13:34      | 13:42         | 0:08                        | 0:07    |
| Aspada 62            | 13:39      | 13:45         | 0:06                        | 0:03    |
| Kopata 66            | 13:46      | 13:46         | 0:00                        | 0:01    |
| Kopata 19            | 13:54      | 13:58         | 0:04                        | 0:12    |



| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway     |
|----------------------|------------|---------------|-----------------------------|-------------|
|                      | Kedatangan | Keberangkatan |                             |             |
| Aspada 120           | 14:02      | 14:07         | 0:05                        | 0:09        |
| Aspada 25            | 14:05      | 14:07         | 0:02                        | 0:00        |
| Aspada 14            | 14:11      | 14:13         | 0:02                        | 0:06        |
| Kopata 75            | 14:13      | 14:16         | 0:03                        | 0:03        |
| Kopata 87            | 14:16      | 14:19         | 0:03                        | 0:03        |
| Aspada 11            | 14:19      | 14:21         | 0:02                        | 0:02        |
| Aspada 65            | 14:22      | 14:28         | 0:06                        | 0:07        |
| Kopata 30            | 14:26      | 14:29         | 0:03                        | 0:01        |
| Aspada 19            | 14:29      | 14:32         | 0:03                        | 0:03        |
| Kopata 22            | 14:33      | 14:38         | 0:05                        | 0:06        |
| Kopata 65            | 14:40      | 14:45         | 0:04                        | 0:07        |
| Kopata 59            | 14:43      | 14:49         | 0:06                        | 0:04        |
| Aspada 15            | 14:46      | 14:48         | 0:02                        | 0:01        |
| Kopata 60            | 14:50      | 14:52         | 0:02                        | 0:04        |
| Aspada 100           | 14:53      | 14:56         | 0:03                        | 0:04        |
| Kopata 45            | 15:00      | 15:02         | 0:02                        | 0:06        |
| Kopata 128           | 15:03      | 15:06         | 0:03                        | 0:04        |
| Kopata 51            | 15:06      | 15:08         | 0:02                        | 0:02        |
| Kopata 66            | 15:11      | 15:15         | 0:04                        | 0:07        |
| Aspada 92            | 15:13      | 15:19         | 0:06                        | 0:04        |
| Kopata 62            | 15:17      | 15:20         | 0:03                        | 0:01        |
| Kopata 65            | 15:21      | 15:25         | 0:04                        | 0:05        |
| Aspada 25            | 15:23      | 15:29         | 0:06                        | 0:04        |
| Kopata 36            | 15:25      | 15:28         | 0:03                        | 0:01        |
| Kopata 19            | 15:29      | 15:31         | 0:02                        | 0:03        |
| Aspada 4             | 15:33      | 15:36         | 0:03                        | 0:05        |
| Kopata 66            | 15:39      | 15:41         | 0:02                        | 0:05        |
| Aspada 120           | 15:45      | 15:48         | 0:03                        | 0:07        |
| Aspada 14            | 15:47      | 15:49         | 0:02                        | 0:01        |
| Kopata 75            | 15:50      | 16:02         | 0:12                        | 0:13        |
| Kopata 87            | 15:54      | 16:00         | 0:06                        | 0:02        |
| Aspada 65            | 16:05      | 16:08         | 0:03                        | 0:08        |
| Kopata 30            | 16:06      | 16:09         | 0:03                        | 0:01        |
| Aspada 19            | 16:08      | 16:12         | 0:04                        | 0:03        |
| Kopata 22            | 16:10      | 16:17         | 0:07                        | 0:05        |
| Aspada 15            | 16:19      | 16:21         | 0:02                        | 0:04        |
| Aspada 100           | 16:23      | 16:26         | 0:03                        | 0:05        |
| Kopata 59            | 16:26      | 16:29         | 0:03                        | 0:03        |
| Kopata 60            | 16:33      | 16:36         | 0:03                        | 0:07        |
| Kopata 45            | 16:39      | 16:42         | 0:03                        | 0:06        |
| Kopata 65            | 16:42      | 16:46         | 0:04                        | 0:04        |
| Aspada 11            | 16:50      | 16:52         | 0:02                        | 0:06        |
| Kopata 51            | 16:54      | 16:59         | 0:05                        | 0:07        |
| Kopata 66            | 16:56      | 16:59         | 0:03                        | 0:00        |
| Aspada 62            | 16:58      | 17:01         | 0:03                        | 0:02        |
| Kopata 36            | 17:02      | 17:05         | 0:03                        | 0:04        |
| Kopata 19            | 17:05      | 17:08         | 0:03                        | 0:03        |
| Kopata 10            | 17:06      | 17:08         | 0:02                        | 0:00        |
| Aspada 4             | 17:09      | 17:11         | 0:02                        | 0:03        |
| Rata-rata            |            |               | <b>0:03</b>                 | <b>0:03</b> |

**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|   |                                    |
|---|------------------------------------|
| Hari/Tanggal :<br>Selasa / 11 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|---|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 25            | 7:12       | 7:16          | 0:04                        |         |
| Kopata 15            | 7:12       | 7:14          | 0:02                        | 0:02    |
| Aspada 30            | 7:14       | 7:16          | 0:02                        | 0:02    |
| Kopata 75            | 7:19       | 7:22          | 0:03                        | 0:06    |
| Kopata 117           | 7:23       | 7:25          | 0:02                        | 0:03    |
| Kopata 105           | 7:25       | 7:29          | 0:04                        | 0:04    |
| Aspada 57            | 7:27       | 7:31          | 0:04                        | 0:02    |
| Aspada 50            | 7:29       | 7:32          | 0:03                        | 0:01    |
| Kopata 28            | 7:31       | 7:33          | 0:02                        | 0:01    |
| Aspada 15            | 7:36       | 7:39          | 0:03                        | 0:06    |
| Kopata 32            | 7:37       | 7:41          | 0:04                        | 0:02    |
| Kopata 29            | 7:39       | 7:42          | 0:03                        | 0:01    |
| Kopata 97            | 7:41       | 7:44          | 0:03                        | 0:02    |
| Kopata 9             | 7:43       | 7:46          | 0:03                        | 0:02    |
| Aspada 66            | 7:47       | 7:51          | 0:04                        | 0:05    |
| Kopata 10            | 7:52       | 7:54          | 0:02                        | 0:03    |
| Aspada 90            | 7:53       | 7:55          | 0:02                        | 0:01    |
| Aspada 100           | 7:56       | 7:59          | 0:03                        | 0:04    |
| Aspada 120           | 7:59       | 8:01          | 0:02                        | 0:02    |
| Aspada 23            | 8:02       | 8:04          | 0:02                        | 0:03    |
| Aspada 35            | 8:09       | 8:11          | 0:02                        | 0:07    |
| Aspada 69            | 8:11       | 8:14          | 0:03                        | 0:03    |
| Kopata 74            | 8:15       | 8:17          | 0:02                        | 0:03    |
| kopata 44            | 8:16       | 8:19          | 0:03                        | 0:02    |
| Aspada 10            | 8:19       | 8:25          | 0:06                        | 0:06    |
| Kopata 8             | 8:25       | 8:29          | 0:04                        | 0:04    |
| Kopata 77            | 8:29       | 8:33          | 0:04                        | 0:04    |
| Kopata 72            | 8:33       | 8:36          | 0:03                        | 0:03    |
| Aspada 11            | 8:39       | 8:41          | 0:02                        | 0:05    |
| Kopata 36            | 8:44       | 8:46          | 0:02                        | 0:05    |
| Aspada 9             | 8:49       | 8:52          | 0:03                        | 0:06    |
| Kopata 27            | 8:57       | 8:59          | 0:02                        | 0:07    |
| Aspada 22            | 9:02       | 9:04          | 0:02                        | 0:05    |
| Aspada 57            | 9:09       | 9:13          | 0:04                        | 0:09    |
| Aspada 30            | 9:13       | 9:16          | 0:03                        | 0:03    |
| Aspada 25            | 9:15       | 9:18          | 0:03                        | 0:02    |
| Kopata 15            | 9:16       | 9:18          | 0:02                        | 0:00    |
| Kopata 117           | 9:19       | 9:21          | 0:02                        | 0:03    |
| Kopata 75            | 9:22       | 9:24          | 0:02                        | 0:03    |
| Kopata 105           | 9:26       | 9:30          | 0:04                        | 0:06    |
| Kopata 123           | 9:31       | 9:36          | 0:05                        | 0:06    |
| Kopata 32            | 9:35       | 9:41          | 0:06                        | 0:05    |
| Kopata 29            | 9:35       | 9:42          | 0:07                        | 0:01    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 97            | 9:39       | 9:43          | 0:04                        | 0:01    |
| Kopata 9             | 9:41       | 9:45          | 0:04                        | 0:02    |
| Aspada 66            | 9:43       | 9:48          | 0:05                        | 0:03    |
| Kopata 10            | 9:44       | 9:47          | 0:03                        | 0:01    |
| Aspada 90            | 9:46       | 9:49          | 0:03                        | 0:02    |
| Aspada 100           | 9:47       | 9:51          | 0:04                        | 0:02    |
| Aspada 120           | 9:48       | 9:50          | 0:02                        | 0:01    |
| Aspada 23            | 9:48       | 9:52          | 0:04                        | 0:02    |
| Aspada 35            | 9:52       | 9:54          | 0:02                        | 0:02    |
| Aspada 69            | 9:54       | 9:56          | 0:02                        | 0:02    |
| Kopata 74            | 9:55       | 9:58          | 0:03                        | 0:02    |
| kopata 44            | 9:55       | 10:00         | 0:05                        | 0:02    |
| Kopata 8             | 10:03      | 10:05         | 0:02                        | 0:05    |
| Kopata 72            | 10:13      | 10:23         | 0:10                        | 0:18    |
| Kopata 36            | 10:17      | 10:22         | 0:09                        | 0:01    |
| Kopata 27            | 10:19      | 10:23         | 0:04                        | 0:01    |
| Aspada 10            | 10:23      | 10:27         | 0:04                        | 0:04    |
| Kopata 77            | 10:27      | 10:31         | 0:04                        | 0:04    |
| Aspada 11            | 10:33      | 10:36         | 0:03                        | 0:05    |
| Aspada 22            | 10:43      | 10:44         | 0:01                        | 0:08    |
| Kopata 117           | 10:49      | 10:51         | 0:02                        | 0:07    |
| Kopata 15            | 10:55      | 10:58         | 0:03                        | 0:07    |
| Aspada 30            | 10:56      | 11:00         | 0:04                        | 0:02    |
| Aspada 25            | 11:02      | 11:04         | 0:02                        | 0:04    |
| Aspada 9             | 11:03      | 11:05         | 0:02                        | 0:01    |
| Kopata 75            | 11:11      | 11:15         | 0:04                        | 0:10    |
| Kopata 105           | 11:15      | 11:18         | 0:03                        | 0:03    |
| Kopata 123           | 11:17      | 11:21         | 0:04                        | 0:03    |
| Kopata 29            | 11:19      | 11:22         | 0:03                        | 0:01    |
| Kopata 9             | 11:23      | 11:25         | 0:02                        | 0:03    |
| Kopata 32            | 11:25      | 11:27         | 0:02                        | 0:02    |
| Kopata 10            | 11:27      | 11:29         | 0:02                        | 0:02    |
| Kopata 97            | 11:29      | 11:32         | 0:03                        | 0:03    |
| Aspada 100           | 11:33      | 11:36         | 0:03                        | 0:04    |
| Aspada 66            | 11:36      | 11:39         | 0:03                        | 0:03    |
| Aspada 90            | 11:43      | 11:48         | 0:05                        | 0:05    |
| kopata 44            | 11:46      | 11:47         | 0:01                        | 0:01    |
| Aspada 120           | 11:47      | 11:51         | 0:04                        | 0:04    |
| Aspada 35            | 11:52      | 11:55         | 0:03                        | 0:04    |
| Aspada 69            | 11:54      | 11:56         | 0:02                        | 0:01    |
| Kopata 74            | 11:56      | 11:58         | 0:02                        | 0:02    |
| Kopata 72            | 11:59      | 12:05         | 0:06                        | 0:07    |
| Kopata 8             | 12:00      | 12:04         | 0:04                        | 0:01    |
| Kopata 36            | 12:09      | 12:12         | 0:03                        | 0:08    |
| Kopata 27            | 12:10      | 12:15         | 0:05                        | 0:03    |
| Aspada 10            | 12:12      | 12:15         | 0:03                        | 0:00    |
| Konata 77            | 12:13      | 12:17         | 0:04                        | 0:02    |

| Waktu<br>n | Ke | Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|------------|----|----------------------|------------|---------------|-----------------------------|---------|
|            |    |                      | Kedatangan | Keberangkatan |                             |         |
|            |    | Kopata 117           | 13:19      | 13:21         | 0:02                        | 0:02    |
|            |    | Kopata 15            | 13:21      | 13:25         | 0:04                        | 0:04    |
|            |    | Aspada 30            | 13:23      | 13:26         | 0:03                        | 0:01    |
|            |    | Aspada 25            | 13:26      | 13:29         | 0:03                        | 0:03    |
|            |    | Kopata 75            | 13:31      | 13:33         | 0:02                        | 0:04    |
|            |    | Kopata 105           | 13:33      | 13:35         | 0:02                        | 0:02    |
|            |    | Aspada 9             | 13:39      | 13:41         | 0:02                        | 0:06    |
|            |    | Kopata 9             | 13:43      | 13:46         | 0:03                        | 0:05    |
|            |    | Kopata 97            | 13:48      | 13:51         | 0:03                        | 0:05    |
|            |    | Aspada 66            | 13:53      | 13:56         | 0:03                        | 0:05    |
|            |    | Kopata 29            | 13:56      | 13:59         | 0:03                        | 0:03    |
|            |    | Kopata 32            | 14:03      | 14:05         | 0:02                        | 0:06    |
|            |    | Kopata 10            | 14:04      | 14:10         | 0:06                        | 0:05    |
|            |    | kopata 44            | 14:05      | 14:09         | 0:04                        | 0:01    |
|            |    | Aspada 100           | 14:10      | 14:15         | 0:05                        | 0:06    |
|            |    | Aspada 23            | 14:13      | 14:17         | 0:04                        | 0:02    |
|            |    | Aspada 90            | 14:14      | 14:19         | 0:05                        | 0:02    |
|            |    | Aspada 120           | 14:16      | 14:20         | 0:04                        | 0:01    |
|            |    | Aspada 35            | 14:19      | 14:23         | 0:04                        | 0:03    |
|            |    | Aspada 69            | 14:23      | 14:26         | 0:03                        | 0:03    |
|            |    | Kopata 74            | 14:26      | 14:29         | 0:03                        | 0:03    |
|            |    | Kopata 72            | 14:29      | 14:33         | 0:04                        | 0:04    |
|            |    | Kopata 8             | 14:31      | 14:36         | 0:05                        | 0:03    |
|            |    | Kopata 36            | 14:32      | 14:38         | 0:06                        | 0:02    |
|            |    | Kopata 27            | 14:36      | 14:41         | 0:05                        | 0:03    |
|            |    | Aspada 10            | 14:39      | 14:45         | 0:06                        | 0:04    |
|            |    | Kopata 77            | 14:41      | 14:44         | 0:03                        | 0:01    |
|            |    | Kopata 8             | 14:42      | 14:45         | 0:03                        | 0:01    |
|            |    | Kopata 72            | 14:43      | 14:48         | 0:05                        | 0:03    |
|            |    | Kopata 36            | 14:44      | 14:51         | 0:07                        | 0:03    |
|            |    | Kopata 27            | 14:45      | 14:50         | 0:05                        | 0:01    |
|            |    | Aspada 10            | 14:49      | 14:52         | 0:03                        | 0:02    |
|            |    | Aspada 11            | 14:54      | 14:56         | 0:02                        | 0:04    |
|            |    | Kopata 35            | 14:59      | 15:04         | 0:05                        | 0:08    |
|            |    | Aspada 22            | 15:01      | 15:06         | 0:05                        | 0:02    |
|            |    | Kopata 15            | 15:04      | 15:08         | 0:04                        | 0:02    |
|            |    | Kopata 117           | 15:06      | 15:11         | 0:05                        | 0:03    |
|            |    | Aspada 25            | 15:11      | 15:15         | 0:04                        | 0:04    |
|            |    | Kopata 75            | 15:15      | 15:19         | 0:04                        | 0:04    |
|            |    | Aspada 30            | 15:19      | 15:21         | 0:02                        | 0:02    |
|            |    | Aspada 98            | 15:21      | 15:25         | 0:04                        | 0:04    |
|            |    | Aspada 23            | 15:23      | 15:29         | 0:06                        | 0:04    |
|            |    | Aspada 66            | 15:25      | 15:28         | 0:03                        | 0:05    |
|            |    | Kopata 105           | 15:29      | 15:33         | 0:04                        | 0:05    |
|            |    | Aspada 9             | 15:31      | 15:34         | 0:03                        | 0:01    |
|            |    | Kopata 9             | 15:33      | 15:36         | 0:03                        | 0:02    |
|            |    | Kopata 97            | 15:36      | 15:39         | 0:03                        | 0:03    |
|            |    | Kopata 44            | 15:39      | 15:42         | 0:03                        | 0:03    |
|            |    | Kopata 29            | 15:41      | 15:45         | 0:04                        | 0:03    |
|            |    | Kopata 32            | 15:43      | 15:46         | 0:03                        | 0:01    |

**Headway Bis Kota Jalur 04**  
**Kota Jogjakarta**

|   |                                      |
|---|--------------------------------------|
| Hari/Tanggal :<br>Selasa / 18 Juni 2002 | Ruas Jalan :<br>Terminal Umbul Harjo |
|---|--------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 115           | 7:27       | 7:29          | 0:02                        |         |
| Aspada 3             | 7:30       | 7:32          | 0:02                        | 0:03    |
| Kopata 46            | 7:32       | 7:34          | 0:02                        | 0:02    |
| Aspada 99            | 7:34       | 7:36          | 0:02                        | 0:02    |
| Kopata 2             | 7:36       | 7:38          | 0:02                        | 0:02    |
| Kopata 17            | 7:40       | 7:42          | 0:02                        | 0:04    |
| Kopata 36            | 7:42       | 7:45          | 0:03                        | 0:03    |
| Aspada 100           | 7:45       | 7:48          | 0:03                        | 0:03    |
| Aspada 84            | 7:47       | 7:51          | 0:04                        | 0:03    |
| Kopata 56            | 7:49       | 7:52          | 0:03                        | 0:01    |
| Aspada 66            | 7:50       | 7:53          | 0:03                        | 0:01    |
| Kopata 19            | 7:51       | 7:54          | 0:03                        | 0:01    |
| Kopata 65            | 7:52       | 7:56          | 0:04                        | 0:02    |
| Kopata 117           | 7:53       | 7:59          | 0:06                        | 0:03    |
| Kopata 44            | 8:00       | 8:03          | 0:03                        | 0:04    |
| Aspada 89            | 8:04       | 8:08          | 0:04                        | 0:05    |
| Aspada 120           | 8:12       | 8:16          | 0:04                        | 0:08    |
| Kopata 66            | 8:16       | 8:19          | 0:03                        | 0:03    |
| Kopata 50            | 8:21       | 8:23          | 0:02                        | 0:04    |
| Aspada 85            | 8:27       | 8:29          | 0:02                        | 0:06    |
| Aspada 92            | 8:32       | 8:34          | 0:02                        | 0:05    |
| Aspada 156           | 8:33       | 8:36          | 0:03                        | 0:02    |
| Aspada 97            | 8:39       | 8:42          | 0:03                        | 0:06    |
| Kopata 75            | 8:45       | 8:48          | 0:03                        | 0:06    |
| Kopata 26            | 8:48       | 8:50          | 0:02                        | 0:02    |
| Kopata 22            | 8:50       | 8:52          | 0:02                        | 0:02    |
| Aspada 8             | 8:55       | 8:59          | 0:04                        | 0:07    |
| Kopata 46            | 9:01       | 9:06          | 0:05                        | 0:07    |
| Kopata 2             | 9:04       | 9:08          | 0:04                        | 0:02    |
| Kopata 115           | 9:09       | 9:12          | 0:03                        | 0:04    |
| Aspada 3             | 9:13       | 9:16          | 0:03                        | 0:04    |
| Aspada 46            | 9:15       | 9:18          | 0:03                        | 0:02    |
| Aspada 99            | 9:17       | 9:21          | 0:04                        | 0:03    |
| Aspada 100           | 9:19       | 9:23          | 0:04                        | 0:02    |
| Kopata 17            | 9:21       | 9:25          | 0:04                        | 0:02    |
| Kopata 36            | 9:25       | 9:27          | 0:02                        | 0:02    |
| Aspada 84            | 9:31       | 9:35          | 0:04                        | 0:08    |
| Kopata 56            | 9:32       | 9:37          | 0:05                        | 0:02    |
| Aspada 66            | 9:34       | 9:36          | 0:02                        | 0:01    |
| Kopata 65            | 9:36       | 9:40          | 0:04                        | 0:04    |
| Kopata 117           | 9:39       | 9:42          | 0:03                        | 0:02    |
| Kopata 19            | 9:41       | 9:43          | 0:02                        | 0:01    |
| Kopata 44            | 9:43       | 9:45          | 0:02                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 50            | 9:46       | 9:48          | 0:02                        | 0:03    |
| Aspada 120           | 9:52       | 9:53          | 0:01                        | 0:05    |
| Aspada 156           | 9:54       | 9:56          | 0:02                        | 0:03    |
| Aspada 89            | 9:56       | 9:59          | 0:03                        | 0:03    |
| Kopata 66            | 10:00      | 10:05         | 0:05                        | 0:06    |
| Kopata 26            | 10:04      | 10:06         | 0:02                        | 0:01    |
| Aspada 85            | 10:08      | 10:12         | 0:04                        | 0:06    |
| Aspada 92            | 10:10      | 10:15         | 0:05                        | 0:03    |
| Aspada 97            | 10:13      | 10:16         | 0:03                        | 0:01    |
| Kopata 75            | 10:15      | 10:19         | 0:04                        | 0:03    |
| Kopata 22            | 10:19      | 10:22         | 0:03                        | 0:03    |
| Aspada 8             | 10:21      | 10:26         | 0:05                        | 0:04    |
| Aspada 21            | 10:25      | 10:28         | 0:03                        | 0:02    |
| Kopata 2             | 10:28      | 10:32         | 0:04                        | 0:04    |
| Kopata 115           | 10:31      | 10:35         | 0:04                        | 0:03    |
| Aspada 3             | 10:33      | 10:36         | 0:03                        | 0:01    |
| Aspada 46            | 10:36      | 10:39         | 0:03                        | 0:03    |
| Aspada 100           | 10:39      | 10:46         | 0:07                        | 0:07    |
| Kopata 36            | 10:45      | 10:48         | 0:03                        | 0:02    |
| Kopata 56            | 10:51      | 10:53         | 0:02                        | 0:05    |
| Aspada 66            | 10:53      | 10:56         | 0:03                        | 0:03    |
| Kopata 117           | 10:56      | 11:00         | 0:04                        | 0:04    |
| Aspada 99            | 11:02      | 11:04         | 0:02                        | 0:04    |
| Kopata 17            | 11:06      | 11:07         | 0:01                        | 0:03    |
| Aspada 84            | 11:11      | 11:15         | 0:04                        | 0:08    |
| Kopata 65            | 11:16      | 11:18         | 0:02                        | 0:03    |
| Kopata 19            | 11:21      | 11:25         | 0:04                        | 0:07    |
| Aspada 21            | 12:20      | 12:25         | 0:05                        |         |
| Aspada 100           | 12:21      | 12:26         | 0:05                        | 0:01    |
| Kopata 2             | 12:23      | 12:25         | 0:02                        | 0:01    |
| Kopata 115           | 12:27      | 12:29         | 0:02                        | 0:04    |
| Aspada 46            | 12:33      | 12:36         | 0:03                        | 0:07    |
| Kopata 56            | 12:39      | 12:41         | 0:02                        | 0:05    |
| Kopata 36            | 12:41      | 12:48         | 0:07                        | 0:07    |
| Aspada 99            | 12:43      | 12:46         | 0:03                        | 0:02    |
| Aspada 66            | 12:45      | 12:48         | 0:03                        | 0:02    |
| Kopata 117           | 12:47      | 12:49         | 0:02                        | 0:01    |
| Aspada 33            | 12:48      | 12:52         | 0:04                        | 0:03    |
| Kopata 17            | 12:49      | 12:54         | 0:05                        | 0:02    |
| Aspada 84            | 12:52      | 12:55         | 0:03                        | 0:01    |
| Kopata 65            | 12:54      | 12:56         | 0:02                        | 0:01    |
| Kopata 19            | 12:56      | 12:58         | 0:02                        | 0:02    |
| Aspada 156           | 13:02      | 13:05         | 0:03                        | 0:07    |
| Kopata 50            | 13:05      | 13:08         | 0:03                        | 0:03    |
| Aspada 120           | 13:09      | 13:12         | 0:03                        | 0:04    |
| Kopata 66            | 13:10      | 13:14         | 0:04                        | 0:02    |
| Aspada 89            | 13:11      | 13:13         | 0:02                        | 0:01    |
| Kopata 26            | 13:13      | 13:19         | 0:06                        | 0:06    |
| Aspada 85            | 13:15      | 13:17         | 0:02                        | 0:02    |
| Aspada 92            | 13:17      | 13:21         | 0:04                        | 0:04    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 97            | 13:21      | 13:25         | 0:04                        | 0:04    |
| Kopata 75            | 13:25      | 13:28         | 0:03                        | 0:03    |
| Aspada 8             | 13:32      | 13:36         | 0:04                        | 0:08    |
| Aspada 21            | 13:33      | 13:39         | 0:06                        | 0:03    |
| Kopata 115           | 13:41      | 13:45         | 0:04                        | 0:06    |
| Aspada 3             | 13:46      | 13:49         | 0:03                        | 0:04    |
| Kopata 22            | 13:50      | 13:56         | 0:06                        | 0:07    |
| Kopata 36            | 13:52      | 13:58         | 0:06                        | 0:02    |
| Kopata 56            | 13:54      | 13:57         | 0:03                        | 0:01    |
| Kopata 117           | 14:00      | 14:04         | 0:04                        | 0:07    |
| Aspada 99            | 14:05      | 14:08         | 0:03                        | 0:04    |
| Aspada 84            | 14:10      | 14:12         | 0:02                        | 0:04    |
| Kopata 19            | 14:16      | 14:21         | 0:05                        | 0:09    |
| Kopata 2             | 14:19      | 14:22         | 0:03                        | 0:01    |
| Aspada 46            | 14:23      | 14:25         | 0:02                        | 0:03    |
| Aspada 100           | 14:25      | 14:29         | 0:04                        | 0:04    |
| Aspada 66            | 14:29      | 14:32         | 0:03                        | 0:03    |
| Kopata 65            | 14:35      | 14:39         | 0:04                        | 0:07    |
| Kopata 17            | 14:39      | 14:41         | 0:02                        | 0:02    |
| Aspada 21            | 14:41      | 14:43         | 0:02                        | 0:02    |
| Aspada 33            | 14:44      | 14:48         | 0:04                        | 0:05    |
| Aspada 156           | 14:46      | 14:49         | 0:03                        | 0:01    |
| Kopata 50            | 14:52      | 14:56         | 0:04                        | 0:07    |
| Aspada 120           | 14:56      | 15:00         | 0:04                        | 0:04    |
| Kopata 117           | 15:02      | 15:05         | 0:03                        | 0:05    |
| Aspada 92            | 15:06      | 15:09         | 0:03                        | 0:04    |
| Aspada 97            | 15:08      | 15:11         | 0:03                        | 0:02    |
| Kopata 75            | 15:10      | 15:16         | 0:06                        | 0:05    |
| Aspada 8             | 15:14      | 15:16         | 0:02                        | 0:00    |
| Aspada 21            | 15:17      | 15:19         | 0:02                        | 0:03    |
| Kopata 115           | 15:18      | 15:22         | 0:04                        | 0:03    |
| Aspada 3             | 15:19      | 15:24         | 0:05                        | 0:02    |
| Kopata 22            | 15:25      | 15:28         | 0:03                        | 0:04    |
| Kopata 36            | 15:31      | 15:33         | 0:02                        | 0:05    |
| Kopata 56            | 15:33      | 15:36         | 0:03                        | 0:03    |
| Aspada 99            | 15:36      | 15:40         | 0:04                        | 0:04    |
| Kopata 19            | 15:43      | 15:45         | 0:02                        | 0:05    |
| Aspada 46            | 15:49      | 15:51         | 0:02                        | 0:06    |
| Kopata 117           | 15:54      | 15:58         | 0:04                        | 0:07    |
| Kopata 65            | 15:56      | 16:00         | 0:04                        | 0:02    |
| Aspada 21            | 16:02      | 16:05         | 0:03                        | 0:05    |
| Kopata 2             | 16:06      | 16:08         | 0:02                        | 0:03    |
| Aspada 84            | 16:07      | 16:10         | 0:03                        | 0:02    |
| Aspada 66            | 16:13      | 16:15         | 0:02                        | 0:05    |
| Kopata 17            | 16:15      | 16:18         | 0:03                        | 0:03    |
| Aspada 100           | 16:21      | 16:25         | 0:04                        | 0:07    |
| Aspada 33            | 16:27      | 16:30         | 0:03                        | 0:05    |
| Aspada 156           | 16:33      | 16:36         | 0:03                        | 0:06    |
| Aspada 120           | 16:40      | 16:42         | 0:02                        | 0:06    |
| Kopata 50            | 16:46      | 16:49         | 0:03                        | 0:07    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 117           | 16:51      | 16:53         | 0:02                        | 0:04    |
| Kopata 22            | 16:54      | 16:57         | 0:03                        | 0:04    |
| Kopata 36            | 16:55      | 16:58         | 0:03                        | 0:01    |
| Kopata 56            | 16:59      | 17:02         | 0:03                        | 0:04    |
| Aspada 21            | 17:03      | 17:05         | 0:02                        | 0:03    |
| Rata-rata            |            |               | 0:03                        | 0:06    |





**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|   |                                      |
|---|--------------------------------------|
| Hari/Tanggal :<br>Selasa / 25 Juni 2002 | Ruas Jalan :<br>Terminal Umbul Harjo |
|---|--------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 64            | 7:26       | 7:29          | 0:03                        |         |
| Kopata 88            | 7:30       | 7:32          | 0:02                        | 0:03    |
| Kopata 90            | 7:34       | 7:38          | 0:04                        | 0:06    |
| Kopata 100           | 7:36       | 7:40          | 0:04                        | 0:02    |
| Kopata 83            | 7:38       | 7:40          | 0:02                        | 0:00    |
| Aspada 43            | 7:38       | 7:42          | 0:04                        | 0:02    |
| Aspada 12            | 7:41       | 7:43          | 0:02                        | 0:01    |
| Kopata 9             | 7:43       | 7:46          | 0:03                        | 0:03    |
| Kopata 12            | 7:46       | 7:49          | 0:03                        | 0:03    |
| Kopata 7             | 7:48       | 7:51          | 0:03                        | 0:02    |
| Kopata 64            | 7:54       | 7:57          | 0:03                        | 0:06    |
| Aspada 55            | 7:57       | 7:59          | 0:02                        | 0:02    |
| Aspada 160           | 8:01       | 8:04          | 0:03                        | 0:05    |
| Aspada 87            | 8:02       | 8:06          | 0:04                        | 0:02    |
| Aspada 79            | 8:04       | 8:10          | 0:06                        | 0:04    |
| Aspada 33            | 8:09       | 8:11          | 0:02                        | 0:01    |
| Aspada 10            | 8:13       | 8:15          | 0:02                        | 0:04    |
| Kopata 68            | 8:17       | 8:21          | 0:04                        | 0:06    |
| Aspada 128           | 8:20       | 8:23          | 0:03                        | 0:02    |
| Kopata 59            | 8:23       | 8:26          | 0:03                        | 0:03    |
| Kopata 70            | 8:29       | 8:31          | 0:02                        | 0:05    |
| Aspada 52            | 8:32       | 8:36          | 0:04                        | 0:05    |
| Kopata 23            | 8:36       | 8:39          | 0:03                        | 0:03    |
| Kopata 120           | 8:41       | 8:43          | 0:02                        | 0:04    |
| Kopata 26            | 8:45       | 8:48          | 0:03                        | 0:05    |
| Aspada 8             | 8:49       | 8:52          | 0:03                        | 0:04    |
| Aspada 52            | 8:52       | 8:56          | 0:04                        | 0:04    |
| Kopata 119           | 8:54       | 8:57          | 0:03                        | 0:01    |
| Aspada 64            | 8:56       | 9:01          | 0:05                        | 0:04    |
| Kopata 100           | 8:58       | 9:02          | 0:04                        | 0:01    |
| Kopata 88            | 9:03       | 9:05          | 0:02                        | 0:03    |
| Aspada 12            | 9:11       | 9:13          | 0:02                        | 0:08    |
| Aspada 43            | 9:13       | 9:15          | 0:02                        | 0:02    |
| Kopata 83            | 9:15       | 9:17          | 0:02                        | 0:02    |
| Kopata 9             | 9:17       | 9:18          | 0:01                        | 0:01    |
| Kopata 7             | 9:19       | 9:23          | 0:04                        | 0:05    |
| Aspada 160           | 9:21       | 9:25          | 0:04                        | 0:02    |
| Kopata 12            | 9:23       | 9:28          | 0:05                        | 0:03    |
| Kopata 64            | 9:27       | 9:29          | 0:02                        | 0:01    |
| Aspada 55            | 9:31       | 9:32          | 0:01                        | 0:03    |
| Aspada 87            | 9:36       | 9:38          | 0:02                        | 0:06    |
| Aspada 79            | 9:41       | 9:44          | 0:03                        | 0:06    |
| Aspada 33            | 9:45       | 9:48          | 0:03                        | 0:04    |
| Aspada 10            | 9:48       | 9:50          | 0:02                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Aspada 156           | 9:50       | 9:52          | 0:02                        | 0:02    |
| Aspada 128           | 9:52       | 9:53          | 0:01                        | 0:01    |
| Kopata 59            | 9:53       | 9:56          | 0:03                        | 0:03    |
| Aspada 52            | 9:58       | 10:00         | 0:02                        | 0:04    |
| Kopata 70            | 10:01      | 10:03         | 0:02                        | 0:03    |
| Kopata 120           | 10:03      | 10:06         | 0:03                        | 0:03    |
| Kopata 26            | 10:05      | 10:09         | 0:04                        | 0:03    |
| Aspada 52            | 10:11      | 10:16         | 0:05                        | 0:07    |
| Aspada 8             | 10:17      | 10:19         | 0:02                        | 0:03    |
| Kopata 23            | 10:23      | 10:25         | 0:02                        | 0:06    |
| Kopata 119           | 10:29      | 10:31         | 0:02                        | 0:06    |
| Kopata 68            | 10:33      | 10:39         | 0:06                        | 0:08    |
| Aspada 64            | 10:41      | 10:43         | 0:02                        | 0:04    |
| Kopata 88            | 10:45      | 10:48         | 0:03                        | 0:05    |
| Kopata 100           | 10:50      | 10:56         | 0:06                        | 0:08    |
| Aspada 12            | 10:54      | 10:58         | 0:04                        | 0:02    |
| Aspada 43            | 11:00      | 11:03         | 0:03                        | 0:05    |
| Kopata 7             | 11:03      | 11:06         | 0:03                        | 0:03    |
| Kopata 9             | 11:06      | 11:10         | 0:04                        | 0:04    |
| Aspada 160           | 11:12      | 11:16         | 0:04                        | 0:06    |
| Kopata 64            | 11:15      | 11:17         | 0:02                        | 0:01    |
| Aspada 33            | 11:19      | 11:20         | 0:01                        | 0:03    |
| Aspada 79            | 11:21      | 11:25         | 0:04                        | 0:05    |
| Aspada 10            | 11:25      | 11:31         | 0:06                        | 0:06    |
| Aspada 55            | 11:27      | 11:34         | 0:07                        | 0:03    |
| Kopata 12            | 11:32      | 11:34         | 0:02                        | 0:00    |
| Aspada 87            | 11:35      | 11:36         | 0:01                        | 0:02    |
| Aspada 156           | 11:41      | 11:46         | 0:05                        | 0:10    |
| Kopata 70            | 11:43      | 11:45         | 0:02                        | 0:01    |
| Kopata 120           | 11:46      | 11:48         | 0:02                        | 0:03    |
| Kopata 26            | 11:48      | 11:51         | 0:03                        | 0:03    |
| Aspada 52            | 11:49      | 11:53         | 0:04                        | 0:02    |
| Aspada 8             | 11:50      | 11:54         | 0:04                        | 0:01    |
| Kopata 23            | 11:53      | 11:56         | 0:03                        | 0:02    |
| Kopata 119           | 11:56      | 11:59         | 0:03                        | 0:03    |
| Kopata 68            | 11:54      | 12:01         | 0:07                        | 0:02    |
| Aspada 64            | 11:59      | 12:06         | 0:07                        | 0:05    |
| Kopata 88            | 12:00      | 12:04         | 0:04                        | 0:02    |
| Kopata 100           | 12:02      | 12:05         | 0:03                        | 0:01    |
| Aspada 43            | 12:06      | 12:09         | 0:03                        | 0:04    |
| Kopata 9             | 13:12      | 13:16         | 0:04                        |         |
| Kopata 143           | 13:14      | 13:19         | 0:05                        | 0:03    |
| Aspada 12            | 13:19      | 13:21         | 0:02                        | 0:02    |
| Aspada 79            | 13:25      | 13:28         | 0:03                        | 0:07    |
| Aspada 10            | 13:31      | 13:35         | 0:04                        | 0:07    |
| Aspada 55            | 13:36      | 13:39         | 0:03                        | 0:04    |
| Kopata 12            | 13:42      | 13:45         | 0:03                        | 0:06    |
| Aspada 87            | 13:48      | 13:51         | 0:03                        | 0:06    |
| Kopata 7             | 13:52      | 13:55         | 0:03                        | 0:04    |
| Aspada 160           | 13:56      | 13:58         | 0:02                        | 0:03    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 64            | 13:58      | 14:02         | 0:04                        | 0:04    |
| Kopata 143           | 14:05      | 14:09         | 0:04                        | 0:07    |
| Aspada 33            | 14:07      | 14:11         | 0:04                        | 0:02    |
| Kopata 68            | 14:10      | 14:15         | 0:05                        | 0:04    |
| Kopata 119           | 14:11      | 14:14         | 0:03                        | 0:01    |
| Aspada 79            | 14:13      | 14:17         | 0:04                        | 0:03    |
| Aspada 64            | 14:15      | 14:19         | 0:04                        | 0:02    |
| Kopata 88            | 14:17      | 14:22         | 0:05                        | 0:03    |
| Kopata 100           | 14:21      | 14:26         | 0:05                        | 0:04    |
| Aspada 43            | 14:25      | 14:28         | 0:03                        | 0:02    |
| Kopata 9             | 14:29      | 14:33         | 0:04                        | 0:05    |
| Aspada 87            | 14:32      | 14:35         | 0:03                        | 0:02    |
| Aspada 12            | 14:33      | 14:36         | 0:03                        | 0:01    |
| Aspada 10            | 14:37      | 14:39         | 0:02                        | 0:03    |
| Aspada 55            | 14:41      | 14:44         | 0:03                        | 0:05    |
| Kopata 12            | 14:43      | 14:46         | 0:03                        | 0:02    |
| Kopata 7             | 14:48      | 14:51         | 0:03                        | 0:05    |
| Aspada 160           | 14:51      | 14:53         | 0:02                        | 0:02    |
| Kopata 88            | 14:54      | 14:58         | 0:04                        | 0:05    |
| Kopata 100           | 14:56      | 14:58         | 0:02                        | 0:00    |
| Kopata 9             | 15:00      | 15:03         | 0:03                        | 0:05    |
| Aspada 43            | 15:04      | 15:06         | 0:02                        | 0:03    |
| Aspada 77            | 15:07      | 15:09         | 0:02                        | 0:03    |
| Kopata 143           | 15:08      | 15:15         | 0:07                        | 0:06    |
| Aspada 55            | 15:12      | 15:16         | 0:04                        | 0:01    |
| Kopata 12            | 15:14      | 15:17         | 0:03                        | 0:01    |
| Aspada 87            | 15:19      | 15:21         | 0:02                        | 0:04    |
| Kopata 7             | 15:23      | 15:25         | 0:02                        | 0:04    |
| Aspada 160           | 15:25      | 15:27         | 0:02                        | 0:02    |
| Kopata 64            | 15:27      | 15:29         | 0:02                        | 0:02    |
| Kopata 143           | 15:29      | 15:33         | 0:04                        | 0:04    |
| Aspada 33            | 15:31      | 15:36         | 0:05                        | 0:03    |
| Kopata 68            | 15:33      | 15:37         | 0:04                        | 0:01    |
| Kopata 1             | 15:36      | 15:38         | 0:02                        | 0:01    |
| Kopata 119           | 15:42      | 15:45         | 0:03                        | 0:07    |
| Kopata 100           | 15:46      | 15:48         | 0:02                        | 0:03    |
| Aspada 64            | 15:52      | 15:54         | 0:02                        | 0:06    |
| Kopata 88            | 15:58      | 16:00         | 0:02                        | 0:06    |
| Aspada 43            | 16:01      | 16:05         | 0:04                        | 0:05    |
| Kopata 9             | 16:04      | 16:06         | 0:02                        | 0:01    |
| Aspada 87            | 16:08      | 16:12         | 0:04                        | 0:06    |
| Aspada 12            | 16:11      | 16:15         | 0:04                        | 0:03    |
| Aspada 10            | 16:13      | 16:15         | 0:02                        | 0:00    |
| Aspada 55            | 16:16      | 16:19         | 0:03                        | 0:04    |
| Kopata 12            | 16:19      | 16:23         | 0:04                        | 0:04    |
| Kopata 7             | 16:20      | 16:25         | 0:05                        | 0:02    |
| Aspada 160           | 16:21      | 16:24         | 0:03                        | 0:01    |
| Kopata 88            | 16:25      | 16:29         | 0:04                        | 0:05    |
| Kopata 100           | 16:29      | 16:27         | 0:02                        | 0:02    |
| Kopata 9             | 16:31      | 16:33         | 0:02                        | 0:06    |

| Nomor Lambung Bis | Waktu      |               | Waktu Tunggu Di terminal | Headway |
|-------------------|------------|---------------|--------------------------|---------|
|                   | Kedatangan | Keberangkatan |                          |         |
| Aspada 77         | 16:34      | 16:36         | 0:02                     | 0:03    |
| Aspada 55         | 16:37      | 16:40         | 0:03                     | 0:04    |
| Kopata 12         | 16:38      | 16:42         | 0:04                     | 0:02    |
| Kopata 143        | 16:43      | 16:46         | 0:03                     | 0:04    |
| Aspada 160        | 16:46      | 16:50         | 0:04                     | 0:04    |
| Kopata 64         | 16:48      | 16:52         | 0:04                     | 0:02    |
| Aspada 33         | 16:54      | 16:59         | 0:05                     | 0:07    |
| Aspada 43         | 16:57      | 16:59         | 0:02                     | 0:00    |
| Kopata 7          | 16:59      | 17:03         | 0:04                     | 0:04    |
| Aspada 87         | 17:02      | 17:05         | 0:03                     | 0:02    |
| Kopata 143        | 17:03      | 17:09         | 0:06                     | 0:04    |
| Kopata 68         | 17:10      | 17:14         | 0:04                     | 0:05    |
| Kopata 1          | 17:14      |               |                          |         |
| Rata-rata         |            |               | 0:03                     | 0:03    |



**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|  |                                    |
|--|------------------------------------|
| Hari/Tanggal :<br>Minggu / 9 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|--|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 115           | 7:11       | 7:14          | 0:03                        |         |
| Kopata 36            | 7:12       | 7:16          | 0:04                        | 0:02    |
| Kopata 20            | 7:14       | 7:18          | 0:04                        | 0:02    |
| Puskopkar 23         | 7:16       | 7:19          | 0:03                        | 0:01    |
| Puskopkar 114        | 7:19       | 7:21          | 0:02                        | 0:02    |
| Kopata 17            | 7:23       | 7:25          | 0:02                        | 0:04    |
| Puskopkar 82         | 7:25       | 7:28          | 0:03                        | 0:03    |
| Kopata 135           | 7:26       | 7:29          | 0:03                        | 0:01    |
| Puskopkar 12         | 7:29       | 7:31          | 0:02                        | 0:02    |
| Puskopkar 9          | 7:30       | 7:32          | 0:02                        | 0:01    |
| Puskopkar 18         | 7:32       | 7:34          | 0:02                        | 0:02    |
| Kopata 140           | 7:34       | 7:39          | 0:05                        | 0:05    |
| Kopata 120           | 7:36       | 7:41          | 0:05                        | 0:02    |
| Kopata 125           | 7:39       | 7:43          | 0:04                        | 0:02    |
| Puskopkar 38         | 7:43       | 7:45          | 0:02                        | 0:02    |
| Puskopkar 40         | 7:45       | 7:48          | 0:03                        | 0:03    |
| Kopata 110           | 7:49       | 7:49          | 0:00                        | 0:01    |
| Kopata 20            | 7:55       | 7:57          | 0:02                        | 0:08    |
| Puskopkar 10         | 8:00       | 8:02          | 0:02                        | 0:05    |
| Puskopkar 76         | 8:02       | 8:05          | 0:03                        | 0:03    |
| Kopata 36            | 8:06       | 8:11          | 0:05                        | 0:06    |
| Puskopkar 48         | 8:11       | 8:13          | 0:02                        | 0:02    |
| Puskopkar 72         | 8:13       | 8:16          | 0:03                        | 0:03    |
| Kopata 100           | 8:15       | 8:19          | 0:04                        | 0:03    |
| Kopata 116           | 8:19       | 8:21          | 0:02                        | 0:02    |
| Puskopkar 28         | 8:20       | 8:23          | 0:03                        | 0:02    |
| Kopata 2             | 8:20       | 8:24          | 0:04                        | 0:01    |
| Puskopkar 51         | 8:23       | 8:26          | 0:03                        | 0:02    |
| Puskopkar 98         | 8:24       | 8:29          | 0:05                        | 0:03    |
| Puskopkar 30         | 8:29       | 8:31          | 0:02                        | 0:02    |
| Kopata 115           | 8:32       | 8:34          | 0:02                        | 0:03    |
| Puskopkar 82         | 8:49       | 8:52          | 0:03                        | 0:18    |
| Kopata 135           | 8:55       | 8:59          | 0:04                        | 0:07    |
| Puskopkar 23         | 8:56       | 9:00          | 0:04                        | 0:01    |
| Puskopkar 12         | 8:59       | 9:03          | 0:04                        | 0:03    |
| Puskopkar 9          | 9:05       | 9:08          | 0:03                        | 0:05    |
| Puskopkar 18         | 9:06       | 9:11          | 0:05                        | 0:03    |
| Kopata 140           | 9:10       | 9:12          | 0:02                        | 0:01    |
| Kopata 120           | 9:12       | 9:15          | 0:03                        | 0:03    |
| Kopata 125           | 9:16       | 9:19          | 0:03                        | 0:04    |
| Puskopkar 40         | 9:19       | 9:22          | 0:03                        | 0:03    |
| Puskopkar 38         | 9:23       | 9:26          | 0:03                        | 0:04    |
| Kopata 110           | 9:25       | 9:28          | 0:03                        | 0:02    |
| Kopata 20            | 9:30       | 9:35          | 0:05                        | 0:07    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Puskopkar 10         | 9:36       | 9:39          | 0:03                        | 0:04    |
| Puskopkar 76         | 9:39       | 9:41          | 0:02                        | 0:02    |
| Kopata 36            | 9:43       | 9:48          | 0:05                        | 0:07    |
| Puskopkar 72         | 9:54       | 9:56          | 0:02                        | 0:08    |
| Puskopkar 48         | 9:56       | 10:00         | 0:04                        | 0:04    |
| Kopata 100           | 10:00      | 10:04         | 0:04                        | 0:04    |
| Kopata 116           | 10:05      | 10:11         | 0:06                        | 0:07    |
| Puskopkar 28         | 10:09      | 10:13         | 0:04                        | 0:02    |
| Kopata 2             | 10:11      | 10:15         | 0:04                        | 0:02    |
| Puskopkar 98         | 10:15      | 10:19         | 0:04                        | 0:04    |
| Puskopkar 51         | 10:19      | 10:25         | 0:06                        | 0:06    |
| Puskopkar 23         | 10:27      | 10:29         | 0:02                        | 0:04    |
| Puskopkar 12         | 10:36      | 10:39         | 0:03                        | 0:10    |
| Puskopkar 4          | 10:39      | 10:42         | 0:03                        | 0:03    |
| Puskopkar 9          | 10:41      | 10:43         | 0:02                        | 0:01    |
| Puskopkar 18         | 10:47      | 10:49         | 0:02                        | 0:06    |
| Kopata 140           | 10:53      | 10:56         | 0:03                        | 0:07    |
| Kopata 120           | 10:56      | 10:59         | 0:03                        | 0:03    |
| Kopata 125           | 10:59      | 11:03         | 0:04                        | 0:04    |
| Puskopkar 40         | 11:03      | 11:06         | 0:03                        | 0:03    |
| Puskopkar 38         | 11:08      | 11:10         | 0:02                        | 0:04    |
| Kopata 110           | 11:13      | 11:16         | 0:03                        | 0:06    |
| Kopata 20            | 11:16      | 11:19         | 0:03                        | 0:03    |
| Puskopkar 10         | 11:19      | 11:23         | 0:04                        | 0:04    |
| Kopata 36            | 11:21      | 11:26         | 0:05                        | 0:03    |
| Puskopkar 76         | 11:25      | 11:29         | 0:04                        | 0:03    |
| Puskopkar 72         | 11:29      | 11:32         | 0:03                        | 0:03    |
| Puskopkar 48         | 11:36      | 11:38         | 0:02                        | 0:06    |
| Kopata 100           | 11:39      | 11:42         | 0:03                        | 0:04    |
| Puskopkar 28         | 11:43      | 11:45         | 0:02                        | 0:03    |
| Kopata 116           | 11:46      | 11:48         | 0:02                        | 0:03    |
| Kopata 2             | 11:49      | 11:51         | 0:02                        | 0:03    |
| Puskopkar 23         | 11:52      | 11:54         | 0:02                        | 0:03    |
| Puskopkar 98         | 11:56      | 11:59         | 0:03                        | 0:05    |
| Puskopkar 114        | 13:15      | 13:17         | 0:02                        | 1:18    |
| Puskopkar 51         | 13:17      | 13:21         | 0:04                        | 0:04    |
| Puskopkar 23         | 13:19      | 13:25         | 0:06                        | 0:04    |
| Puskopkar 12         | 13:21      | 13:26         | 0:05                        | 0:01    |
| Puskopkar 64         | 13:24      | 13:28         | 0:04                        | 0:02    |
| Puskopkar 9          | 13:26      | 13:28         | 0:02                        | 0:00    |
| Puskopkar 18         | 13:29      | 13:31         | 0:02                        | 0:03    |
| Kopata 140           | 13:32      | 13:36         | 0:04                        | 0:05    |
| Kopata 120           | 13:34      | 13:39         | 0:05                        | 0:03    |
| Kopata 125           | 13:38      | 13:42         | 0:04                        | 0:03    |
| Puskopkar 40         | 13:42      | 13:46         | 0:04                        | 0:04    |
| Puskopkar 38         | 13:46      | 13:49         | 0:03                        | 0:03    |
| Kopata 10            | 13:49      | 13:52         | 0:03                        | 0:03    |
| Kopata 110           | 13:54      | 13:58         | 0:04                        | 0:06    |
| Kopata 20            | 13:56      | 14:00         | 0:04                        | 0:02    |
| Puskopkar 10         | 14:02      | 14:06         | 0:04                        | 0:06    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 36            | 14:08      | 14:11         | 0:03                        | 0:05    |
| Puskopkar 76         | 14:13      | 14:19         | 0:06                        | 0:08    |
| Puskopkar 13         | 14:14      | 14:21         | 0:07                        | 0:02    |
| Puskopkar 72         | 14:20      | 14:24         | 0:04                        | 0:03    |
| Puskopkar 48         | 14:24      | 14:26         | 0:02                        | 0:02    |
| Kopata 100           | 14:29      | 14:30         | 0:01                        | 0:04    |
| Puskopkar 28         | 14:32      | 14:35         | 0:03                        | 0:05    |
| Kopata 116           | 14:33      | 14:40         | 0:07                        | 0:05    |
| Kopata 2             | 14:36      | 14:38         | 0:02                        | 0:02    |
| Puskopkar 51         | 14:41      | 14:44         | 0:03                        | 0:06    |
| Puskopkar 98         | 14:44      | 14:48         | 0:04                        | 0:04    |
| Puskopkar 114        | 14:51      | 14:53         | 0:02                        | 0:05    |
| Puskopkar 82         | 14:54      | 14:59         | 0:05                        | 0:06    |
| Puskopkar 51         | 14:56      | 14:58         | 0:02                        | 0:01    |
| Puskopkar 23         | 14:59      | 15:02         | 0:03                        | 0:04    |
| Puskopkar 70         | 15:04      | 15:06         | 0:02                        | 0:04    |
| Puskopkar 12         | 15:06      | 15:08         | 0:02                        | 0:02    |
| Puskopkar 64         | 15:10      | 15:12         | 0:02                        | 0:04    |
| Puskopkar 9          | 15:16      | 15:18         | 0:02                        | 0:06    |
| Puskopkar 18         | 15:25      | 15:28         | 0:03                        | 0:10    |
| Kopata 140           | 15:32      | 15:34         | 0:02                        | 0:06    |
| Kopata 120           | 15:36      | 15:38         | 0:02                        | 0:04    |
| Kopata 125           | 15:41      | 15:44         | 0:03                        | 0:06    |
| Puskopkar 40         | 15:46      | 15:48         | 0:02                        | 0:04    |
| Puskopkar 38         | 15:49      | 15:51         | 0:02                        | 0:03    |
| Kopata 110           | 15:52      | 15:55         | 0:03                        | 0:04    |
| Kopata 20            | 15:56      | 16:00         | 0:04                        | 0:05    |
| Puskopkar 10         | 16:00      | 16:03         | 0:03                        | 0:03    |
| Kopata 36            | 16:05      | 16:08         | 0:03                        | 0:05    |
| Puskopkar 76         | 16:13      | 16:16         | 0:03                        | 0:08    |
| Puskopkar 72         | 16:16      | 16:19         | 0:03                        | 0:03    |
| Kopata 100           | 16:19      | 16:21         | 0:02                        | 0:02    |
| Puskopkar 48         | 16:21      | 16:24         | 0:03                        | 0:03    |
| Puskopkar 28         | 16:24      | 16:27         | 0:03                        | 0:03    |
| Kopata 116           | 16:27      | 16:31         | 0:04                        | 0:04    |
| Kopata 2             | 16:30      | 16:32         | 0:02                        | 0:01    |
| Puskopkar 51         | 16:33      | 16:36         | 0:03                        | 0:04    |
| Puskopkar 98         | 16:37      | 16:41         | 0:04                        | 0:05    |
| Puskopkar 82         | 16:40      | 16:42         | 0:02                        | 0:01    |
| Puskopkar 70         | 16:46      | 16:52         | 0:06                        | 0:10    |
| Puskopkar 12         | 16:49      | 16:54         | 0:05                        | 0:02    |
| Puskopkar 64         | 16:51      | 16:55         | 0:04                        | 0:01    |
| Puskopkar 9          | 16:55      | 16:59         | 0:04                        | 0:04    |
| Puskopkar 18         | 16:59      | 17:03         | 0:04                        | 0:04    |
| Puskopkar 43         | 17:05      |               |                             |         |
| Rata-rata            |            |               | 0:03                        | 0:03    |

**Headway Bis Kota Jalur 04**  
**Kota Jogjakarta**

|                       |                      |
|-----------------------|----------------------|
| Hari/Tanggal :        | Ruas Jalan           |
| Minggu / 16 Juni 2002 | Terminal Umbul Harjo |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 120           | 7:45       | 7:48          | 0:03                        |         |
| Kopata 140           | 7:46       | 7:48          | 0:02                        | 0:00    |
| Pukopkar 100         | 7:49       | 7:52          | 0:03                        | 0:04    |
| Kopata 116           | 7:51       | 7:53          | 0:02                        | 0:01    |
| Kopata 135           | 7:54       | 7:56          | 0:02                        | 0:03    |
| Pukopkar 98          | 8:00       | 8:03          | 0:03                        | 0:07    |
| Kopata 108           | 8:02       | 8:06          | 0:04                        | 0:03    |
| Pukopkar 76          | 8:03       | 8:05          | 0:02                        | 0:01    |
| Pukopkar 65          | 8:06       | 8:09          | 0:03                        | 0:04    |
| Pukopkar 60          | 8:10       | 8:11          | 0:01                        | 0:02    |
| Kopata 98            | 8:12       | 8:14          | 0:02                        | 0:03    |
| Kopata 70            | 8:15       | 8:16          | 0:01                        | 0:02    |
| Pukopkar 50          | 8:17       | 8:19          | 0:02                        | 0:03    |
| Kopata 75            | 8:21       | 8:23          | 0:02                        | 0:04    |
| Pukopkar 54          | 8:25       | 8:26          | 0:01                        | 0:03    |
| Pukopkar 30          | 8:26       | 8:28          | 0:02                        | 0:02    |
| Kopata 68            | 8:29       | 8:31          | 0:02                        | 0:03    |
| Kopata 113           | 8:32       | 8:34          | 0:02                        | 0:03    |
| Pukopkar 29          | 8:35       | 8:36          | 0:01                        | 0:02    |
| Pukopkar 40          | 8:37       | 8:40          | 0:03                        | 0:04    |
| Pukopkar 48          | 8:39       | 8:41          | 0:02                        | 0:01    |
| Kopata 110           | 8:42       | 8:45          | 0:03                        | 0:04    |
| Pukopkar 10          | 8:45       | 8:48          | 0:03                        | 0:03    |
| Kopata 29            | 8:49       | 8:51          | 0:02                        | 0:03    |
| Pukopkar 76          | 8:52       | 8:53          | 0:01                        | 0:02    |
| Pukopkar 55          | 8:59       | 9:03          | 0:04                        | 0:10    |
| Kopata 22            | 9:10       | 9:12          | 0:02                        | 0:09    |
| Kopata 120           | 9:11       | 9:16          | 0:05                        | 0:04    |
| Pukopkar 100         | 9:12       | 9:18          | 0:06                        | 0:02    |
| Kopata 140           | 9:16       | 9:19          | 0:03                        | 0:01    |
| Kopata 116           | 9:25       | 9:26          | 0:01                        | 0:07    |
| Kopata 135           | 9:27       | 9:30          | 0:03                        | 0:04    |
| Pukopkar 98          | 9:30       | 9:32          | 0:02                        | 0:02    |
| Kopata 108           | 9:32       | 9:34          | 0:02                        | 0:02    |
| Pukopkar 76          | 9:36       | 9:36          | 0:00                        | 0:02    |
| Pukopkar 65          | 9:39       | 9:43          | 0:04                        | 0:07    |
| Pukopkar 60          | 9:42       | 9:45          | 0:03                        | 0:02    |
| Pukopkar 53          | 9:45       | 9:48          | 0:03                        | 0:03    |
| Kopata 70            | 9:49       | 9:51          | 0:02                        | 0:03    |
| Pukopkar 50          | 9:54       | 9:56          | 0:02                        | 0:05    |
| Kopata 75            | 9:55       | 9:58          | 0:03                        | 0:02    |
| Pukopkar 54          | 9:57       | 9:59          | 0:02                        | 0:01    |
| Pukopkar 30          | 10:03      | 10:05         | 0:02                        | 0:06    |



| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 68            | 10:06      | 10:09         | 0:03                        | 0:04    |
| Kopata 113           | 10:10      | 10:13         | 0:03                        | 0:04    |
| Pukopkar 29          | 10:12      | 10:15         | 0:03                        | 0:02    |
| Pukopkar 40          | 10:13      | 10:16         | 0:03                        | 0:01    |
| Pukopkar 48          | 10:16      | 10:19         | 0:03                        | 0:03    |
| Kopata 110           | 10:19      | 10:21         | 0:02                        | 0:02    |
| Pukopkar 10          | 10:22      | 10:26         | 0:04                        | 0:05    |
| Kopata 29            | 10:25      | 10:28         | 0:03                        | 0:02    |
| Pukopkar 76          | 10:27      | 10:30         | 0:03                        | 0:02    |
| Pukopkar 55          | 10:29      | 10:33         | 0:04                        | 0:03    |
| Kopata 22            | 10:33      | 10:35         | 0:02                        | 0:02    |
| Kopata 120           | 10:34      | 10:37         | 0:03                        | 0:02    |
| Pukopkar 100         | 10:36      | 10:39         | 0:03                        | 0:02    |
| Kopata 140           | 10:40      | 10:43         | 0:03                        | 0:04    |
| Pukopkar 100         | 10:49      | 10:51         | 0:02                        | 0:08    |
| Kopata 140           | 10:51      | 10:55         | 0:04                        | 0:04    |
| Kopata 116           | 10:52      | 10:54         | 0:02                        | 0:01    |
| Kopata 135           | 10:53      | 10:56         | 0:03                        | 0:02    |
| Pukopkar 98          | 10:56      | 10:58         | 0:02                        | 0:02    |
| Kopata 108           | 11:00      | 11:03         | 0:03                        | 0:05    |
| Pukopkar 76          | 11:05      | 11:09         | 0:04                        | 0:06    |
| Pukopkar 65          | 11:08      | 11:12         | 0:04                        | 0:03    |
| Pukopkar 60          | 11:13      | 11:16         | 0:03                        | 0:04    |
| Pukopkar 53          | 11:16      | 11:18         | 0:02                        | 0:02    |
| Kopata 135           | 12:06      | 12:10         | 0:04                        | 0:00    |
| Kopata 85            | 12:10      | 12:15         | 0:05                        | 0:05    |
| Kopata 98            | 12:14      | 12:17         | 0:03                        | 0:02    |
| Kopata 120           | 12:19      | 12:21         | 0:02                        | 0:04    |
| Pukopkar 100         | 12:24      | 12:27         | 0:03                        | 0:06    |
| Kopata 140           | 12:29      | 12:31         | 0:02                        | 0:04    |
| Kopata 116           | 12:32      | 12:35         | 0:03                        | 0:04    |
| Pukopkar 98          | 12:40      | 12:42         | 0:02                        | 0:07    |
| Kopata 108           | 12:42      | 12:45         | 0:03                        | 0:03    |
| Pukopkar 76          | 12:44      | 12:48         | 0:04                        | 0:03    |
| Pukopkar 65          | 12:45      | 12:49         | 0:04                        | 0:01    |
| Pukopkar 60          | 12:52      | 12:55         | 0:03                        | 0:06    |
| Pukopkar 53          | 13:00      | 13:05         | 0:05                        | 0:10    |
| Kopata 70            | 13:04      | 13:09         | 0:05                        | 0:04    |
| Pukopkar 50          | 13:06      | 13:09         | 0:03                        | 0:00    |
| Kopata 75            | 13:07      | 13:10         | 0:03                        | 0:01    |
| Pukopkar 54          | 13:09      | 13:13         | 0:04                        | 0:03    |
| Pukopkar 30          | 13:10      | 13:15         | 0:05                        | 0:02    |
| Kopata 68            | 13:11      | 13:14         | 0:03                        | 0:01    |
| Kopata 113           | 13:13      | 13:16         | 0:03                        | 0:02    |
| Pukopkar 29          | 13:16      | 13:19         | 0:03                        | 0:03    |
| Pukopkar 40          | 13:19      | 13:21         | 0:02                        | 0:02    |
| Pukopkar 48          | 13:23      | 13:27         | 0:04                        | 0:06    |
| Kopata 110           | 13:26      | 13:28         | 0:02                        | 0:01    |
| Pukopkar 10          | 13:29      | 13:32         | 0:03                        | 0:04    |
| Kopata 29            | 13:32      | 13:34         | 0:02                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Pukopkar 76          | 13:33      | 13:36         | 0:03                        | 0:02    |
| Pukopkar 55          | 13:35      | 13:39         | 0:04                        | 0:03    |
| Kopata 22            | 13:37      | 13:40         | 0:03                        | 0:01    |
| Kopata 120           | 13:39      | 13:42         | 0:03                        | 0:02    |
| Pukopkar 100         | 13:44      | 13:48         | 0:04                        | 0:06    |
| Kopata 140           | 13:52      | 13:54         | 0:02                        | 0:06    |
| Kopata 85            | 13:54      | 13:59         | 0:05                        | 0:05    |
| Kopata 98            | 13:56      | 13:59         | 0:03                        | 0:00    |
| Kopata 120           | 13:58      | 14:00         | 0:02                        | 0:01    |
| Pukopkar 100         | 14:02      | 14:06         | 0:04                        | 0:06    |
| Kopata 140           | 14:06      | 14:09         | 0:03                        | 0:03    |
| Kopata 116           | 14:09      | 14:11         | 0:02                        | 0:02    |
| Kopata 135           | 14:11      | 14:13         | 0:02                        | 0:02    |
| Pukopkar 98          | 14:13      | 14:16         | 0:03                        | 0:03    |
| Kopata 108           | 14:14      | 14:17         | 0:03                        | 0:01    |
| Pukopkar 76          | 14:16      | 14:19         | 0:03                        | 0:02    |
| Pukopkar 65          | 14:19      | 14:22         | 0:03                        | 0:03    |
| Pukopkar 60          | 14:20      | 14:26         | 0:06                        | 0:04    |
| Kopata 89            | 14:32      | 14:34         | 0:02                        | 0:08    |
| Pukopkar 53          | 14:33      | 14:36         | 0:03                        | 0:02    |
| Kopata 70            | 14:36      | 14:38         | 0:02                        | 0:02    |
| Pukopkar 50          | 14:36      | 14:39         | 0:03                        | 0:01    |
| Kopata 75            | 14:41      | 14:43         | 0:02                        | 0:04    |
| Pukopkar 54          | 14:43      | 14:46         | 0:03                        | 0:03    |
| Pukopkar 30          | 14:49      | 14:51         | 0:02                        | 0:05    |
| Kopata 68            | 14:52      | 14:53         | 0:01                        | 0:02    |
| Kopata 113           | 14:54      | 14:57         | 0:03                        | 0:04    |
| Pukopkar 29          | 14:58      | 15:00         | 0:02                        | 0:03    |
| Pukopkar 40          | 15:00      | 15:03         | 0:03                        | 0:03    |
| Pukopkar 48          | 15:05      | 15:09         | 0:04                        | 0:06    |
| Kopata 110           | 15:06      | 15:10         | 0:04                        | 0:01    |
| Pukopkar 10          | 15:10      | 15:12         | 0:02                        | 0:02    |
| Kopata 29            | 15:12      | 15:16         | 0:04                        | 0:04    |
| Pukopkar 76          | 15:14      | 15:18         | 0:04                        | 0:02    |
| Pukopkar 55          | 15:16      | 15:20         | 0:04                        | 0:02    |
| Kopata 22            | 15:25      | 15:28         | 0:03                        | 0:08    |
| Kopata 120           | 15:30      | 15:32         | 0:02                        | 0:04    |
| Pukopkar 100         | 15:32      | 15:34         | 0:02                        | 0:02    |
| Kopata 140           | 15:37      | 15:39         | 0:02                        | 0:05    |
| Kopata 85            | 15:39      | 15:42         | 0:03                        | 0:03    |
| Kopata 108           | 15:43      | 15:46         | 0:03                        | 0:04    |
| Kopata 60            | 15:49      | 15:52         | 0:03                        | 0:06    |
| Pukopkar 65          | 15:53      | 15:55         | 0:02                        | 0:03    |
| Pukopkar 76          | 16:14      | 16:19         | 0:05                        | 0:24    |
| Pukopkar 50          | 16:16      | 16:18         | 0:02                        | 0:01    |
| Kopata 75            | 16:19      | 16:23         | 0:04                        | 0:05    |
| Pukopkar 54          | 16:23      | 16:25         | 0:02                        | 0:02    |
| Kopata 89            | 16:25      | 16:28         | 0:03                        | 0:03    |
| Kopata 113           | 16:29      | 16:32         | 0:03                        | 0:04    |
| Pukopkar 29          | 16:32      | 16:34         | 0:02                        | 0:02    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Pukopkar 40          | 16:35      | 16:37         | 0:02                        | 0:03    |
| Pukopkar 48          | 16:36      | 16:39         | 0:03                        | 0:02    |
| Kopata 110           | 16:39      | 16:42         | 0:03                        | 0:03    |
| Pukopkar 10          | 16:41      | 16:44         | 0:03                        | 0:02    |
| Kopata 29            | 16:43      | 16:45         | 0:02                        | 0:01    |
| Pukopkar 55          | 16:46      | 16:50         | 0:04                        | 0:05    |
| Kopata 22            | 16:49      | 16:52         | 0:03                        | 0:02    |
| Kopata 120           | 16:52      | 16:55         | 0:03                        | 0:03    |
| Pukopkar 100         | 16:54      | 16:58         | 0:04                        | 0:03    |
| Kopata 140           | 16:56      | 16:59         | 0:03                        | 0:01    |
| Kopata 85            | 16:56      | 16:59         | 0:03                        | 0:00    |
| Kopata 108           | 16:59      | 17:00         | 0:01                        | 0:01    |
| Rata-rata            |            |               | 0:02                        | 0:03    |



**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|   |                                    |
|---|------------------------------------|
| Hari/Tanggal :<br>Minggu / 23 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|---|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 59            | 8:14       | 8:16          | 0:02                        |         |
| Puskopkar 100        | 8:16       | 8:18          | 0:02                        | 0:02    |
| Puskopkar 52         | 8:17       | 8:19          | 0:02                        | 0:01    |
| Puskopkar 41         | 8:19       | 8:20          | 0:01                        | 0:01    |
| Kopata 46            | 8:21       | 8:24          | 0:03                        | 0:04    |
| Kopata 36            | 8:24       | 8:27          | 0:03                        | 0:03    |
| Puskopkar 12         | 8:25       | 8:29          | 0:04                        | 0:02    |
| Kopata 20            | 8:26       | 8:30          | 0:04                        | 0:01    |
| Kopata 132           | 8:29       | 8:31          | 0:02                        | 0:01    |
| kopata 80            | 8:33       | 8:35          | 0:02                        | 0:04    |
| Kopata 22            | 8:36       | 8:39          | 0:03                        | 0:04    |
| Puskopkar 9          | 8:39       | 8:42          | 0:03                        | 0:03    |
| Kopata 140           | 8:41       | 8:43          | 0:02                        | 0:01    |
| Puskopkar 15         | 8:42       | 8:45          | 0:03                        | 0:02    |
| Puskopkar 18         | 8:46       | 8:49          | 0:03                        | 0:04    |
| Kopata 120           | 8:49       | 8:52          | 0:03                        | 0:03    |
| Kopata 114           | 8:53       | 8:56          | 0:03                        | 0:04    |
| Kopata 125           | 8:56       | 8:59          | 0:03                        | 0:03    |
| Puskopkar 29         | 8:59       | 9:02          | 0:03                        | 0:03    |
| Puskopkar 38         | 9:10       | 9:12          | 0:02                        | 0:10    |
| Kopata 15            | 9:14       | 9:17          | 0:03                        | 0:05    |
| Puskopkar 35         | 9:19       | 9:23          | 0:04                        | 0:06    |
| Puskopkar 40         | 9:22       | 9:26          | 0:04                        | 0:03    |
| Puskopkar 48         | 9:26       | 9:30          | 0:04                        | 0:04    |
| kopata 110           | 9:30       | 9:32          | 0:02                        | 0:02    |
| Puskopkar 10         | 9:34       | 9:37          | 0:03                        | 0:05    |
| Puskopkar 76         | 9:42       | 9:43          | 0:01                        | 0:06    |
| Kopata 59            | 9:45       | 9:48          | 0:03                        | 0:05    |
| Puskopkar 100        | 9:50       | 9:52          | 0:02                        | 0:04    |
| Puskopkar 52         | 9:55       | 9:58          | 0:03                        | 0:06    |
| Puskopkar 111        | 9:59       | 10:03         | 0:04                        | 0:05    |
| Puskopkar 41         | 10:05      | 10:07         | 0:02                        | 0:04    |
| Kopata 46            | 10:11      | 10:13         | 0:02                        | 0:06    |
| Kopata 36            | 10:13      | 10:16         | 0:03                        | 0:03    |
| Puskopkar 12         | 10:14      | 10:18         | 0:04                        | 0:02    |
| Kopata 132           | 10:17      | 10:20         | 0:03                        | 0:02    |
| kopata 80            | 10:19      | 10:23         | 0:04                        | 0:03    |
| Kopata 22            | 10:23      | 10:26         | 0:03                        | 0:03    |
| Puskopkar 9          | 10:27      | 10:29         | 0:02                        | 0:03    |
| Kopata 140           | 10:30      | 10:32         | 0:02                        | 0:03    |
| Puskopkar 15         | 10:31      | 10:33         | 0:02                        | 0:01    |
| Kopata 120           | 10:31      | 10:35         | 0:04                        | 0:02    |
| Puskopkar 18         | 10:32      | 10:36         | 0:04                        | 0:01    |
| Kopata 114           | 10:39      | 10:42         | 0:03                        | 0:06    |
| Kopata 125           | 10:41      | 10:43         | 0:02                        | 0:01    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Puskopkar 29         | 10:43      | 10:45         | 0:02                        | 0:02    |
| Puskopkar 38         | 10:44      | 10:46         | 0:02                        | 0:01    |
| Puskopkar 35         | 10:49      | 10:51         | 0:02                        | 0:05    |
| Puskopkar 40         | 10:52      | 10:54         | 0:02                        | 0:03    |
| Puskopkar 48         | 10:53      | 10:55         | 0:02                        | 0:01    |
| Puskopkar 10         | 10:59      | 11:02         | 0:03                        | 0:07    |
| Puskopkar 76         | 11:03      | 11:06         | 0:03                        | 0:04    |
| Puskopkar 48         | 11:06      | 11:10         | 0:04                        | 0:04    |
| kopata 110           | 11:09      | 11:13         | 0:04                        | 0:03    |
| Kopata 59            | 11:17      | 11:22         | 0:05                        | 0:09    |
| Puskopkar 111        | 11:21      | 11:26         | 0:05                        | 0:04    |
| Puskopkar 100        | 11:25      | 11:31         | 0:06                        | 0:05    |
| Puskopkar 52         | 11:33      | 11:36         | 0:03                        | 0:05    |
| Puskopkar 41         | 11:35      | 11:39         | 0:04                        | 0:03    |
| Kopata 46            | 11:41      | 11:43         | 0:02                        | 0:04    |
| Kopata 36            | 11:43      | 11:47         | 0:04                        | 0:04    |
| Puskopkar 12         | 11:45      | 11:48         | 0:03                        | 0:01    |
| Kopata 132           | 11:49      | 11:51         | 0:02                        | 0:03    |
| kopata 80            | 13:05      | 13:08         | 0:03                        | 1:17    |
| Kopata 17            | 13:09      | 13:11         | 0:02                        | 0:03    |
| Puskopkar 52         | 13:11      | 13:15         | 0:04                        | 0:04    |
| Puskopkar 41         | 13:13      | 13:17         | 0:04                        | 0:02    |
| Kopata 46            | 13:14      | 13:18         | 0:04                        | 0:01    |
| Kopata 36            | 13:16      | 13:19         | 0:03                        | 0:01    |
| Puskopkar 12         | 13:19      | 13:22         | 0:03                        | 0:03    |
| Kopata 132           | 13:21      | 13:25         | 0:04                        | 0:03    |
| Kopata 22            | 13:32      | 13:36         | 0:04                        | 0:11    |
| Puskopkar 9          | 13:33      | 13:38         | 0:05                        | 0:02    |
| Kopata 140           | 13:36      | 13:39         | 0:03                        | 0:01    |
| Puskopkar 15         | 13:39      | 13:42         | 0:03                        | 0:03    |
| Kopata 120           | 13:41      | 13:43         | 0:02                        | 0:01    |
| Puskopkar 18         | 13:43      | 13:50         | 0:07                        | 0:07    |
| Kopata 114           | 13:44      | 13:48         | 0:04                        | 0:02    |
| Kopata 125           | 13:46      | 13:49         | 0:03                        | 0:01    |
| Puskopkar 29         | 13:49      | 13:51         | 0:02                        | 0:02    |
| Puskopkar 38         | 13:50      | 13:52         | 0:02                        | 0:01    |
| Puskopkar 35         | 13:52      | 13:54         | 0:02                        | 0:02    |
| Puskopkar 40         | 13:55      | 13:58         | 0:03                        | 0:04    |
| Puskopkar 48         | 13:59      | 14:03         | 0:04                        | 0:05    |
| kopata 110           | 14:00      | 14:06         | 0:06                        | 0:03    |
| Puskopkar 76         | 14:04      | 14:09         | 0:05                        | 0:03    |
| kopata 29            | 14:11      | 14:15         | 0:04                        | 0:06    |
| Puskopkar 10         | 14:13      | 14:17         | 0:04                        | 0:02    |
| Kopata 59            | 14:19      | 14:21         | 0:02                        | 0:04    |
| Puskopkar 111        | 14:20      | 14:25         | 0:05                        | 0:04    |
| Puskopkar 100        | 14:21      | 14:23         | 0:02                        | 0:01    |
| Puskopkar 15         | 14:25      | 14:28         | 0:03                        | 0:05    |
| Puskopkar 18         | 14:29      | 14:33         | 0:04                        | 0:05    |
| Kopata 114           | 14:32      | 14:36         | 0:04                        | 0:03    |
| Kopata 120           | 14:33      | 14:39         | 0:06                        | 0:03    |
| Kopata 17            | 14:46      | 14:50         | 0:04                        | 0:11    |
| Puskopkar 52         | 14:47      | 14:51         | 0:04                        | 0:01    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 46            | 14:50      | 14:52         | 0:02                        | 0:01    |
| Kopata 36            | 14:51      | 14:54         | 0:03                        | 0:02    |
| Puskopkar 12         | 14:52      | 14:56         | 0:04                        | 0:02    |
| Kopata 132           | 14:53      | 14:59         | 0:06                        | 0:03    |
| kopata 80            | 14:55      | 14:58         | 0:03                        | 0:01    |
| Kopata 22            | 15:06      | 15:09         | 0:03                        | 0:11    |
| Puskopkar 9          | 15:09      | 15:12         | 0:03                        | 0:03    |
| Kopata 140           | 15:11      | 15:13         | 0:02                        | 0:01    |
| Puskopkar 15         | 15:14      | 15:16         | 0:02                        | 0:03    |
| Kopata 120           | 15:16      | 15:21         | 0:05                        | 0:05    |
| Puskopkar 18         | 15:19      | 15:20         | 0:01                        | 0:01    |
| Kopata 114           | 15:22      | 15:24         | 0:02                        | 0:04    |
| Kopata 125           | 15:23      | 15:26         | 0:03                        | 0:02    |
| Puskopkar 29         | 15:25      | 15:27         | 0:02                        | 0:01    |
| Puskopkar 38         | 15:27      | 15:30         | 0:03                        | 0:03    |
| Puskopkar 35         | 15:29      | 15:35         | 0:06                        | 0:05    |
| Puskopkar 40         | 15:30      | 15:32         | 0:02                        | 0:03    |
| Puskopkar 48         | 15:33      | 15:36         | 0:03                        | 0:04    |
| kopata 110           | 15:36      | 15:38         | 0:02                        | 0:02    |
| Puskopkar 10         | 15:39      | 15:42         | 0:03                        | 0:04    |
| Puskopkar 76         | 15:41      | 15:43         | 0:02                        | 0:01    |
| kopata 22            | 15:44      | 15:48         | 0:04                        | 0:05    |
| Kopata 59            | 15:48      | 15:51         | 0:03                        | 0:03    |
| Puskopkar 100        | 15:52      | 15:54         | 0:02                        | 0:03    |
| Puskopkar 111        | 16:02      | 16:05         | 0:03                        | 0:11    |
| Puskopkar 99         | 16:06      | 16:12         | 0:06                        | 0:07    |
| Kopata 17            | 16:13      | 16:18         | 0:05                        | 0:06    |
| Puskopkar 52         | 16:14      | 16:17         | 0:03                        | 0:01    |
| Puskopkar 41         | 16:16      | 16:20         | 0:04                        | 0:03    |
| Kopata 46            | 16:19      | 16:22         | 0:03                        | 0:02    |
| Kopata 36            | 16:21      | 16:23         | 0:02                        | 0:01    |
| Puskopkar 12         | 16:23      | 16:25         | 0:02                        | 0:02    |
| Kopata 132           | 16:27      | 16:28         | 0:01                        | 0:03    |
| kopata 80            | 16:28      | 16:29         | 0:01                        | 0:01    |
| Kopata 22            | 16:39      | 16:41         | 0:02                        | 0:12    |
| Puskopkar 9          | 16:40      | 16:44         | 0:04                        | 0:03    |
| Kopata 140           | 16:41      | 16:43         | 0:02                        | 0:01    |
| Puskopkar 15         | 16:44      | 16:46         | 0:02                        | 0:03    |
| Kopata 120           | 16:46      | 16:51         | 0:05                        | 0:05    |
| Puskopkar 18         | 16:49      | 16:52         | 0:03                        | 0:01    |
| Kopata 114           | 16:51      | 16:53         | 0:02                        | 0:01    |
| Kopata 125           | 16:53      | 16:57         | 0:04                        | 0:04    |
| Puskopkar 29         | 16:55      | 16:58         | 0:03                        | 0:01    |
| Puskopkar 38         | 16:56      | 16:59         | 0:03                        | 0:01    |
| Puskopkar 35         | 16:58      | 17:00         | 0:02                        | 0:01    |
| Puskopkar 40         | 17:02      | 17:06         | 0:04                        | 0:06    |
| Rata-rata            |            |               | 0:03                        | 0:03    |

**Headway Bis Kota Jalur 04  
Kota Jogjakarta**

|   |                                    |
|---|------------------------------------|
| Hari/Tanggal :<br>Minggu / 30 Juni 2002 | Ruas Jalan<br>Terminal Umbul Harjo |
|---|------------------------------------|

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Kopata 46            | 7:48       | 7:50          | 0:02                        |         |
| Puskopkar 52         | 7:50       | 7:52          | 0:02                        | 0:02    |
| Kopata 36            | 7:52       | 7:55          | 0:03                        | 0:03    |
| kopata 20            | 7:55       | 7:58          | 0:03                        | 0:03    |
| Kopata 23            | 7:56       | 7:59          | 0:03                        | 0:01    |
| Kopata 25            | 7:59       | 8:01          | 0:02                        | 0:02    |
| Puskopkar 51         | 8:00       | 8:05          | 0:05                        | 0:04    |
| Puskopkar 46         | 8:01       | 8:04          | 0:03                        | 0:01    |
| Kopata 17            | 8:03       | 8:07          | 0:04                        | 0:03    |
| Puskopkar 100        | 8:04       | 8:09          | 0:05                        | 0:02    |
| Kopata 80            | 8:06       | 8:09          | 0:03                        | 0:00    |
| Kopata 120           | 8:08       | 8:11          | 0:03                        | 0:02    |
| Puskopkar 85         | 8:10       | 8:13          | 0:03                        | 0:02    |
| Kopata 115           | 8:13       | 8:15          | 0:02                        | 0:02    |
| kopata 18            | 8:17       | 8:19          | 0:02                        | 0:04    |
| kopata 3             | 8:24       | 8:25          | 0:01                        | 0:06    |
| Puskopkar 76         | 8:27       | 8:27          | 0:00                        | 0:02    |
| Puskopkar 12         | 8:32       | 8:35          | 0:03                        | 0:08    |
| Kopata 22            | 8:38       | 8:39          | 0:01                        | 0:04    |
| Puskopkar 14         | 8:39       | 8:41          | 0:02                        | 0:02    |
| Puskopkar 9          | 8:41       | 8:43          | 0:02                        | 0:02    |
| Puskopkar 28         | 8:43       | 8:45          | 0:02                        | 0:02    |
| Kopata 125           | 8:46       | 8:48          | 0:02                        | 0:03    |
| Puskopkar 72         | 8:49       | 8:51          | 0:02                        | 0:03    |
| Kopata 113           | 8:52       | 8:54          | 0:02                        | 0:03    |
| Kopata 119           | 8:54       | 8:56          | 0:02                        | 0:02    |
| Puskopkar 40         | 9:01       | 9:05          | 0:04                        | 0:09    |
| Puskopkar 48         | 9:04       | 9:09          | 0:05                        | 0:04    |
| Kopata 110           | 9:06       | 9:11          | 0:05                        | 0:02    |
| Puskopkar 10         | 9:14       | 9:16          | 0:02                        | 0:05    |
| Kopata 36            | 9:22       | 9:23          | 0:01                        | 0:07    |
| Kopata 46            | 9:24       | 9:26          | 0:02                        | 0:03    |
| Puskopkar 52         | 9:26       | 9:28          | 0:02                        | 0:02    |
| Kopata 20            | 9:29       | 9:32          | 0:03                        | 0:04    |
| Kopata 23            | 9:32       | 9:36          | 0:04                        | 0:04    |
| Kopata 25            | 9:36       | 9:36          | 0:00                        | 0:00    |
| Puskopkar 51         | 9:38       | 9:41          | 0:03                        | 0:05    |
| Puskopkar 46         | 9:41       | 9:43          | 0:02                        | 0:02    |
| Kopata 17            | 9:44       | 9:48          | 0:04                        | 0:05    |
| Puskopkar 100        | 9:47       | 9:51          | 0:04                        | 0:03    |
| Kopata 80            | 9:51       | 9:53          | 0:02                        | 0:02    |
| Kopata 120           | 9:54       | 9:56          | 0:02                        | 0:03    |
| Puskopkar 85         | 9:55       | 9:58          | 0:03                        | 0:02    |
| Kopata 115           | 9:56       | 10:00         | 0:04                        | 0:02    |
| Kopata 18            | 9:59       | 10:04         | 0:05                        | 0:04    |
| Kopata 3             | 10:03      | 10:08         | 0:05                        | 0:04    |
| Puskopkar 76         | 10:05      | 10:07         | 0:02                        | 0:01    |

| Nomor<br>Lambung Bis | Waktu      |               | Waktu Tunggu<br>Di terminal | Headway |
|----------------------|------------|---------------|-----------------------------|---------|
|                      | Kedatangan | Keberangkatan |                             |         |
| Puskopkar 12         | 10:09      | 10:11         | 0:02                        | 0:04    |
| Kopata 22            | 10:11      | 10:13         | 0:02                        | 0:02    |
| Puskopkar 14         | 10:16      | 10:19         | 0:03                        | 0:06    |
| Puskopkar 9          | 10:19      | 10:21         | 0:02                        | 0:02    |
| Puskopkar 28         | 10:23      | 10:25         | 0:02                        | 0:04    |
| Kopata 125           | 10:25      | 10:27         | 0:02                        | 0:02    |
| Puskopkar 72         | 10:29      | 10:31         | 0:02                        | 0:04    |
| Kopata 113           | 10:30      | 10:34         | 0:04                        | 0:03    |
| Kopata 119           | 10:33      | 10:35         | 0:02                        | 0:01    |
| Puskopkar 40         | 10:36      | 10:39         | 0:03                        | 0:04    |
| Kopata 110           | 10:46      | 10:48         | 0:02                        | 0:09    |
| Puskopkar 48         | 10:50      | 10:53         | 0:03                        | 0:05    |
| Puskopkar 10         | 11:05      | 11:08         | 0:03                        | 0:15    |
| Kopata 17            | 11:21      | 11:25         | 0:04                        | 0:17    |
| Kopata 46            | 11:32      | 11:33         | 0:01                        | 0:08    |
| Puskopkar 100        | 11:36      | 11:38         | 0:02                        | 0:05    |
| Kopata 80            | 11:38      | 11:41         | 0:03                        | 0:03    |
| Kopata 120           | 11:40      | 11:43         | 0:03                        | 0:02    |
| Puskopkar 85         | 11:43      | 11:45         | 0:02                        | 0:02    |
| Kopata 115           | 11:48      | 11:52         | 0:04                        | 0:07    |
| Kopata 18            | 11:49      | 11:51         | 0:02                        | 0:01    |
| Kopata 3             | 11:52      | 11:56         | 0:04                        | 0:05    |
| Puskopkar 76         | 11:54      | 11:58         | 0:04                        | 0:02    |
| Puskopkar 12         | 11:56      | 11:58         | 0:02                        | 0:00    |
| Kopata 23            | 11:59      | 12:02         | 0:03                        | 0:04    |
| Puskopkar 14         | 12:00      | 12:04         | 0:04                        | 0:02    |
| Puskopkar 9          | 12:06      | 12:08         | 0:02                        | 0:04    |
| Puskopkar 28         | 12:10      | 12:13         | 0:03                        | 0:05    |
| Kopata 125           | 12:11      | 12:15         | 0:04                        | 0:02    |
| Puskopkar 72         | 12:17      | 12:19         | 0:02                        | 0:04    |
| Kopata 113           | 12:19      | 12:23         | 0:04                        | 0:04    |
| Kopata 119           | 13:18      | 13:22         | 0:04                        | 0:00    |
| Kopata 18            | 13:25      | 13:28         | 0:03                        | 0:06    |
| Puskopkar 76         | 13:33      | 13:35         | 0:02                        | 0:07    |
| Kopata 3             | 13:36      | 13:38         | 0:02                        | 0:03    |
| Puskopkar 12         | 13:40      | 13:46         | 0:06                        | 0:08    |
| Kopata 23            | 13:46      | 13:49         | 0:03                        | 0:03    |
| Kopata 46            | 13:49      | 13:52         | 0:03                        | 0:03    |
| Puskopkar 100        | 13:52      | 13:54         | 0:02                        | 0:02    |
| Kopata 80            | 13:54      | 13:57         | 0:03                        | 0:03    |
| Kopata 120           | 13:55      | 13:58         | 0:03                        | 0:01    |
| Puskopkar 85         | 13:56      | 14:00         | 0:04                        | 0:02    |
| Kopata 115           | 13:59      | 14:02         | 0:03                        | 0:02    |
| Kopata 36            | 14:02      | 14:06         | 0:04                        | 0:04    |
| Kopata 20            | 14:08      | 14:11         | 0:03                        | 0:05    |
| Puskopkar 52         | 14:15      | 14:18         | 0:03                        | 0:07    |
| Puskopkar 46         | 14:20      | 14:22         | 0:02                        | 0:04    |
| Kopata 51            | 14:20      | 14:24         | 0:04                        | 0:02    |
| Kopata 22            | 14:29      | 14:32         | 0:03                        | 0:08    |
| Puskopkar 14         | 14:32      | 14:36         | 0:04                        | 0:04    |
| Puskopkar 9          | 14:36      | 14:39         | 0:03                        | 0:03    |
| Puskopkar 28         | 14:39      | 14:41         | 0:02                        | 0:02    |
| Kopata 125           | 14:41      | 14:43         | 0:02                        | 0:02    |



**Waktu Sirkulasi  
Berdasarkan Headway  
Minggu 9 Juni 2002**

| Bis Kota  |     | Waktu      |               | Waktu Sirkulasi |       |
|-----------|-----|------------|---------------|-----------------|-------|
|           |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata    | 115 | 7:11       | 7:14          | 1:18            | 78    |
|           |     | 8:32       | 8:34          |                 |       |
| Kopata    | 36  | 7:12       | 7:16          | 2:27            | 147   |
|           |     | 9:43       | 9:48          | 1:33            | 99    |
|           |     | 11:21      | 11:26         | 2:42            | 162   |
|           |     | 14:08      | 14:11         | 1:54            | 114   |
|           |     | 16:05      | 16:08         |                 |       |
| Kopata    | 20  | 7:14       | 7:18          | 2:12            | 132   |
|           |     | 9:30       | 9:35          | 1:41            | 101   |
|           |     | 11:16      | 11:19         | 2:37            | 157   |
|           |     | 13:56      | 14:00         | 1:56            | 116   |
|           |     | 15:56      | 16:00         |                 |       |
| Puskopkar | 23  | 7:16       | 7:19          | 1:37            | 97    |
|           |     | 8:56       | 9:00          | 1:27            | 87    |
|           |     | 10:27      | 10:29         | 1:23            | 83    |
|           |     | 11:52      | 11:54         | 1:25            | 85    |
|           |     | 13:19      | 13:25         | 1:34            | 94    |
|           |     | 14:59      | 15:02         |                 |       |
| Puskopkar | 114 | 7:19       | 7:21          |                 |       |
|           |     | 13:15      | 13:17         | 1:34            | 94    |
|           |     | 14:51      | 14:53         |                 |       |
| Puskopkar | 82  | 7:25       | 7:28          | 1:21            | 81    |
|           |     | 8:49       | 8:52          |                 |       |
|           |     | 14:54      | 14:59         | 1:41            | 101   |
|           |     | 16:40      | 16:42         |                 |       |
| Kopata    | 135 | 7:26       | 7:29          | 1:26            | 86    |
|           |     | 8:55       | 8:59          |                 |       |
| Puskopkar | 12  | 7:29       | 7:31          | 1:28            | 88    |
|           |     | 8:59       | 9:03          | 1:33            | 93    |
|           |     | 10:36      | 10:39         | 2:42            | 162   |
|           |     | 13:21      | 13:26         | 1:40            | 160   |
|           |     | 15:06      | 15:08         | 1:41            | 161   |
| Puskopkar | 9   | 16:49      | 16:54         |                 |       |
|           |     | 7:30       | 7:32          | 1:33            | 93    |
|           |     | 9:05       | 9:08          | 1:33            | 93    |
|           |     | 10:41      | 10:43         | 2:43            | 163   |
|           |     | 13:26      | 13:28         | 1:48            | 168   |
|           |     | 15:16      | 15:18         | 1:37            | 97    |
| Puskopkar | 18  | 16:55      | 16:59         |                 |       |
|           |     | 7:32       | 7:34          | 1:32            | 92    |
|           |     | 9:06       | 9:11          | 1:36            | 96    |
|           |     | 10:47      | 10:49         | 2:40            | 160   |
|           |     | 13:29      | 13:31         | 1:54            | 114   |
|           |     | 15:25      | 15:28         | 1:31            | 91    |
|           |     | 17:03      |               |                 |       |

| Ked | Bis Kota     | Waktu      |               | Waktu Sirkulasi |       |
|-----|--------------|------------|---------------|-----------------|-------|
|     |              | Kedatangan | Keberangkatan | Jam             | Menit |
|     | Kopata 140   | 7:34       | 7:39          | 1:31            | 91    |
|     |              | 9:10       | 9:12          | 1:41            | 101   |
|     |              | 10:53      | 10:56         | 2:36            | 156   |
|     |              | 13:32      | 13:36         | 1:56            | 116   |
|     |              | 15:32      | 15:34         |                 |       |
|     | Kopata 120   | 7:36       | 7:41          | 1:31            | 91    |
|     |              | 9:12       | 9:15          | 1:41            | 101   |
|     |              | 10:56      | 10:59         | 2:35            | 155   |
|     |              | 13:34      | 13:39         | 1:57            | 117   |
|     |              | 15:36      | 15:38         |                 |       |
|     | Kopata 125   | 7:39       | 7:43          | 1:33            | 93    |
|     |              | 9:16       | 9:19          | 1:40            | 100   |
|     |              | 10:59      | 11:03         | 2:35            | 155   |
|     |              | 13:38      | 13:42         | 1:59            | 119   |
|     |              | 15:41      | 15:44         |                 |       |
|     | Puskopkar 38 | 7:43       | 7:45          | 1:38            | 98    |
|     |              | 9:23       | 9:26          | 1:42            | 102   |
|     |              | 11:08      | 11:10         | 2:36            | 156   |
|     |              | 13:46      | 13:49         | 2:00            | 120   |
|     |              | 15:49      | 15:51         |                 |       |
|     | Puskopkar 40 | 7:45       | 7:48          | 1:31            | 91    |
|     |              | 9:19       | 9:22          | 1:41            | 101   |
|     |              | 11:03      | 11:06         | 2:36            | 156   |
|     |              | 13:42      | 13:46         | 2:00            | 120   |
|     |              | 15:46      | 15:48         |                 |       |
|     | Kopata 110   | 7:49       | 7:49          | 1:36            | 96    |
|     |              | 9:25       | 9:28          | 1:45            | 105   |
|     |              | 11:13      | 11:16         | 2:38            | 158   |
|     |              | 13:54      | 13:58         | 1:54            | 114   |
|     |              | 15:52      | 15:55         |                 |       |
|     | Puskopkar 10 | 8:00       | 8:02          | 1:34            | 94    |
|     |              | 9:36       | 9:39          | 1:40            | 100   |
|     |              | 11:19      | 11:23         | 2:26            | 146   |
|     |              | 13:49      | 13:52         | 2:08            | 128   |
|     |              | 16:00      | 16:03         |                 |       |
|     | Puskopkar 76 | 8:02       | 8:05          | 1:34            | 94    |
|     |              | 9:39       | 9:41          | 1:44            | 104   |
|     |              | 11:25      | 11:29         | 2:44            | 164   |
|     |              | 14:13      | 14:19         | 1:54            | 114   |
|     |              | 16:13      | 16:16         |                 |       |
|     | Puskopkar 48 | 8:11       | 8:13          | 1:43            | 103   |
|     |              | 9:56       | 10:00         | 1:36            | 96    |
|     |              | 11:36      | 11:38         | 2:46            | 166   |
|     |              | 14:24      | 14:26         | 1:55            | 115   |
|     |              | 16:21      | 16:24         |                 |       |
|     | Puskopkar 72 | 8:13       | 8:16          | 1:38            | 98    |
|     |              | 9:54       | 9:56          | 1:33            | 93    |
|     |              | 11:29      | 11:32         | 2:48            | 168   |
|     |              | 14:20      | 14:24         | 1:52            | 112   |
|     |              | 16:16      | 16:19         |                 |       |

**Waktu Sirkulasi  
Berdasarkan Headway  
Minggu 16 Juni 2002**

| Bis Kota     | Waktu      |               | Waktu Sirkulasi |       |
|--------------|------------|---------------|-----------------|-------|
|              | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 120   | 7:45       | 7:48          | 1:23            | 83    |
|              | 9:11       | 9:16          | 1:18            | 78    |
|              | 10:34      | 10:37         | 1:42            | 102   |
|              | 12:19      | 12:21         | 1:37            | 97    |
|              | 13:58      | 14:00         | 1:30            | 90    |
|              | 15:30      | 15:32         | 1:20            | 80    |
|              | 16:52      | 16:55         |                 |       |
| Kopata 140   | 7:46       | 7:48          | 1:28            | 88    |
|              | 9:16       | 9:19          | 1:32            | 92    |
|              | 10:51      | 10:55         | 1:34            | 94    |
|              | 12:29      | 12:31         | 1:35            | 95    |
|              | 14:06      | 14:09         | 1:28            | 88    |
|              | 15:37      | 15:39         | 1:17            | 77    |
|              | 16:56      | 16:59         |                 |       |
| Pukopkar 100 | 7:49       | 7:52          | 1:20            | 80    |
|              | 9:12       | 9:18          | 1:31            | 91    |
|              | 10:49      | 10:51         | 1:33            | 93    |
|              | 12:24      | 12:27         | 1:35            | 95    |
|              | 14:02      | 14:06         | 1:26            | 86    |
|              | 15:32      | 15:34         | 1:20            | 80    |
|              | 16:54      | 16:58         |                 |       |
| Kopata 116   | 7:51       | 7:53          | 1:32            | 92    |
|              | 9:25       | 9:26          | 1:26            | 86    |
|              | 10:52      | 10:54         | 1:38            | 98    |
|              | 12:32      | 12:35         | 1:34            | 94    |
|              | 14:09      | 14:11         |                 |       |
| Kopata 135   | 7:54       | 7:56          | 1:31            | 91    |
|              | 9:27       | 9:30          | 1:23            | 83    |
|              | 10:53      | 10:56         | 1:10            | 70    |
|              | 12:06      | 12:10         | 2:01            | 121   |
|              | 14:11      | 14:13         |                 |       |
| Pukopkar 98  | 8:00       | 8:03          | 1:27            | 87    |
|              | 9:30       | 9:32          | 1:24            | 84    |
|              | 10:56      | 10:58         | 1:42            | 102   |
|              | 12:40      | 12:42         | 1:31            | 91    |
|              | 14:13      | 14:16         |                 |       |
| Kopata 108   | 8:02       | 8:06          | 1:26            | 86    |
|              | 9:32       | 9:34          | 1:26            | 86    |
|              | 11:00      | 11:03         | 1:39            | 99    |
|              | 12:42      | 12:45         | 1:29            | 89    |
|              | 14:14      | 14:17         | 1:26            | 86    |
|              | 15:43      | 15:46         | 1:13            | 73    |
|              | 16:59      | 17:00         |                 |       |

| Bis Kota    | Waktu      |               | Waktu Sirkulasi |       |
|-------------|------------|---------------|-----------------|-------|
|             | Kedatangan | Keberangkatan | Jam             | Menit |
| Pukopkar 76 | 8:03       | 8:05          | 1:31            | 91    |
|             | 9:36       | 9:36          | 1:29            | 89    |
|             | 11:05      | 11:09         | 1:35            | 95    |
|             | 12:44      | 12:48         | 1:28            | 88    |
|             | 14:16      | 14:19         | 1:55            | 115   |
|             | 16:14      | 16:19         |                 |       |
| Pukopkar 65 | 8:06       | 8:09          | 1:30            | 90    |
|             | 9:39       | 9:43          | 1:25            | 85    |
|             | 11:08      | 11:12         | 1:33            | 93    |
|             | 12:45      | 12:49         | 1:30            | 90    |
|             | 14:19      | 14:22         | 1:31            | 911   |
|             | 15:53      | 15:55         |                 |       |
| Pukopkar 60 | 8:10       | 8:11          | 1:31            | 91    |
|             | 9:42       | 9:45          | 1:28            | 88    |
|             | 11:13      | 11:16         | 1:36            | 96    |
|             | 12:52      | 12:55         | 1:25            | 85    |
|             | 14:20      | 14:26         | 1:23            | 83    |
|             | 15:49      | 15:52         |                 |       |
| Kopata 98   | 8:12       | 8:14          |                 |       |
|             | 12:14      | 12:17         | 1:39            | 99    |
|             | 13:56      | 13:59         |                 |       |
| Kopata 70   | 8:15       | 8:16          | 1:33            | 93    |
|             | 9:49       | 9:51          |                 |       |
|             | 13:04      | 13:09         | 1:27            | 87    |
|             | 14:36      | 14:38         |                 |       |
| Pukopkar 50 | 8:17       | 8:19          | 1:35            | 95    |
|             | 9:54       | 9:56          |                 |       |
|             | 13:06      | 13:09         | 1:27            | 87    |
|             | 14:36      | 14:39         | 1:37            | 97    |
|             | 16:16      | 16:18         |                 |       |
| Kopata 75   | 8:21       | 8:23          | 1:32            | 92    |
|             | 9:55       | 9:58          |                 |       |
|             | 13:07      | 13:10         | 1:31            | 91    |
|             | 14:41      | 14:43         | 1:36            | 96    |
|             | 16:19      | 16:23         |                 |       |
| Pukopkar 54 | 8:25       | 8:26          | 1:31            | 91    |
|             | 9:57       | 9:59          |                 |       |
|             | 13:09      | 13:13         | 1:30            | 90    |
|             | 14:43      | 14:46         | 1:37            | 97    |
|             | 16:23      | 16:25         |                 |       |
| Pukopkar 30 | 8:26       | 8:28          | 1:35            | 95    |
|             | 10:03      | 10:05         |                 |       |
|             | 13:10      | 13:15         | 1:34            | 94    |
|             | 14:49      | 14:51         |                 |       |
| Kopata 68   | 8:29       | 8:31          | 1:35            | 95    |
|             | 10:06      | 10:09         |                 |       |
|             | 13:11      | 13:14         | 1:38            | 98    |
|             | 14:52      | 14:53         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 113 | 8:32       | 8:34          | 1:36            | 96    |
|          |     | 10:10      | 10:13         |                 |       |
|          |     | 13:13      | 13:16         | 1:38            | 98    |
|          |     | 14:54      | 14:57         | 1:32            | 92    |
|          |     | 16:29      | 16:32         |                 |       |
| Pukopkar | 29  | 8:35       | 8:36          | 1:36            | 96    |
|          |     | 10:12      | 10:15         |                 |       |
|          |     | 13:16      | 13:19         | 1:39            | 99    |
|          |     | 14:58      | 15:00         | 1:32            | 92    |
|          |     | 16:32      | 16:34         |                 |       |
| Pukopkar | 40  | 8:37       | 8:40          | 1:33            | 93    |
|          |     | 10:13      | 10:16         |                 |       |
|          |     | 13:19      | 13:21         | 1:39            | 99    |
|          |     | 15:00      | 15:03         | 1:32            | 92    |
|          |     | 16:35      | 16:37         |                 |       |
| Pukopkar | 48  | 8:39       | 8:41          | 1:35            | 95    |
|          |     | 10:16      | 10:19         |                 |       |
|          |     | 13:23      | 13:27         | 1:38            | 98    |
|          |     | 15:05      | 15:09         | 1:27            | 87    |
|          |     | 16:36      | 16:39         |                 |       |
| Kopata   | 110 | 8:42       | 8:45          | 1:34            | 94    |
|          |     | 10:19      | 10:21         |                 |       |
|          |     | 13:26      | 13:28         | 1:38            | 98    |
|          |     | 15:06      | 15:10         | 1:29            | 89    |
|          |     | 16:39      | 16:42         |                 |       |
| Pukopkar | 10  | 8:45       | 8:48          | 1:34            | 94    |
|          |     | 10:22      | 10:26         |                 |       |
|          |     | 13:29      | 13:32         | 1:38            | 98    |
|          |     | 15:10      | 15:12         | 1:29            | 89    |
|          |     | 16:41      | 16:44         |                 |       |
| Kopata   | 29  | 8:49       | 8:51          | 1:34            | 94    |
|          |     | 10:25      | 10:28         |                 |       |
|          |     | 13:32      | 13:34         | 1:38            | 98    |
|          |     | 15:12      | 15:16         | 1:27            | 87    |
|          |     | 16:43      | 16:45         |                 |       |
| Pukopkar | 55  | 8:59       | 9:03          | 1:26            | 86    |
|          |     | 10:29      | 10:33         |                 |       |
|          |     | 13:35      | 13:39         | 1:37            | 97    |
|          |     | 15:16      | 15:20         | 1:26            | 86    |
|          |     | 16:46      | 16:50         |                 |       |
| Kopata   | 22  | 9:10       | 9:12          | 1:21            | 81    |
|          |     | 10:33      | 10:35         |                 |       |
|          |     | 13:37      | 13:40         | 1:45            | 105   |
|          |     | 15:25      | 15:28         | 1:21            | 81    |
|          |     | 16:49      | 16:52         |                 |       |
| Pukopkar | 53  | 9:45       | 9:48          | 1:28            | 88    |
|          |     | 11:16      | 11:18         | 1:42            | 102   |
|          |     | 13:00      | 13:05         | 1:28            | 88    |
|          |     | 14:33      | 14:36         |                 |       |

| Bis Kota  | Waktu      |               | Waktu Sirkulasi |       |
|-----------|------------|---------------|-----------------|-------|
|           | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 85 | 12:10      | 12:15         | 1:39            | 99    |
|           | 13:54      | 13:59         | 1:40            | 100   |
|           | 15:39      | 15:42         | 1:14            | 74    |
|           | 16:56      | 16:59         |                 |       |
| Kopata 89 | 14:32      | 14:34         | 1:51            | 111   |
|           | 16:25      | 16:28         |                 |       |
|           |            |               |                 |       |



**Waktu Sirkulasi  
Berdasarkan Headway  
Minggu 23 Juni 2002**

| Bis Kota      | Waktu      |               | Waktu Sirkulasi |       |
|---------------|------------|---------------|-----------------|-------|
|               | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 59     | 8:14       | 8:16          | 1:29            | 89    |
|               | 9:45       | 9:48          | 1:29            | 89    |
|               | 11:17      | 11:22         |                 |       |
|               | 14:19      | 14:21         | 1:27            | 87    |
|               | 15:48      | 15:51         |                 |       |
| Puskopkar 100 | 8:16       | 8:18          | 1:32            | 92    |
|               | 9:50       | 9:52          | 1:33            | 93    |
|               | 11:25      | 11:31         |                 |       |
|               | 14:21      | 14:23         | 1:29            | 89    |
|               | 15:52      | 15:54         |                 |       |
| Puskopkar 52  | 8:17       | 8:19          | 1:36            | 96    |
|               | 9:55       | 9:58          | 1:35            | 95    |
|               | 11:33      | 11:36         | 1:35            | 95    |
|               | 13:11      | 13:15         | 1:32            | 92    |
|               | 14:47      | 14:51         | 1:23            | 83    |
| Puskopkar 41  | 16:14      | 16:17         |                 |       |
|               | 8:19       | 8:20          | 1:45            | 105   |
|               | 10:05      | 10:07         | 1:28            | 88    |
|               | 11:35      | 11:39         | 1:34            | 94    |
|               | 13:13      | 13:17         | 1:32            | 92    |
| Kopata 46     | 14:49      | 14:53         | 1:23            | 83    |
|               | 16:16      | 16:20         |                 |       |
|               | 8:21       | 8:24          | 1:47            | 107   |
|               | 10:11      | 10:13         | 1:28            | 88    |
|               | 11:41      | 11:43         | 1:31            | 91    |
|               | 13:14      | 13:18         | 1:32            | 92    |
|               | 14:50      | 14:52         | 1:27            | 87    |
| Kopata 36     | 16:19      | 16:22         |                 |       |
|               | 8:24       | 8:27          | 1:46            | 106   |
|               | 10:13      | 10:16         | 1:27            | 87    |
|               | 11:43      | 11:47         | 1:29            | 89    |
|               | 13:16      | 13:19         | 1:32            | 92    |
|               | 14:51      | 14:54         | 1:27            | 87    |
| Puskopkar 12  | 16:21      | 16:23         |                 |       |
|               | 8:25       | 8:29          | 1:45            | 105   |
|               | 10:14      | 10:18         | 1:27            | 87    |
|               | 11:45      | 11:48         | 1:31            | 91    |
|               | 13:19      | 13:22         | 1:30            | 90    |
|               | 14:52      | 14:56         | 1:27            | 87    |
| Kopata 132    | 16:23      | 16:25         |                 |       |
|               | 8:29       | 8:31          | 1:46            | 106   |
|               | 10:17      | 10:20         | 1:29            | 89    |
|               | 11:49      | 11:51         | 1:30            | 90    |
|               | 13:21      | 13:25         | 1:28            | 88    |
|               | 14:53      | 14:59         | 1:28            | 88    |
|               | 16:27      | 16:28         |                 |       |

| Bis Kota  |     | Waktu      |               | Waktu Sirkulasi |       |
|-----------|-----|------------|---------------|-----------------|-------|
|           |     | Kedatangan | Keberangkatan | Jam             | Menit |
| kopata    | 80  | 8:33       | 8:35          | 1:44            | 104   |
|           |     | 10:19      | 10:23         |                 |       |
|           |     | 13:05      | 13:08         | 1:47            | 107   |
|           |     | 14:55      | 14:58         | 1:30            | 90    |
|           |     | 16:28      | 16:29         |                 |       |
| Kopata    | 22  | 8:36       | 8:39          | 1:44            | 104   |
|           |     | 10:23      | 10:26         |                 |       |
|           |     | 13:32      | 13:36         | 1:30            | 90    |
|           |     | 15:06      | 15:09         | 1:30            | 90    |
|           |     | 16:39      | 16:41         |                 |       |
| Puskopkar | 9   | 8:39       | 8:42          | 1:45            | 105   |
|           |     | 10:27      | 10:29         |                 |       |
|           |     | 13:33      | 13:38         | 1:31            | 91    |
|           |     | 15:09      | 15:12         | 1:28            | 88    |
|           |     | 16:40      | 16:44         |                 |       |
| Kopata    | 140 | 8:41       | 8:43          | 1:47            | 107   |
|           |     | 10:30      | 10:32         |                 |       |
|           |     | 13:36      | 13:39         | 1:32            | 92    |
|           |     | 15:11      | 15:13         | 1:28            | 88    |
|           |     | 16:41      | 16:43         |                 |       |
| Puskopkar | 15  | 8:42       | 8:45          | 1:46            | 106   |
|           |     | 10:31      | 10:33         |                 |       |
|           |     | 13:39      | 13:42         | 1:32            | 92    |
|           |     | 15:14      | 15:16         | 1:28            | 88    |
|           |     | 16:44      | 16:46         |                 |       |
| Puskopkar | 18  | 8:46       | 8:49          | 1:43            | 103   |
|           |     | 10:32      | 10:36         |                 |       |
|           |     | 13:43      | 13:50         | 1:29            | 89    |
|           |     | 15:19      | 15:20         | 1:29            | 89    |
|           |     | 16:49      | 16:52         |                 |       |
| Kopata    | 120 | 8:49       | 8:52          | 1:39            | 99    |
|           |     | 10:31      | 10:35         |                 |       |
|           |     | 13:41      | 13:43         | 1:33            | 93    |
|           |     | 15:16      | 15:21         | 1:25            | 85    |
|           |     | 16:46      | 16:51         |                 |       |
| Kopata    | 114 | 8:53       | 8:56          | 1:43            | 103   |
|           |     | 10:39      | 10:42         |                 |       |
|           |     | 13:44      | 13:48         | 1:34            | 94    |
|           |     | 15:22      | 15:24         | 1:27            | 87    |
|           |     | 16:51      | 16:53         |                 |       |
| Kopata    | 125 | 8:56       | 8:59          | 1:42            | 102   |
|           |     | 10:41      | 10:43         |                 |       |
|           |     | 13:46      | 13:49         | 1:34            | 94    |
|           |     | 15:23      | 15:26         | 1:27            | 87    |
|           |     | 16:53      | 16:57         |                 |       |
| Puskopkar | 29  | 8:59       | 9:02          | 1:41            | 101   |
|           |     | 10:43      | 10:45         |                 |       |
|           |     | 13:49      | 13:51         | 1:34            | 94    |
|           |     | 15:25      | 15:27         | 1:28            | 88    |
|           |     | 16:55      | 16:58         |                 |       |



| Bis Kota      | Waktu      |               | Waktu Sirkulasi |       |
|---------------|------------|---------------|-----------------|-------|
|               | Kedatangan | Keberangkatan | Jam             | Menit |
| Puskopkar 38  | 9:10       | 9:12          | 1:32            | 92    |
|               | 10:44      | 10:46         |                 |       |
|               | 13:50      | 13:52         | 1:35            | 95    |
|               | 15:27      | 15:30         | 1:26            | 86    |
|               | 16:56      | 16:59         |                 |       |
| Puskopkar 35  | 9:19       | 9:23          | 1:26            | 86    |
|               | 10:49      | 10:51         |                 |       |
|               | 13:52      | 13:54         | 1:35            | 95    |
|               | 15:29      | 15:35         | 1:23            | 83    |
|               | 16:58      | 17:00         |                 |       |
| Puskopkar 40  | 9:22       | 9:26          | 1:26            | 86    |
|               | 10:52      | 10:54         |                 |       |
|               | 13:55      | 13:58         | 1:32            | 92    |
|               | 15:30      | 15:32         | 1:30            | 90    |
|               | 17:02      | 17:06         |                 |       |
| Puskopkar 48  | 9:26       | 9:30          | 1:23            | 83    |
|               | 10:53      | 10:55         |                 |       |
|               | 11:06      | 11:10         |                 |       |
|               | 13:59      | 14:03         | 1:30            | 90    |
|               | 15:33      | 15:36         |                 |       |
| kopata 110    | 9:30       | 9:32          | 1:37            | 97    |
|               | 11:09      | 11:13         |                 |       |
|               | 14:00      | 14:06         | 1:30            | 90    |
|               | 15:36      | 15:38         |                 |       |
| Puskopkar 10  | 9:34       | 9:37          | 1:22            | 88    |
|               | 10:59      | 11:02         |                 |       |
|               | 14:13      | 14:17         | 1:22            | 88    |
|               | 15:39      | 15:42         |                 |       |
| Puskopkar 76  | 9:42       | 9:43          | 1:20            | 80    |
|               | 11:03      | 11:06         |                 |       |
|               | 14:04      | 14:09         | 1:32            | 92    |
|               | 15:41      | 15:43         |                 |       |
| Kopata 17     | 13:09      | 13:11         | 1:35            | 95    |
|               | 14:46      | 14:50         | 1:23            | 83    |
|               | 16:13      | 16:18         |                 |       |
| Puskopkar 111 | 14:20      | 14:25         | 1:37            | 97    |
|               | 16:02      | 16:05         |                 |       |

**Waktu Sirkulasi  
Berdasarkan Headway  
Minggu 30 Juni 2002**

| Bis Kota  |     | Waktu      |               | Waktu Sirkulasi |       |
|-----------|-----|------------|---------------|-----------------|-------|
|           |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata    | 46  | 7:48       | 7:50          | 1:34            | 94    |
|           |     | 9:24       | 9:26          | 2:06            | 126   |
|           |     | 11:32      | 11:33         | 2:16            | 136   |
|           |     | 13:49      | 13:52         | 1:13            | 73    |
|           |     | 15:05      | 15:08         | 1:25            | 85    |
|           |     | 16:33      | 16:36         |                 |       |
| Puskopkar | 52  | 7:50       | 7:52          | 1:34            | 94    |
|           |     | 9:26       | 9:28          |                 |       |
|           |     | 14:15      | 14:18         | 1:31            | 91    |
|           |     | 15:49      | 15:51         |                 |       |
| Kopata    | 36  | 7:52       | 7:55          | 1:27            | 87    |
|           |     | 9:22       | 9:23          | 4:39            | 99    |
|           |     | 14:02      | 14:06         | 2:24            | 144   |
|           |     | 16:30      | 16:34         |                 |       |
| kopata    | 20  | 7:55       | 7:58          | 1:31            | 91    |
|           |     | 9:29       | 9:32          |                 |       |
|           |     | 14:08      | 14:11         |                 |       |
| Kopata    | 23  | 7:56       | 7:59          | 1:33            | 93    |
|           |     | 9:32       | 9:36          | 2:23            | 143   |
|           |     | 11:59      | 12:02         | 1:44            | 104   |
|           |     | 13:46      | 13:49         |                 |       |
| Kopata    | 25  | 7:59       | 8:01          | 1:35            | 95    |
|           |     | 9:36       | 9:36          |                 |       |
|           |     | 16:36      | 16:38         |                 |       |
| Puskopkar | 51  | 8:00       | 8:05          | 1:33            | 93    |
|           |     | 9:38       | 9:41          |                 |       |
|           |     | 14:20      | 14:24         | 2:15            | 135   |
|           |     | 16:39      | 16:42         |                 |       |
| Puskopkar | 46  | 8:01       | 8:04          | 1:37            | 97    |
|           |     | 9:41       | 9:43          |                 |       |
|           |     | 14:20      | 14:22         | 2:19            | 79    |
|           |     | 16:41      | 16:43         |                 |       |
| Kopata    | 17  | 8:03       | 8:07          | 1:37            | 97    |
|           |     | 9:44       | 9:48          | 1:33            | 93    |
|           |     | 11:21      | 11:25         |                 |       |
|           |     | 15:19      | 15:21         | 1:25            | 85    |
|           |     | 16:46      | 16:49         |                 |       |
| Puskopkar | 100 | 8:04       | 8:09          | 1:38            | 98    |
|           |     | 9:47       | 9:51          | 1:45            | 105   |
|           |     | 11:36      | 11:38         | 2:14            | 134   |
|           |     | 13:52      | 13:54         | 1:30            | 90    |
|           |     | 15:24      | 15:26         | 1:23            | 83    |
|           |     | 16:49      | 16:52         |                 |       |

| Bis Kota  |     | Waktu      |               | Waktu Sirkulasi |       |
|-----------|-----|------------|---------------|-----------------|-------|
|           |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata    | 80  | 8:06       | 8:09          | 1:42            | 102   |
|           |     | 9:51       | 9:53          | 1:45            | 105   |
|           |     | 11:38      | 11:41         | 2:13            | 133   |
|           |     | 13:54      | 13:57         | 1:29            | 89    |
|           |     | 15:26      | 15:29         | 1:23            | 83    |
|           |     | 16:52      | 16:54         |                 |       |
| Kopata    | 120 | 8:08       | 8:11          | 1:43            | 103   |
|           |     | 9:54       | 9:56          | 1:44            | 104   |
|           |     | 11:40      | 11:43         | 2:12            | 132   |
|           |     | 13:55      | 13:58         | 1:31            | 91    |
|           |     | 15:29      | 15:31         | 1:22            | 82    |
|           |     | 16:53      | 16:58         |                 |       |
| Puskopkar | 85  | 8:10       | 8:13          | 1:42            | 102   |
|           |     | 9:55       | 9:58          | 1:45            | 105   |
|           |     | 11:43      | 11:45         | 3:45            | 105   |
|           |     | 13:56      | 14:00         | 2:59            | 119   |
|           |     | 15:30      | 15:33         | 1:26            | 86    |
|           |     | 16:59      | 17:02         |                 |       |
| Kopata    | 115 | 8:13       | 8:15          | 1:41            | 101   |
|           |     | 9:56       | 10:00         | 1:48            | 108   |
|           |     | 11:48      | 11:52         | 2:07            | 127   |
|           |     | 13:59      | 14:02         |                 |       |
|           |     | 17:02      | 17:06         |                 |       |
| kopata    | 18  | 8:17       | 8:19          | 1:40            | 100   |
|           |     | 9:59       | 10:04         | 1:45            | 105   |
|           |     | 11:49      | 11:51         | 1:34            | 94    |
|           |     | 13:25      | 13:28         |                 |       |
|           |     | 17:06      | 17:08         |                 |       |
| kopata    | 3   | 8:24       | 8:25          | 1:38            | 98    |
|           |     | 10:03      | 10:08         | 1:44            | 104   |
|           |     | 11:52      | 11:56         | 1:40            | 100   |
|           |     | 13:36      | 13:38         | 3:35            | 95    |
|           |     | 17:13      | 17:15         |                 |       |
| Puskopkar | 76  | 8:27       | 8:27          | 1:38            | 98    |
|           |     | 10:05      | 10:07         | 1:47            | 107   |
|           |     | 11:54      | 11:58         | 1:35            | 95    |
|           |     | 13:33      | 13:35         |                 |       |
| Puskopkar | 12  | 8:32       | 8:35          | 1:34            | 94    |
|           |     | 10:09      | 10:11         | 1:45            | 105   |
|           |     | 11:56      | 11:58         | 1:42            | 102   |
|           |     | 13:40      | 13:46         |                 |       |
| Kopata    | 22  | 8:38       | 8:39          | 1:32            | 92    |
|           |     | 10:11      | 10:13         |                 |       |
|           |     | 14:29      | 14:32         | 1:22            | 82    |
|           |     | 15:54      | 15:57         |                 |       |
| Puskopkar | 14  | 8:39       | 8:41          | 1:35            | 95    |
|           |     | 10:16      | 10:19         | 1:41            | 101   |
|           |     | 12:00      | 12:04         | 2:28            | 88    |
|           |     | 14:32      | 14:36         | 1:21            | 81    |
|           |     | 15:57      | 15:59         |                 |       |

| Bis Kota  |     | Waktu      |               | Waktu Sirkulasi |       |
|-----------|-----|------------|---------------|-----------------|-------|
|           |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Puskopkar | 9   | 8:41       | 8:43          | 1:36            | 96    |
|           |     | 10:19      | 10:21         | 1:45            | 105   |
|           |     | 12:06      | 12:08         | 2:28            | 148   |
|           |     | 14:36      | 14:39         | 1:21            | 81    |
|           |     | 16:00      | 16:03         |                 |       |
| Puskopkar | 28  | 8:43       | 8:45          | 1:38            | 98    |
|           |     | 10:23      | 10:25         | 1:45            | 105   |
|           |     | 12:10      | 12:13         | 2:26            | 146   |
|           |     | 14:39      | 14:41         |                 |       |
| Kopata    | 125 | 8:46       | 8:48          | 1:37            | 97    |
|           |     | 10:25      | 10:27         | 1:44            | 104   |
|           |     | 12:11      | 12:15         | 2:26            | 146   |
|           |     | 14:41      | 14:43         | 1:25            | 85    |
|           |     | 16:08      | 16:11         |                 |       |
| Puskopkar | 72  | 8:49       | 8:51          | 1:38            | 98    |
|           |     | 10:29      | 10:31         | 1:46            | 106   |
|           |     | 12:17      | 12:19         | 2:24            | 144   |
|           |     | 14:43      | 14:46         | 1:28            | 88    |
|           |     | 16:14      | 16:19         |                 |       |
| Kopata    | 113 | 8:52       | 8:54          | 1:36            | 96    |
|           |     | 10:30      | 10:34         | 1:45            | 105   |
|           |     | 12:19      | 12:23         | 2:23            | 143   |
|           |     | 14:46      | 14:49         | 1:29            | 89    |
|           |     | 16:18      | 16:22         |                 |       |
| Kopata    | 119 | 8:54       | 8:56          | 1:37            | 97    |
|           |     | 10:33      | 10:35         | 2:43            | 163   |
|           |     | 13:18      | 13:22         | 1:27            | 87    |
|           |     | 14:49      | 14:52         | 1:28            | 88    |
|           |     | 16:20      | 16:23         |                 |       |
| Puskopkar | 40  | 9:01       | 9:05          | 1:31            | 91    |
|           |     | 10:36      | 10:39         |                 |       |
|           |     | 14:52      | 14:55         | 1:27            | 87    |
|           |     | 16:22      | 16:25         |                 |       |
| Puskopkar | 48  | 9:04       | 9:09          | 1:41            | 101   |
|           |     | 10:50      | 10:53         |                 |       |
|           |     | 14:54      | 14:56         | 1:28            | 88    |
|           |     | 16:24      | 16:27         |                 |       |
| Kopata    | 110 | 9:06       | 9:11          | 1:35            | 95    |
|           |     | 10:46      | 10:48         |                 |       |
|           |     | 14:54      | 14:58         | 1:29            | 89    |
|           |     | 16:27      | 16:29         |                 |       |
| Puskopkar | 10  | 9:14       | 9:16          | 1:49            | 109   |
|           |     | 11:05      | 11:08         |                 |       |
|           |     | 14:59      | 15:03         | 1:26            | 86    |
|           |     | 16:29      | 16:33         |                 |       |

**Waktu Sirkulasi  
Berdasarkan Headway  
Senin 10 Juni 2002**

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 100 | 7:39       | 7:42          | 1:32            | 92    |
|            | 9:14       | 9:17          | 1:32            | 92    |
|            | 10:49      | 10:51         | 2:34            | 154   |
|            | 13:25      | 13:28         | 1:36            | 96    |
|            | 15:04      | 15:06         | 1:37            | 97    |
|            | 16:43      | 16:45         |                 |       |
| Aspada 111 | 7:41       | 7:45          | 1:36            | 96    |
|            | 9:21       | 9:25          | 1:42            | 102   |
|            | 11:07      | 11:09         | 2:35            | 155   |
|            | 13:44      | 13:48         | 1:28            | 88    |
|            | 15:16      | 15:18         | 1:52            | 112   |
|            | 17:10      | 17:13         |                 |       |
| Kopata 104 | 7:43       | 7:45          | 1:25            | 85    |
|            | 9:10       | 9:14          | 1:37            | 97    |
|            | 10:51      | 10:54         | 2:33            | 153   |
|            | 13:27      | 13:31         |                 |       |
| Aspada 55  | 7:43       | 7:46          | 1:37            | 97    |
|            | 9:23       | 9:25          | 1:42            | 102   |
|            | 11:07      | 11:11         | 2:46            | 166   |
|            | 13:57      | 14:00         | 1:52            | 112   |
|            | 15:52      | 15:55         |                 |       |
| Kopata 109 | 7:47       | 7:49          | 1:36            | 96    |
|            | 9:25       | 9:27          | 1:45            | 105   |
|            | 11:12      | 11:14         | 1:56            | 116   |
|            | 13:10      | 13:14         | 1:57            | 117   |
|            | 15:11      | 15:15         | 1:52            | 112   |
|            | 17:07      | 17:09         |                 |       |
| Kopata 130 | 7:49       | 7:51          | 1:37            | 97    |
|            | 9:28       | 9:31          | 1:38            | 98    |
|            | 11:09      | 11:12         | 2:24            | 144   |
|            | 13:36      | 13:38         | 1:29            | 89    |
|            | 15:07      | 15:10         |                 |       |
| Aspada 97  | 7:52       | 7:53          | 1:37            | 103   |
|            | 8:36       | 8:39          | 1:36            | 111   |
|            | 9:30       | 9:32          | 2:14            | 163   |
|            | 10:15      | 10:16         | 2:56            | 150   |
|            | 11:46      | 11:48         |                 |       |
|            | 13:12      | 13:17         | 1:57            | 117   |
|            | 15:14      | 15:18         | 1:31            | 91    |
|            | 16:49      | 16:51         |                 |       |
| Aspada 106 | 7:54       | 7:55          | 1:34            | 94    |
|            | 9:29       | 9:33          | 1:40            | 100   |
|            | 11:13      | 11:16         | 1:54            | 114   |
|            | 13:10      | 13:16         | 1:56            | 116   |
|            | 15:12      | 15:16         | 1:31            | 91    |
|            | 16:47      | 16:49         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 107 | 7:56       | 7:58          | 1:36            | 96    |
|          |     | 9:34       | 9:36          | 1:45            | 105   |
|          |     | 11:21      | 11:23         | 2:53            | 173   |
|          |     | 14:16      | 14:18         | 1:38            | 98    |
|          |     | 15:56      | 15:59         |                 |       |
| Aspada   | 112 | 7:57       | 7:59          | 1:32            | 92    |
|          |     | 9:31       | 9:34          | 1:45            | 105   |
|          |     | 11:19      | 11:21         | 2:36            | 156   |
|          |     | 13:57      | 13:59         | 1:37            | 97    |
|          |     | 15:36      | 15:39         |                 |       |
| Kopata   | 210 | 7:58       | 8:00          | 1:34            | 94    |
|          |     | 9:34       | 9:37          | 1:45            | 105   |
|          |     | 11:22      | 11:25         | 2:37            | 157   |
|          |     | 14:02      | 14:04         | 1:39            | 99    |
|          |     | 15:43      | 15:45         |                 |       |
| Kopata   | 9   | 8:03       | 8:05          | 1:28            | 88    |
|          |     | 9:33       | 9:36          | 1:38            | 98    |
|          |     | 11:14      | 11:19         | 1:52            | 112   |
|          |     | 13:11      | 13:17         | 1:51            | 111   |
|          |     | 15:08      | 15:11         | 1:22            | 82    |
|          |     | 16:33      | 16:35         |                 |       |
| Kopata   | 15  | 8:05       | 8:07          | 1:29            | 89    |
|          |     | 9:36       | 9:39          | 1:44            | 104   |
|          |     | 11:23      | 11:27         |                 |       |
|          |     | 14:43      | 14:45         | 1:37            | 97    |
|          |     | 16:22      | 16:25         |                 |       |
| Aspada   | 123 | 8:07       | 8:09          | 1:29            | 89    |
|          |     | 9:38       | 9:40          | 1:46            | 106   |
|          |     | 11:26      | 11:29         | 2:52            | 172   |
|          |     | 14:21      | 14:24         | 1:05            | 65    |
|          |     | 15:29      | 15:31         | 1:24            | 84    |
|          |     | 16:55      | 16:59         |                 |       |
| Kopata   | 120 | 8:09       | 8:11          | 1:38            | 98    |
|          |     | 9:49       | 9:51          | 1:39            | 99    |
|          |     | 11:30      | 11:32         | 2:57            | 177   |
|          |     | 14:29      | 14:31         | 1:27            | 87    |
|          |     | 15:58      | 16:01         |                 |       |
| Aspada   | 113 | 8:13       | 8:13          | 1:29            | 89    |
|          |     | 9:42       | 9:44          | 1:48            | 108   |
|          |     | 11:32      | 11:34         |                 |       |
|          |     | 14:44      | 14:47         | 1:36            | 96    |
|          |     | 16:23      | 16:26         |                 |       |
| Aspada   | 115 | 8:14       | 8:17          | 1:36            | 96    |
|          |     | 9:53       | 9:54          | 1:42            | 102   |
|          |     | 11:36      | 11:38         | 2:55            | 175   |
|          |     | 14:33      | 14:35         | 1:51            | 111   |
|          |     | 16:26      | 16:29         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 121 | 8:16       | 8:19          | 1:36            | 96    |
|            | 9:55       | 9:56          | 1:33            | 93    |
|            | 11:29      | 11:31         | 2:56            | 176   |
|            | 14:27      | 14:29         | 1:42            | 102   |
|            | 16:11      | 16:14         |                 |       |
| Kopata 124 | 8:17       | 8:21          | 1:34            | 94    |
|            | 9:55       | 9:57          | 1:30            | 90    |
|            | 11:27      | 11:29         | 2:43            | 163   |
|            | 14:12      | 14:14         | 1:09            | 69    |
|            | 15:23      | 15:25         | 1:27            | 87    |
| Aspada 64  | 8:21       | 8:23          | 1:34            | 94    |
|            | 9:57       | 10:00         | 1:27            | 87    |
|            | 11:27      | 11:30         | 2:54            | 174   |
|            | 14:24      | 14:27         | 1:43            | 103   |
|            | 16:10      | 16:15         |                 |       |
| Kopata 75  | 8:23       | 8:25          | 1:31            | 91    |
|            | 9:56       | 9:59          | 1:30            | 90    |
|            | 11:29      | 11:31         | 2:42            | 162   |
|            | 14:13      | 14:16         | 1:09            | 69    |
|            | 15:25      | 15:27         | 1:35            | 95    |
| Aspada 117 | 17:02      | 17:04         |                 |       |
|            | 8:25       | 8:27          | 1:37            | 97    |
|            | 10:04      | 10:07         | 1:34            | 94    |
| Aspada 100 | 11:41      | 11:45         |                 |       |
|            | 8:26       | 8:29          | 1:30            | 90    |
|            | 9:59       | 10:03         | 1:36            | 96    |
|            | 11:39      | 11:42         | 2:54            | 174   |
|            | 14:36      | 14:38         | 1:41            | 101   |
| Kopata 119 | 16:19      | 16:21         |                 |       |
|            | 8:27       | 8:29          | 1:34            | 94    |
|            | 10:03      | 10:05         | 1:36            | 96    |
| Kopata 166 | 11:41      | 11:44         |                 |       |
|            | 8:32       | 8:33          | 1:36            | 96    |
| Kopata 132 | 10:09      | 10:12         |                 |       |
|            | 8:35       | 8:37          | 1:28            | 88    |
|            | 10:05      | 10:08         | 1:35            | 95    |
|            | 11:43      | 11:46         |                 |       |
|            | 14:53      | 14:56         | 1:40            | 100   |
| Kopata 50  | 16:36      | 16:37         |                 |       |
|            | 8:41       | 8:43          | 1:36            | 96    |
| Aspada 52  | 10:19      | 10:23         |                 |       |
|            | 8:43       | 8:45          | 1:32            | 92    |
| Kopata 200 | 10:17      | 10:20         |                 |       |
|            | 8:45       | 8:49          | 1:32            | 92    |
| Aspada 68  | 10:21      | 10:25         |                 |       |
|            | 8:48       | 8:50          | 1:35            | 95    |
|            | 10:25      | 10:27         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 17  | 9:02       | 9:04          | 1:38            | 98    |
|          |     | 10:42      | 10:43         | 2:40            | 160   |
|          |     | 13:23      | 13:25         | 1:36            | 96    |
|          |     | 15:01      | 15:03         | 1:36            | 96    |
|          |     | 16:39      | 16:41         |                 |       |
| Aspada   | 60  | 9:09       | 9:12          | 1:34            | 94    |
|          |     | 10:46      | 10:48         | 2:29            | 149   |
|          |     | 13:17      | 13:21         |                 |       |
| Kopata   | 125 | 10:00      | 10:04         | 1:36            | 96    |
|          |     | 11:40      | 11:43         | 1:32            | 92    |
|          |     | 13:15      | 13:18         | 1:33            | 93    |
|          |     | 14:51      | 14:53         | 1:34            | 94    |
|          |     | 16:27      | 16:30         |                 |       |
| Kopata   | 25  | 13:06      | 13:11         |                 |       |
| Kopata   | 86  | 13:08      | 13:12         | 1:34            | 94    |
|          |     | 14:46      | 14:50         | 1:40            | 100   |
|          |     | 16:30      | 16:32         |                 |       |





**Waktu Sirkulasi  
Berdasarkan Headway  
Senin 17 Juni 2002**

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 115 | 7:17       | 7:19          | 2:11            | 131   |
|          |     | 9:30       | 9:32          | 1:45            | 105   |
|          |     | 11:17      | 11:23         | 2:26            | 146   |
|          |     | 13:49      | 13:55         | 1:39            | 99    |
|          |     | 15:34      | 15:38         |                 |       |
| Kopata   | 11  | 7:20       | 7:21          | 2:00            | 120   |
|          |     | 9:21       | 9:24          | 1:42            | 102   |
|          |     | 11:06      | 11:09         | 2:43            | 163   |
|          |     | 13:52      | 13:54         | 1:23            | 83    |
|          |     | 15:17      | 15:22         | 1:31            | 91    |
|          |     | 16:53      | 16:58         |                 |       |
| Aspada   | 150 | 7:21       | 7:23          | 2:13            | 133   |
|          |     | 9:36       | 9:38          | 1:37            | 97    |
|          |     | 11:15      | 11:19         | 3:24            | 204   |
|          |     | 14:43      | 14:46         | 1:27            | 87    |
|          |     | 16:13      | 16:18         |                 |       |
| Kopata   | 123 | 7:22       | 7:24          | 2:08            | 128   |
|          |     | 9:32       | 9:35          | 1:18            | 78    |
|          |     | 10:53      | 10:59         |                 |       |
|          |     | 14:22      | 14:26         | 2:04            | 124   |
|          |     | 16:30      | 16:33         |                 |       |
| Aspada   | 52  | 7:26       | 7:27          | 1:52            | 112   |
|          |     | 9:19       | 9:22          | 1:25            | 85    |
|          |     | 10:47      | 10:49         | 1:17            | 77    |
|          |     | 12:06      | 12:09         | 2:06            | 126   |
|          |     | 14:15      | 14:18         | 1:46            | 106   |
|          |     | 16:04      | 16:06         |                 |       |
| Kopata   | 38  | 7:30       | 7:33          | 1:58            | 118   |
|          |     | 9:31       | 9:33          | 1:46            | 106   |
|          |     | 11:19      | 11:25         | 2:54            | 174   |
|          |     | 14:19      | 14:22         | 1:25            | 85    |
|          |     | 15:47      | 15:50         |                 |       |
| Kopata   | 21  | 7:33       | 7:35          | 1:04            | 64    |
|          |     | 8:39       | 8:43          | 1:44            | 104   |
|          |     | 10:27      | 10:31         |                 |       |
|          |     | 13:57      | 14:03         | 1:30            | 90    |
|          |     | 15:33      | 15:38         |                 |       |
| Aspada   | 51  | 7:39       | 7:41          | 1:36            | 96    |
|          |     | 9:17       | 9:20          |                 |       |
| Kopata   | 17  | 7:42       | 7:45          | 1:56            | 116   |
|          |     | 9:41       | 9:43          |                 |       |
| Kopata   | 56  | 7:43       | 7:45          | 2:05            | 125   |
|          |     | 9:50       | 9:53          | 1:42            | 102   |
|          |     | 11:35      | 11:38         |                 |       |
|          |     | 15:05      | 15:08         |                 |       |

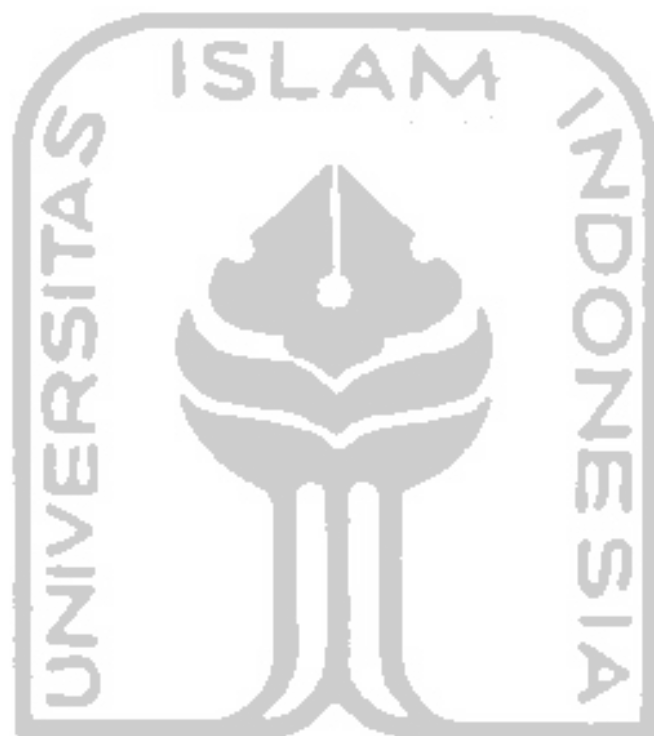
| Bis Kota   | Waktu | Waktu Sirkulasi |               |     |
|------------|-------|-----------------|---------------|-----|
|            |       | Kedatangan      | Keberangkatan | Jam |
| Kopata 35  | 7:45  | 7:47            | 1:58          | 118 |
|            | 9:45  | 9:47            |               |     |
| Kopata 20  | 7:50  | 7:53            | 2:00          | 120 |
|            | 9:53  | 9:59            | 1:45          | 105 |
|            | 11:44 | 11:46           |               |     |
|            | 15:12 | 15:15           | 1:52          | 112 |
|            | 17:07 | 17:10           |               |     |
| Kopata 117 | 8:01  | 8:03            |               |     |
|            | 9:47  | 9:51            | 1:39          | 99  |
|            | 11:30 | 11:32           |               |     |
|            | 14:46 | 14:49           | 1:15          | 75  |
| Aspada 30  | 8:07  | 8:10            | 1:39          | 99  |
|            | 9:49  | 9:52            | 1:48          | 108 |
|            | 11:40 | 11:43           | 2:20          | 140 |
|            | 14:03 | 14:08           | 1:38          | 98  |
|            | 15:46 | 15:49           |               |     |
| Aspada 7   | 8:12  | 8:14            | 1:43          | 103 |
|            | 9:57  | 10:00           | 2:00          | 120 |
|            | 12:00 | 12:05           |               |     |
| Aspada 46  | 15:27 | 15:29           |               |     |
|            | 8:16  | 8:19            | 1:34          | 94  |
|            | 9:53  | 9:56            | 2:09          | 129 |
|            | 12:05 | 12:07           |               |     |
| Aspada 87  | 15:19 | 15:24           | 1:33          | 93  |
|            | 16:57 | 16:58           |               |     |
|            | 8:19  | 8:24            | 1:37          | 97  |
|            | 10:01 | 10:05           | 1:41          | 101 |
|            | 11:46 | 11:49           |               |     |
| Kopata 42  | 15:14 | 15:16           | 1:35          | 95  |
|            | 16:51 | 16:54           |               |     |
|            | 8:29  | 8:31            | 2:04          | 124 |
|            | 10:35 | 10:39           |               |     |
| Aspada 12  | 14:06 | 14:09           | 1:32          | 92  |
|            | 15:41 | 15:43           |               |     |
|            | 8:31  | 8:35            | 1:32          | 92  |
| Aspada 19  | 10:07 | 10:12           |               |     |
|            | 8:35  | 8:38            | 1:59          | 119 |
|            | 10:37 | 10:40           |               |     |
|            | 13:57 | 14:02           | 1:41          | 101 |
| Aspada 40  | 15:43 | 15:46           |               |     |
|            | 8:47  | 8:50            | 1:25          | 85  |
|            | 10:15 | 10:18           | 1:15          | 75  |
|            | 11:33 | 11:36           | 2:18          | 138 |
|            | 13:54 | 13:56           | 1:06          | 66  |
|            | 15:02 | 15:05           | 1:38          | 98  |
|            | 16:43 | 16:46           |               |     |

**Waktu Sirkulasi  
Berdasarkan Headway  
Senin 24 Juni 2002**

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 150 | 7:39       | 7:41          | 1:32            | 92    |
|          |     | 9:13       | 9:16          | 1:26            | 86    |
|          |     | 10:42      | 10:48         | 1:55            | 115   |
|          |     | 12:43      | 12:46         | 1:50            | 110   |
|          |     | 14:36      | 14:39         | 1:34            | 94    |
|          |     | 16:13      | 16:17         |                 |       |
| Kopata   | 110 | 7:41       | 7:43          | 1:12            | 72    |
|          |     | 8:55       | 8:59          | 1:24            | 84    |
|          |     | 10:23      | 10:28         | 2:08            | 128   |
|          |     | 12:36      | 12:39         | 1:16            | 76    |
|          |     | 13:55      | 13:58         | 2:11            | 131   |
|          |     | 16:09      | 16:12         |                 |       |
| Aspada   | 56  | 7:41       | 7:45          | 1:32            | 92    |
|          |     | 9:17       | 9:21          | 1:15            | 75    |
|          |     | 10:36      | 10:39         |                 |       |
| Kopata   | 20  | 7:43       | 7:46          | 1:33            | 93    |
|          |     | 9:19       | 9:22          | 1:24            | 84    |
|          |     | 10:46      | 10:51         |                 |       |
| Aspada   | 36  | 7:46       | 7:48          | 1:35            | 95    |
|          |     | 9:23       | 9:27          | 1:16            | 76    |
|          |     | 10:43      | 10:46         |                 |       |
| Kopata   | 122 | 7:48       | 7:53          | 1:36            | 96    |
|          |     | 9:29       | 9:31          |                 |       |
| Kopata   | 17  | 8:14       | 8:19          | 2:32            | 152   |
|          |     | 10:51      | 10:53         | 3:20            | 200   |
|          |     | 14:13      | 14:15         | 2:01            | 121   |
|          |     | 16:16      | 16:18         |                 |       |
| Kopata   | 80  | 8:16       | 8:18          | 2:35            | 155   |
|          |     | 10:53      | 10:56         |                 |       |
| Kopata   | 3   | 8:19       | 8:21          | 2:35            | 155   |
|          |     | 10:56      | 10:58         |                 |       |
| Aspada   | 125 | 8:21       | 8:25          | 1:27            | 87    |
|          |     | 9:52       | 9:54          | 1:34            | 94    |
|          |     | 11:28      | 11:30         | 1:32            | 92    |
|          |     | 13:02      | 13:06         | 1:54            | 114   |
|          |     | 15:00      | 15:05         | 1:22            | 82    |
|          |     | 16:27      | 16:30         |                 |       |
| Kopata   | 125 | 8:23       | 8:26          | 2:45            | 165   |
|          |     | 11:11      | 11:15         |                 |       |
|          |     | 16:46      | 16:50         |                 |       |
| Aspada   | 106 | 8:24       | 8:29          | 1:27            | 87    |
|          |     | 9:56       | 9:58          | 1:06            | 66    |
|          |     | 11:04      | 11:10         | 2:14            | 134   |
|          |     | 13:24      | 13:31         | 1:56            | 116   |
|          |     | 15:27      | 15:31         | 1:17            | 77    |
|          |     | 16:48      | 16:52         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada   | 51  | 8:25       | 8:32          | 1:31            | 91    |
|          |     | 10:03      | 10:05         | 1:30            | 90    |
|          |     | 11:35      | 11:38         | 1:36            | 96    |
|          |     | 13:14      | 13:17         | 2:08            | 128   |
|          |     | 15:25      | 15:29         | 1:21            | 81    |
|          |     | 16:50      | 16:54         |                 |       |
| Aspada   | 22  | 8:27       | 8:29          | 1:39            | 99    |
|          |     | 10:08      | 10:11         | 1:26            | 86    |
|          |     | 11:37      | 11:41         | 2:02            | 122   |
|          |     | 13:43      | 13:48         | 1:45            | 105   |
|          |     | 15:33      | 15:37         |                 |       |
| Aspada   | 12  | 8:29       | 8:31          | 1:42            | 102   |
|          |     | 10:13      | 10:15         | 2:52            | 172   |
|          |     | 13:07      | 13:10         | 1:56            | 116   |
|          |     | 15:06      | 15:10         | 1:43            | 103   |
|          |     | 16:53      | 16:55         |                 |       |
| Kopata   | 113 | 8:41       | 8:44          | 1:35            | 95    |
|          |     | 10:19      | 10:22         | 2:07            | 127   |
|          |     | 12:29      | 12:32         | 1:30            | 90    |
|          |     | 14:02      | 14:05         | 1:54            | 114   |
|          |     | 15:59      | 16:02         |                 |       |
| Aspada   | 10  | 8:47       | 8:52          | 1:25            | 85    |
|          |     | 10:17      | 10:21         | 2:09            | 129   |
|          |     | 12:30      | 12:36         | 1:47            | 107   |
|          |     | 14:23      | 14:27         | 1:24            | 84    |
|          |     | 15:51      | 15:54         |                 |       |
| Kopata   | 110 | 8:55       | 8:59          | 1:24            | 84    |
|          |     | 10:23      | 10:28         | 2:08            | 128   |
|          |     | 12:36      | 12:39         | 1:49            | 109   |
|          |     | 14:28      | 14:31         | 1:38            | 98    |
|          |     | 16:09      | 16:12         |                 |       |
| Aspada   | 9   | 9:03       | 9:05          | 1:20            | 80    |
|          |     | 10:25      | 10:27         | 2:19            | 139   |
|          |     | 12:46      | 12:50         | 1:17            | 77    |
|          |     | 14:07      | 14:10         | 1:32            | 92    |
|          |     | 15:42      | 15:45         |                 |       |
| Aspada   | 17  | 9:06       | 9:10          | 1:16            | 76    |
|          |     | 10:26      | 10:30         | 2:21            | 141   |
|          |     | 12:51      | 12:53         | 1:50            | 110   |
|          |     | 14:43      | 14:45         | 1:08            | 68    |
|          |     | 15:53      | 15:56         |                 |       |
| Aspada   | 11  | 9:10       | 9:15          | 1:16            | 76    |
|          |     | 10:31      | 10:33         | 2:24            | 144   |
|          |     | 12:57      | 13:01         | 1:46            | 106   |
|          |     | 14:47      | 14:51         | 1:33            | 93    |
|          |     | 16:24      | 16:30         |                 |       |
| Kopata   | 150 | 9:13       | 9:16          | 1:26            | 86    |
|          |     | 10:42      | 10:48         | 1:55            | 115   |
|          |     | 12:43      | 12:46         | 1:50            | 110   |
|          |     | 14:36      | 14:39         | 1:34            | 94    |
|          |     | 16:13      | 16:17         |                 |       |

| Bis Kota  | Waktu      |               | Waktu Sirkulasi |       |
|-----------|------------|---------------|-----------------|-------|
|           | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 56 | 9:17       | 9:21          | 1:15            | 75    |
|           | 10:36      | 10:39         |                 |       |
| Kopata 20 | 9:19       | 9:22          | 1:24            | 84    |
|           | 10:46      | 10:51         |                 |       |
| Aspada 36 | 9:23       | 9:27          | 1:16            | 76    |
|           | 10:43      | 10:46         |                 |       |
| Kopata 62 | 9:50       | 9:52          | 1:33            | 93    |
|           | 11:25      | 11:28         |                 |       |



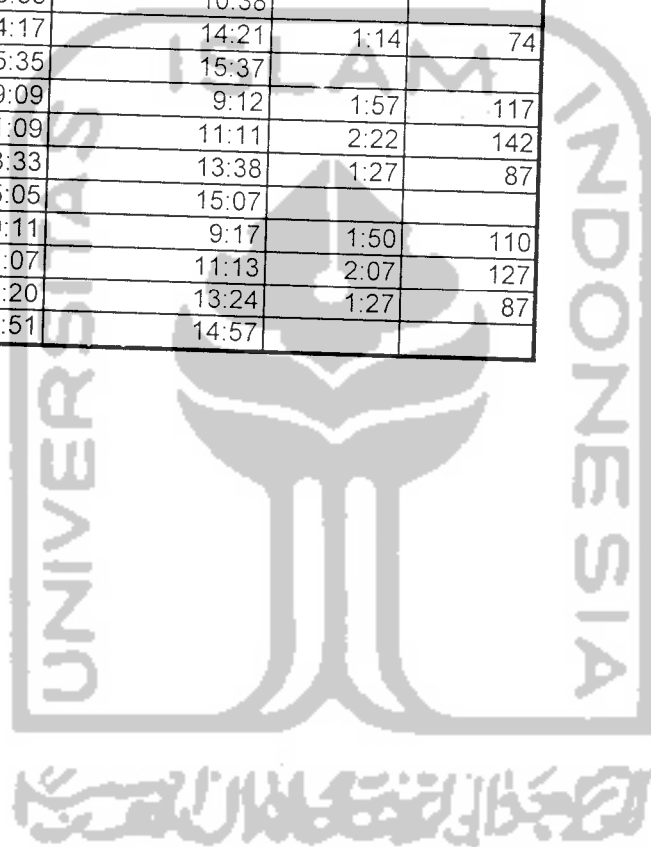
UNIVERSITAS ISLAM INDONESIA

**Waktu Sirkulasi  
Berdasarkan Headway  
Senin 3 Juni 2002**

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 115 | 7:38       | 7:48          | 1:35            | 95    |
|            | 9:23       | 9:25          | 1:55            | 115   |
|            | 11:20      | 11:25         | 1:44            | 104   |
|            | 13:09      | 13:11         | 1:30            | 90    |
|            | 14:41      | 14:47         |                 |       |
| Kopata 122 | 7:38       | 7:40          | 1:35            | 95    |
| Aspada 81  | 9:15       | 9:18          |                 |       |
|            | 7:40       | 7:42          | 1:42            | 102   |
|            | 9:24       | 9:29          | 1:44            | 104   |
|            | 11:13      | 11:15         | 2:08            | 128   |
|            | 13:23      | 13:27         | 1:22            | 82    |
| Kopata 56  | 14:49      | 14:54         |                 |       |
|            | 7:42       | 7:46          | 1:40            | 100   |
|            | 9:26       | 9:27          | 2:03            | 123   |
|            | 11:30      | 11:37         | 2:04            | 124   |
|            | 13:41      | 13:46         | 1:27            | 87    |
| Kopata 117 | 15:13      | 15:20         |                 |       |
|            | 7:45       | 7:47          | 2:07            | 127   |
|            | 9:54       | 9:57          |                 |       |
|            | 13:57      | 14:01         | 1:18            | 78    |
| Aspada 56  | 15:19      | 15:24         |                 |       |
|            | 7:45       | 7:47          | 1:44            | 104   |
|            | 9:31       | 9:35          | 1:46            | 106   |
|            | 11:21      | 11:24         | 2:01            | 121   |
|            | 13:25      | 13:31         | 1:28            | 88    |
| Aspada 60  | 14:59      | 15:00         |                 |       |
|            | 7:47       | 7:50          | 1:42            | 102   |
|            | 9:32       | 9:38          | 1:58            | 118   |
|            | 11:36      | 11:41         | 2:09            | 129   |
|            | 13:50      | 13:54         | 1:24            | 84    |
| Kopata 38  | 15:18      | 15:22         |                 |       |
|            | 7:48       | 7:51          | 2:14            | 134   |
|            | 10:05      | 10:07         |                 |       |
|            | 14:03      | 14:08         | 1:17            | 77    |
| Kopata 20  | 15:25      | 15:27         |                 |       |
|            | 7:49       | 7:51          | 1:45            | 105   |
|            | 9:36       | 9:40          | 1:45            | 105   |
|            | 11:25      | 11:30         | 2:15            | 135   |
|            | 13:45      | 13:49         | 1:21            | 81    |
| Aspada 78  | 15:10      | 15:12         |                 |       |
|            | 7:51       | 7:53          | 1:47            | 107   |
|            | 9:40       | 9:44          | 1:45            | 105   |
|            | 11:29      | 11:33         | 2:26            | 146   |
|            | 13:59      | 14:05         | 1:19            | 79    |
|            | 15:24      | 15:26         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 46  | 7:55       | 7:55          | 2:20            | 140   |
|          |     | 10:15      | 10:21         |                 |       |
|          |     | 14:10      | 14:13         | 1:33            | 93    |
|          |     | 15:46      | 15:57         |                 |       |
| Aspada   | 100 | 7:56       | 8:00          | 1:44            | 104   |
|          |     | 9:44       | 9:48          | 1:59            | 119   |
|          |     | 11:47      | 11:51         | 1:55            | 115   |
|          |     | 13:46      | 13:50         | 1:24            | 84    |
|          |     | 15:14      | 15:17         |                 |       |
| Kopata   | 18  | 8:01       | 8:02          | 1:44            | 104   |
|          |     | 9:46       | 9:51          |                 |       |
|          |     | 13:53      | 13:57         | 1:21            | 81    |
|          |     | 15:18      | 15:19         |                 |       |
| Aspada   | 108 | 8:07       | 8:09          | 1:36            | 96    |
|          |     | 9:45       | 9:49          | 1:35            | 95    |
|          |     | 11:24      | 11:28         | 2:07            | 127   |
|          |     | 13:35      | 13:36         | 1:29            | 89    |
|          |     | 15:05      | 15:08         |                 |       |
| Kopata   | 35  | 8:08       | 8:11          | 1:49            | 109   |
|          |     | 10:00      | 10:05         |                 |       |
|          |     | 14:31      | 14:34         |                 |       |
| Kopata   | 42  | 8:22       | 8:25          | 2:15            | 135   |
|          |     | 10:40      | 10:45         | 3:46            | 106   |
|          |     | 14:31      | 14:37         |                 |       |
| Aspada   | 120 | 8:24       | 8:25          | 1:41            | 101   |
|          |     | 10:06      | 10:13         |                 |       |
|          |     | 14:30      | 14:33         |                 |       |
| Aspada   | 87  | 8:26       | 8:30          | 1:41            | 101   |
|          |     | 10:11      | 10:15         |                 |       |
|          |     | 14:06      | 14:09         | 1:16            | 76    |
|          |     | 15:25      | 15:30         |                 |       |
| Kopata   | 11  | 8:29       | 8:34          | 2:13            | 133   |
|          |     | 10:47      | 10:49         | 2:38            | 158   |
|          |     | 13:27      | 13:33         | 1:33            | 93    |
|          |     | 15:06      | 15:15         |                 |       |
| Aspada   | 45  | 8:35       | 8:41          | 2:02            | 122   |
|          |     | 10:43      | 10:48         | 2:25            | 145   |
|          |     | 13:13      | 13:18         | 1:25            | 85    |
|          |     | 14:43      | 14:45         |                 |       |
| Kopata   | 3   | 8:44       | 8:46          | 1:33            | 93    |
|          |     | 10:19      | 10:22         |                 |       |
|          |     | 14:19      | 14:25         | 1:11            | 71    |
|          |     | 15:36      | 15:39         |                 |       |
| Kopata   | 17  | 8:45       | 8:47          | 2:16            | 136   |
|          |     | 11:03      | 11:09         | 2:01            | 121   |
|          |     | 13:10      | 13:17         | 1:25            | 85    |
|          |     | 14:42      | 14:46         |                 |       |

| Bis Kota |    | Waktu      |               | Waktu Sirkulasi |       |
|----------|----|------------|---------------|-----------------|-------|
|          |    | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada   | 40 | 8:50       | 8:51          | 1:34            | 94    |
|          |    | 10:25      | 10:27         |                 |       |
|          |    | 14:12      | 14:17         | 1:24            | 84    |
|          |    | 15:41      | 15:45         |                 |       |
| Aspada   | 30 | 8:54       | 8:57          | 2:04            | 124   |
|          |    | 11:01      | 11:05         | 2:11            | 131   |
|          |    | 13:16      | 13:20         | 1:28            | 88    |
|          |    | 14:48      | 14:51         |                 |       |
| Kopata   | 9  | 8:55       | 9:02          | 1:32            | 92    |
|          |    | 10:34      | 10:37         |                 |       |
|          |    | 14:22      | 14:27         | 1:11            | 71    |
|          |    | 15:38      | 15:42         |                 |       |
| Aspada   | 19 | 9:00       | 9:04          | 1:31            | 91    |
|          |    | 10:35      | 10:38         |                 |       |
|          |    | 14:17      | 14:21         | 1:14            | 74    |
|          |    | 15:35      | 15:37         |                 |       |
| Aspada   | 7  | 9:09       | 9:12          | 1:57            | 117   |
|          |    | 11:09      | 11:11         | 2:22            | 142   |
|          |    | 13:33      | 13:38         | 1:27            | 87    |
|          |    | 15:05      | 15:07         |                 |       |
| Aspada   | 12 | 9:11       | 9:17          | 1:50            | 110   |
|          |    | 11:07      | 11:13         | 2:07            | 127   |
|          |    | 13:20      | 13:24         | 1:27            | 87    |
|          |    | 14:51      | 14:57         |                 |       |





**Waktu Sirkulasi**  
**Berdasarkan Headway**  
**Selasa 4 Juni 2002**

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 111 | 7:13       | 7:17          | 1:45            | 105   |
|            | 9:02       | 9:04          |                 |       |
| Aspada 25  | 7:14       | 7:19          | 1:45            | 105   |
|            | 9:04       | 9:06          | 1:49            | 109   |
|            | 10:55      | 10:58         |                 |       |
|            | 14:05      | 14:07         | 1:16            | 76    |
|            | 15:23      | 15:29         |                 |       |
| Kopata 66  | 7:16       | 7:21          | 1:46            | 106   |
|            | 9:07       | 9:11          | 1:48            | 108   |
|            | 10:59      | 11:00         |                 |       |
|            | 13:46      | 13:46         | 1:53            | 113   |
|            | 15:39      | 15:41         | 1:15            | 75    |
|            | 16:56      | 16:59         |                 |       |
| Aspada 14  | 7:19       | 7:22          | 1:49            | 109   |
|            | 9:11       | 9:14          | 1:50            | 110   |
|            | 11:04      | 11:09         |                 |       |
|            | 14:11      | 14:13         | 1:34            | 94    |
|            | 15:47      | 15:49         |                 |       |
| Kopata 87  | 7:23       | 7:26          | 1:50            | 110   |
|            | 9:16       | 9:21          | 1:54            | 114   |
|            | 11:15      | 11:18         |                 |       |
|            | 14:16      | 14:19         | 1:35            | 95    |
|            | 15:54      | 16:00         |                 |       |
| Kopata 75  | 7:25       | 7:28          | 1:44            | 104   |
|            | 9:12       | 9:16          | 1:52            | 112   |
|            | 11:08      | 11:10         |                 |       |
|            | 14:13      | 14:16         | 1:34            | 94    |
|            | 15:50      | 16:02         |                 |       |
| Kopata 65  | 7:27       | 7:31          |                 |       |
|            | 11:11      | 11:15         |                 |       |
|            | 15:21      | 15:25         | 1:17            | 77    |
|            | 16:42      | 16:46         |                 |       |
| Aspada 11  | 7:28       | 7:32          | 1:51            | 111   |
|            | 9:23       | 9:27          | 1:54            | 114   |
|            | 11:21      | 11:25         | 2:54            | 114   |
|            | 14:19      | 14:21         | 2:29            | 89    |
|            | 16:50      | 16:52         |                 |       |
| Aspada 15  | 7:29       | 7:35          | 1:51            | 111   |
|            | 9:26       | 9:28          | 1:57            | 117   |
|            | 11:25      | 11:29         | 3:17            | 77    |
|            | 14:46      | 14:48         | 1:31            | 91    |
|            | 16:19      | 16:21         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 59  | 7:33       | 7:36          | 1:43            | 103   |
|            | 9:19       | 9:22          | 1:54            | 114   |
|            | 11:16      | 11:21         |                 |       |
|            | 14:43      | 14:49         | 1:37            | 97    |
|            | 16:26      | 16:29         |                 |       |
| Aspada 19  | 7:36       | 7:38          | 1:51            | 111   |
|            | 9:29       | 9:31          | 1:57            | 117   |
|            | 11:28      | 11:32         | 2:57            | 117   |
|            | 14:29      | 14:32         | 1:36            | 96    |
|            | 16:08      | 16:12         |                 |       |
| Kopata 60  | 7:43       | 7:47          | 1:45            | 105   |
|            | 9:32       | 9:36          | 1:53            | 113   |
|            | 11:29      | 11:35         |                 |       |
|            | 14:50      | 14:52         | 1:41            | 101   |
|            | 16:33      | 16:36         |                 |       |
| Kopata 22  | 7:48       | 7:51          | 1:45            | 105   |
|            | 9:36       | 9:38          | 1:54            | 114   |
|            | 11:32      | 11:35         |                 |       |
|            | 14:33      | 14:38         | 1:32            | 92    |
|            | 16:10      | 16:17         |                 |       |
| Aspada 65  | 7:51       | 7:55          | 1:26            | 86    |
|            | 9:21       | 9:25          | 1:53            | 113   |
|            | 11:18      | 11:25         |                 |       |
|            | 14:22      | 14:28         | 1:37            | 97    |
|            | 16:05      | 16:08         |                 |       |
| Kopata 30  | 7:52       | 7:59          | 1:41            | 101   |
|            | 9:40       | 9:43          | 1:58            | 118   |
|            | 11:41      | 11:43         |                 |       |
|            | 14:26      | 14:29         | 1:37            | 97    |
|            | 16:06      | 16:09         |                 |       |
| Aspada 100 | 7:53       | 8:01          | 1:38            | 98    |
|            | 9:39       | 9:41          | 1:57            | 117   |
|            | 11:38      | 11:41         |                 |       |
|            | 14:53      | 14:56         | 1:27            | 87    |
|            | 16:23      | 16:26         |                 |       |
| Aspada 85  | 7:55       | 8:00          | 1:43            | 103   |
|            | 9:43       | 9:45          |                 |       |
| Kopata 45  | 8:00       | 8:06          | 1:35            | 95    |
|            | 9:41       | 9:48          |                 |       |
|            | 12:49      | 12:51         | 2:09            | 69    |
|            | 15:00      | 15:02         | 1:37            | 97    |
|            | 16:39      | 16:42         |                 |       |
| Kopata 51  | 8:04       | 8:09          | 1:37            | 97    |
|            | 9:46       | 9:50          |                 |       |
|            | 13:17      | 13:19         | 1:47            | 107   |
|            | 15:06      | 15:08         | 1:46            | 106   |
|            | 16:54      | 16:59         |                 |       |
| Kopata 23  | 8:11       | 8:13          | 1:34            | 94    |
|            | 9:47       | 9:52          | 1:50            | 110   |
|            | 11:42      | 11:45         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 62  | 8:19       | 8:23          |                 |       |
|            | 13:39      | 13:45         |                 |       |
|            | 16:58      | 17:01         |                 |       |
| Kopata 50  | 8:23       | 8:26          | 1:35            | 95    |
|            | 10:01      | 10:03         |                 |       |
|            | 12:59      | 13:04         |                 |       |
| Kopata 19  | 10:04      | 10:06         |                 |       |
|            | 13:54      | 13:58         | 1:31            | 91    |
|            | 15:29      | 15:31         | 1:34            | 94    |
|            | 17:05      | 17:08         |                 |       |
| Aspada 13  | 8:33       | 8:35          | 1:36            | 96    |
|            | 10:11      | 10:15         |                 |       |
|            | 13:06      | 13:09         |                 |       |
| Aspada 95  | 8:49       | 8:50          | 1:27            | 87    |
|            | 10:17      | 10:21         |                 |       |
| Aspada 120 | 8:51       | 8:56          | 1:43            | 103   |
|            | 10:39      | 10:41         |                 |       |
|            | 14:02      | 14:07         | 1:38            | 98    |
|            | 15:45      | 15:48         |                 |       |
| Kopata 36  | 8:54       | 8:57          | 1:28            | 88    |
|            | 10:25      | 10:27         |                 |       |
|            | 13:31      | 13:35         | 1:50            | 110   |
|            | 15:25      | 15:28         | 1:34            | 94    |
|            | 17:02      | 17:05         |                 |       |
| Aspada 4   | 8:56       | 9:00          | 1:48            | 108   |
|            | 10:48      | 10:52         |                 |       |
|            | 13:23      | 13:27         | 2:06            | 66    |
|            | 15:33      | 15:36         | 1:33            | 93    |
|            | 17:09      | 17:11         |                 |       |
| Aspada 123 | 9:50       | 9:54          | 1:50            | 110   |
|            | 11:44      | 11:48         | 1:33            | 93    |
| Kopata 128 | 13:21      | 13:22         | 1:41            | 101   |
|            | 15:03      | 15:06         |                 |       |
| Kopata 62  | 15:17      | 15:20         | 1:53            | 113   |
|            | 17:13      |               |                 |       |

INDONESIA

وَمَا كُنَّا بِمُعَظَّمِي الْبَنِي إِسْرَائِيلَ إِلَّا لِنُعَلِّمَهُمُ الْبَيِّنَاتِ وَأَلَّا يَحْكُمُوا بِآيَاتِنَا ۚ كَذَّبَ الَّذِينَ كَفَرُوا فَسَاءَ أَلْفَاظُ الْقَائِلِينَ بِنِعْمَتِ رَبِّهِمْ إِذْ سَمِعُوا بِآيَاتِهِ فَانكَبُوا بِهَا نُكُودًا ۚ

**Waktu Sirkulasi**  
**Berdasarkan Headway**  
**Selasa 11 Juni 2002**

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 25  | 7:12       | 7:16          | 1:59            | 119   |
|            | 9:15       | 9:18          | 1:44            | 104   |
|            | 11:02      | 11:04         |                 |       |
|            | 13:26      | 13:29         | 1:42            | 102   |
|            | 15:11      | 15:15         | 1:40            | 100   |
|            | 16:55      | 16:58         |                 |       |
| Kopata 15  | 7:12       | 7:14          | 2:02            | 122   |
|            | 9:16       | 9:18          | 1:37            | 97    |
|            | 10:55      | 10:58         |                 |       |
|            | 13:21      | 13:25         | 1:39            | 99    |
|            | 15:04      | 15:08         | 1:42            | 102   |
|            | 16:50      | 16:53         |                 |       |
| Aspada 30  | 7:14       | 7:16          | 1:57            | 117   |
|            | 9:13       | 9:16          | 1:40            | 100   |
|            | 10:56      | 11:00         |                 |       |
|            | 13:23      | 13:26         | 1:53            | 113   |
|            | 15:19      | 15:21         | 1:38            | 98    |
|            | 16:59      | 17:03         |                 |       |
| Kopata 75  | 7:19       | 7:22          | 2:00            | 120   |
|            | 9:22       | 9:24          | 1:47            | 107   |
|            | 11:11      | 11:15         | 2:16            | 136   |
|            | 13:31      | 13:33         | 1:42            | 102   |
|            | 15:15      | 15:19         | 1:38            | 98    |
|            | 16:57      | 17:00         |                 |       |
| Kopata 117 | 7:23       | 7:25          | 1:54            | 114   |
|            | 9:19       | 9:21          | 1:28            | 88    |
|            | 10:49      | 10:51         |                 |       |
|            | 13:19      | 13:21         | 1:45            | 105   |
|            | 15:06      | 15:11         | 1:41            | 101   |
|            | 16:52      | 16:55         |                 |       |
| Kopata 105 | 7:25       | 7:29          | 1:57            | 117   |
|            | 9:26       | 9:30          | 1:45            | 105   |
|            | 11:15      | 11:18         | 2:15            | 135   |
|            | 13:33      | 13:35         | 1:54            | 114   |
|            | 15:29      | 15:33         |                 |       |
| Aspada 57  | 7:27       | 7:31          | 1:38            | 98    |
|            | 9:09       | 9:13          |                 |       |
| Aspada 50  | 7:29       | 7:32          |                 |       |
| Aspada 15  | 7:36       | 7:39          |                 |       |
| Kopata 32  | 7:37       | 7:41          | 1:54            | 114   |
|            | 9:35       | 9:41          | 1:44            | 104   |
|            | 11:25      | 11:27         | 2:36            | 156   |
|            | 14:03      | 14:05         | 1:38            | 98    |
|            | 15:43      | 15:46         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 29  | 7:39       | 7:42          | 1:53            | 113   |
|            | 9:35       | 9:42          | 1:37            | 97    |
|            | 11:19      | 11:22         | 2:34            | 154   |
|            | 13:56      | 13:59         | 1:42            | 102   |
|            | 15:41      | 15:45         |                 |       |
| Kopata 97  | 7:41       | 7:44          | 1:55            | 115   |
|            | 9:39       | 9:43          | 1:46            | 106   |
|            | 11:29      | 11:32         | 2:16            | 136   |
|            | 13:48      | 13:51         | 1:45            | 105   |
|            | 15:36      | 15:39         |                 |       |
| Kopata 9   | 7:43       | 7:46          | 1:55            | 115   |
|            | 9:41       | 9:45          | 1:38            | 98    |
|            | 11:23      | 11:25         | 2:18            | 138   |
|            | 13:43      | 13:46         | 1:47            | 107   |
|            | 15:33      | 15:36         |                 |       |
| Aspada 66  | 7:47       | 7:51          | 1:52            | 112   |
|            | 9:43       | 9:48          | 1:48            | 108   |
|            | 11:36      | 11:39         | 2:14            | 134   |
|            | 13:53      | 13:56         | 1:29            | 89    |
|            | 15:25      | 15:28         |                 |       |
| Kopata 10  | 7:52       | 7:54          | 1:50            | 110   |
|            | 9:44       | 9:47          | 1:40            | 100   |
|            | 11:27      | 11:29         |                 |       |
|            | 14:04      | 14:10         | 1:36            | 96    |
|            | 15:46      | 15:48         |                 |       |
| Aspada 90  | 7:53       | 7:55          | 1:51            | 111   |
|            | 9:46       | 9:49          | 1:54            | 114   |
|            | 11:43      | 11:48         | 2:26            | 146   |
|            | 14:14      | 14:19         | 1:36            | 96    |
|            | 15:55      | 15:57         |                 |       |
| Aspada 100 | 7:56       | 7:59          | 1:48            | 108   |
|            | 9:47       | 9:51          | 1:42            | 102   |
|            | 11:33      | 11:36         |                 |       |
|            | 14:10      | 14:15         | 1:37            | 97    |
|            | 15:52      | 15:54         |                 |       |
| Aspada 120 | 7:59       | 8:01          | 1:47            | 107   |
|            | 9:48       | 9:50          | 1:57            | 117   |
|            | 11:47      | 11:51         |                 |       |
|            | 14:16      | 14:20         | 1:36            | 96    |
|            | 15:56      | 15:59         |                 |       |
| Aspada 23  | 8:02       | 8:04          | 1:44            | 104   |
|            | 9:48       | 9:52          | 1:47            | 107   |
|            | 11:39      | 11:43         | 2:30            | 150   |
|            | 14:13      | 14:17         | 1:06            | 66    |
|            | 15:23      | 15:29         |                 |       |
| Aspada 35  | 8:09       | 8:11          | 1:41            | 101   |
|            | 9:52       | 9:54          | 1:58            | 118   |
|            | 11:52      | 11:55         | 2:24            | 144   |
|            | 14:19      | 14:23         | 1:36            | 96    |
|            | 15:59      | 16:02         |                 |       |

| Bis Kota  | Waktu      |               | Waktu Sirkulasi |       |
|-----------|------------|---------------|-----------------|-------|
|           | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 69 | 8:11       | 8:14          | 1:40            | 100   |
|           | 9:54       | 9:56          | 1:58            | 118   |
|           | 11:54      | 11:56         |                 |       |
|           | 14:23      | 14:26         | 1:34            | 94    |
|           | 16:00      | 16:03         |                 |       |
| Kopata 74 | 8:15       | 8:17          | 1:38            | 98    |
|           | 9:55       | 9:58          | 1:58            | 118   |
|           | 11:56      | 11:58         |                 |       |
|           | 14:26      | 14:29         | 1:33            | 93    |
|           | 16:02      | 16:06         |                 |       |
| kopata 44 | 8:16       | 8:19          | 1:36            | 96    |
|           | 9:55       | 10:00         | 1:46            | 106   |
|           | 11:46      | 11:47         | 2:18            | 138   |
|           | 14:05      | 14:09         | 1:30            | 90    |
|           | 15:39      | 15:42         |                 |       |
| Aspada 10 | 8:19       | 8:25          | 1:58            | 118   |
|           | 10:23      | 10:27         | 1:45            | 105   |
|           | 12:12      | 12:15         |                 |       |
|           | 14:49      | 14:52         | 1:21            | 81    |
|           | 16:13      | 16:16         |                 |       |
| Kopata 8  | 8:25       | 8:29          | 1:34            | 94    |
|           | 10:03      | 10:05         | 1:55            | 115   |
|           | 12:00      | 12:04         |                 |       |
|           | 14:42      | 14:45         | 2:00            | 120   |
|           | 16:45      | 16:48         |                 |       |
| Kopata 77 | 8:29       | 8:33          | 1:54            | 114   |
|           | 10:27      | 10:31         | 1:42            | 102   |
|           | 12:13      | 12:17         |                 |       |
|           | 14:41      | 14:44         | 1:30            | 90    |
|           | 16:14      | 16:17         |                 |       |
| Kopata 72 | 8:33       | 8:36          | 1:37            | 97    |
|           | 10:13      | 10:23         | 1:36            | 96    |
|           | 11:59      | 12:05         |                 |       |
|           | 14:43      | 14:48         | 1:34            | 94    |
|           | 16:22      | 16:25         |                 |       |
| Aspada 11 | 8:39       | 8:41          | 1:52            | 112   |
|           | 10:33      | 10:36         |                 |       |
|           | 14:54      | 14:56         | 1:40            | 100   |
|           | 16:36      | 16:39         |                 |       |
| Kopata 36 | 8:44       | 8:46          | 1:31            | 91    |
|           | 10:17      | 10:22         | 1:47            | 107   |
|           | 12:09      | 12:12         | 2:20            | 140   |
|           | 14:32      | 14:38         | 1:31            | 91    |
|           | 16:09      | 16:11         |                 |       |
| Aspada 9  | 8:49       | 8:52          | 2:11            | 131   |
|           | 11:03      | 11:05         | 2:34            | 154   |
|           | 13:39      | 13:41         | 1:50            | 110   |
|           | 15:31      | 15:34         |                 |       |

| Bis Kota   |  | Waktu      |               | Waktu Sirkulasi |       |
|------------|--|------------|---------------|-----------------|-------|
|            |  | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 27  |  | 8:57       | 8:59          | 1:20            | 80    |
|            |  | 10:19      | 10:23         |                 |       |
|            |  | 14:36      | 14:41         | 1:30            | 90    |
|            |  | 16:11      | 16:13         |                 |       |
| Aspada 22  |  | 9:02       | 9:04          | 1:39            | 99    |
|            |  | 10:43      | 10:44         |                 |       |
|            |  | 13:15      | 13:19         | 1:42            | 102   |
|            |  | 15:01      | 15:06         | 1:43            | 103   |
|            |  | 16:49      | 16:53         |                 |       |
| Kopata 123 |  | 9:31       | 9:36          | 1:41            | 101   |
|            |  | 11:17      | 11:21         | 1:53            | 113   |
|            |  | 13:14      | 13:17         | 1:42            | 102   |
| Kopata 35  |  | 14:59      | 15:04         | 1:44            | 104   |
|            |  | 16:48      | 16:52         |                 |       |
| Aspada 98  |  | 15:21      | 15:25         | 1:37            | 97    |
|            |  | 17:02      | 17:06         |                 |       |



**Waktu Sirkulasi  
Berdasarkan Headway  
Selasa 18 Juni 2002**

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 115 | 7:27       | 7:29          | 1:40            | 100   |
|          |     | 9:09       | 9:12          | 1:19            | 79    |
|          |     | 10:31      | 10:35         | 1:52            | 112   |
|          |     | 12:27      | 12:29         | 1:12            | 72    |
|          |     | 13:41      | 13:45         | 1:33            | 93    |
|          |     | 15:18      | 15:22         |                 |       |
| Aspada   | 3   | 7:30       | 7:32          | 1:41            | 101   |
|          |     | 9:13       | 9:16          | 1:17            | 77    |
|          |     | 10:33      | 10:36         |                 |       |
|          |     | 13:46      | 13:49         | 1:30            | 90    |
|          |     | 15:19      | 15:24         |                 |       |
| Kopata   | 46  | 7:32       | 7:34          | 1:27            | 87    |
| Aspada   | 99  | 9:01       | 9:06          |                 |       |
|          |     | 7:34       | 7:36          | 1:41            | 101   |
|          |     | 9:17       | 9:21          | 1:41            | 101   |
|          |     | 11:02      | 11:04         | 1:39            | 99    |
|          |     | 12:43      | 12:46         | 1:19            | 79    |
|          |     | 14:05      | 14:08         | 1:28            | 88    |
| Kopata   | 2   | 15:36      | 15:40         |                 |       |
|          |     | 7:36       | 7:38          | 1:26            | 86    |
|          |     | 9:04       | 9:08          | 1:20            | 80    |
|          |     | 10:28      | 10:32         | 1:51            | 111   |
|          |     | 12:23      | 12:25         | 1:54            | 114   |
|          |     | 14:19      | 14:22         | 1:44            | 104   |
| Kopata   | 17  | 16:06      | 16:08         |                 |       |
|          |     | 7:40       | 7:42          | 1:39            | 99    |
|          |     | 9:21       | 9:25          | 1:41            | 101   |
|          |     | 11:06      | 11:07         | 1:42            | 102   |
|          |     | 12:49      | 12:54         | 1:45            | 105   |
|          |     | 14:39      | 14:41         | 1:34            | 94    |
| Kopata   | 36  | 16:15      | 16:18         |                 |       |
|          |     | 7:42       | 7:45          | 1:40            | 100   |
|          |     | 9:25       | 9:27          | 1:18            | 78    |
|          |     | 10:45      | 10:48         | 1:53            | 113   |
|          |     | 12:41      | 12:48         | 1:04            | 64    |
|          |     | 13:52      | 13:58         | 1:33            | 93    |
|          |     | 15:31      | 15:33         | 1:22            | 82    |
| Aspada   | 100 | 16:55      | 16:58         |                 |       |
|          |     | 7:45       | 7:48          | 1:31            | 91    |
|          |     | 9:19       | 9:23          | 1:16            | 76    |
|          |     | 10:39      | 10:46         | 1:35            | 95    |
|          |     | 12:21      | 12:26         | 1:59            | 119   |
|          |     | 14:25      | 14:29         | 1:52            | 112   |
|          |     | 16:21      | 16:25         |                 |       |



| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 84  | 7:47       | 7:51          | 1:40            | 100   |
|            | 9:31       | 9:35          | 1:36            | 96    |
|            | 11:11      | 11:15         | 1:37            | 97    |
|            | 12:52      | 12:55         | 1:15            | 75    |
|            | 14:10      | 14:12         | 1:55            | 115   |
|            | 16:07      | 16:10         |                 |       |
| Kopata 56  | 7:49       | 7:52          | 1:40            | 100   |
|            | 9:32       | 9:37          | 1:14            | 74    |
|            | 10:51      | 10:53         | 1:46            | 106   |
|            | 12:39      | 12:41         | 1:13            | 73    |
|            | 13:54      | 13:57         | 1:36            | 96    |
|            | 15:33      | 15:36         | 1:23            | 83    |
|            | 16:59      | 17:02         |                 |       |
| Aspada 66  | 7:50       | 7:53          | 1:41            | 101   |
|            | 9:34       | 9:36          | 1:17            | 77    |
|            | 10:53      | 10:56         | 1:49            | 109   |
|            | 12:45      | 12:48         | 1:41            | 101   |
|            | 14:29      | 14:32         | 1:41            | 101   |
|            | 16:13      | 16:15         |                 |       |
| Kopata 19  | 7:51       | 7:54          | 1:47            | 107   |
|            | 9:41       | 9:43          | 1:38            | 98    |
|            | 11:21      | 11:25         | 1:31            | 91    |
|            | 12:56      | 12:58         | 1:18            | 78    |
|            | 14:16      | 14:21         | 1:22            | 82    |
|            | 15:43      | 15:45         |                 |       |
| Kopata 65  | 7:52       | 7:56          | 1:40            | 100   |
|            | 9:36       | 9:40          | 1:36            | 96    |
|            | 11:16      | 11:18         | 1:36            | 96    |
|            | 12:54      | 12:56         | 1:39            | 99    |
|            | 14:35      | 14:39         | 1:17            | 77    |
|            | 15:56      | 16:00         |                 |       |
| Kopata 117 | 7:53       | 7:59          | 1:40            | 100   |
|            | 9:39       | 9:42          | 1:14            | 74    |
|            | 10:56      | 11:00         | 1:47            | 107   |
|            | 12:47      | 12:49         |                 |       |
|            | 16:51      | 16:53         |                 |       |
| Kopata 44  | 8:00       | 8:03          | 1:40            | 100   |
|            | 9:43       | 9:45          |                 |       |
| Aspada 89  | 8:04       | 8:08          | 1:48            | 108   |
|            | 9:56       | 9:59          |                 |       |
|            | 13:11      | 13:13         |                 |       |
| Aspada 120 | 8:12       | 8:16          | 1:36            | 96    |
|            | 9:52       | 9:53          |                 |       |
|            | 13:09      | 13:12         | 1:44            | 104   |
|            | 14:56      | 15:00         | 1:40            | 100   |
|            | 16:40      | 16:42         |                 |       |
| Kopata 66  | 8:16       | 8:19          | 1:41            | 101   |
|            | 10:00      | 10:05         |                 |       |
|            | 13:10      | 13:14         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata 50  | 8:21       | 8:23          | 1:23            | 83    |
|            | 9:46       | 9:48          |                 |       |
|            | 13:05      | 13:08         | 1:44            | 104   |
|            | 14:52      | 14:56         | 1:50            | 110   |
|            | 16:46      | 16:49         |                 |       |
| Aspada 85  | 8:27       | 8:29          | 1:39            | 99    |
|            | 10:08      | 10:12         |                 |       |
|            | 13:15      | 13:17         |                 |       |
| Aspada 92  | 8:32       | 8:34          | 1:36            | 96    |
|            | 10:10      | 10:15         |                 |       |
|            | 13:17      | 13:21         | 1:45            | 105   |
|            | 15:06      | 15:09         |                 |       |
| Aspada 156 | 8:33       | 8:36          | 1:18            | 78    |
|            | 9:54       | 9:56          |                 |       |
|            | 13:02      | 13:05         | 1:41            | 101   |
|            | 14:46      | 14:49         | 1:44            | 104   |
|            | 16:33      | 16:36         |                 |       |
| Aspada 97  | 8:39       | 8:42          | 1:31            | 91    |
|            | 10:13      | 10:16         |                 |       |
|            | 13:21      | 13:25         | 1:43            | 103   |
|            | 15:08      | 15:11         |                 |       |
| Kopata 75  | 8:45       | 8:48          | 1:27            | 87    |
|            | 10:15      | 10:19         |                 |       |
|            | 13:25      | 13:28         | 1:42            | 102   |
|            | 15:10      | 15:16         |                 |       |
| Kopata 26  | 8:48       | 8:50          | 1:14            | 74    |
|            | 10:04      | 10:06         |                 |       |
|            | 13:13      | 13:19         |                 |       |
| Kopata 22  | 8:50       | 8:52          | 1:27            | 87    |
|            | 10:19      | 10:22         |                 |       |
|            | 13:50      | 13:56         | 1:29            | 89    |
|            | 15:25      | 15:28         | 1:26            | 86    |
|            | 16:54      | 16:57         |                 |       |
| Aspada 8   | 8:55       | 8:59          | 1:22            | 82    |
|            | 10:21      | 10:26         |                 |       |
|            | 13:32      | 13:36         | 1:38            | 98    |
|            | 15:14      | 15:16         |                 |       |
| Aspada 46  | 9:15       | 9:18          | 1:18            | 78    |
|            | 10:36      | 10:39         | 1:54            | 114   |
|            | 12:33      | 12:36         | 1:47            | 107   |
|            | 14:23      | 14:25         | 1:24            | 84    |
|            | 15:49      | 15:51         |                 |       |
| Aspada 21  | 10:25      | 10:28         | 1:52            | 112   |
|            | 12:20      | 12:25         | 1:08            | 68    |
|            | 13:33      | 13:39         | 1:02            | 62    |
|            | 14:41      | 14:43         | 1:19            | 79    |
|            | 16:02      | 16:05         |                 |       |
|            | 17:03      | 17:05         |                 |       |
| Aspada 33  | 12:48      | 12:52         | 1:52            | 112   |
|            | 14:44      | 14:48         | 1:39            | 99    |
|            | 16:27      | 16:30         |                 |       |

**Waktu Sirkulasi  
Berdasarkan Headway  
Selasa 25 Juni 2002**

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 64  | 7:26       | 7:29          | 1:27            | 87    |
|            | 8:56       | 9:01          | 1:40            | 100   |
|            | 10:41      | 10:43         | 1:16            | 76    |
|            | 11:59      | 12:06         | 2:09            | 129   |
|            | 14:15      | 14:19         | 1:33            | 93    |
|            | 15:52      | 15:54         |                 |       |
| Kopata 88  | 7:30       | 7:32          | 1:31            | 91    |
|            | 9:03       | 9:05          | 1:40            | 100   |
|            | 10:45      | 10:48         | 1:12            | 72    |
|            | 12:00      | 12:04         | 2:50            | 170   |
|            | 14:54      | 14:58         | 1:27            | 87    |
|            | 16:25      | 16:29         |                 |       |
| Kopata 90  | 7:34       | 7:38          |                 |       |
| Kopata 100 | 7:36       | 7:40          | 1:18            | 78    |
|            | 8:58       | 9:02          | 1:48            | 108   |
|            | 10:50      | 10:56         | 1:06            | 66    |
|            | 12:02      | 12:05         | 2:16            | 136   |
|            | 14:21      | 14:26         | 2:03            | 123   |
|            | 16:29      | 16:27         |                 |       |
| Kopata 83  | 7:38       | 7:40          | 1:35            | 95    |
|            | 9:15       | 9:17          |                 |       |
| Aspada 43  | 7:38       | 7:42          | 1:31            | 91    |
|            | 9:13       | 9:15          | 1:45            | 105   |
|            | 11:00      | 11:03         | 1:03            | 63    |
|            | 12:06      | 12:09         |                 |       |
|            | 16:57      | 16:59         |                 |       |
|            |            |               |                 |       |
| Aspada 12  | 7:41       | 7:43          | 1:28            | 88    |
|            | 9:11       | 9:13          | 1:41            | 101   |
|            | 10:54      | 10:58         | 2:21            | 141   |
|            | 13:19      | 13:21         | 1:12            | 72    |
|            | 14:33      | 14:36         | 1:35            | 95    |
|            | 16:11      | 16:15         |                 |       |
| Kopata 9   | 7:43       | 7:46          | 1:31            | 91    |
|            | 9:17       | 9:18          | 1:48            | 108   |
|            | 11:06      | 11:10         | 2:02            | 122   |
|            | 13:12      | 13:16         | 1:44            | 104   |
|            | 15:00      | 15:03         | 1:28            | 88    |
|            | 16:31      | 16:33         |                 |       |
| Kopata 12  | 7:46       | 7:49          | 1:34            | 94    |
|            | 9:23       | 9:28          | 2:04            | 124   |
|            | 11:32      | 11:34         |                 |       |
|            | 15:14      | 15:17         | 1:21            | 81    |
|            | 16:38      | 16:42         |                 |       |

| Bis Kota |     | Waktu      |               | Waktu Sirkulasi |       |
|----------|-----|------------|---------------|-----------------|-------|
|          |     | Kedatangan | Keberangkatan | Jam             | Menit |
| Kopata   | 7   | 7:48       | 7:51          | 1:28            | 88    |
|          |     | 9:19       | 9:23          | 1:40            | 100   |
|          |     | 11:03      | 11:06         |                 |       |
|          |     | 14:48      | 14:51         | 2:08            | 128   |
|          |     | 16:59      | 17:03         |                 |       |
| Kopata   | 64  | 7:54       | 7:57          | 1:30            | 90    |
|          |     | 9:27       | 9:29          | 1:46            | 106   |
|          |     | 11:15      | 11:17         | 2:41            | 161   |
|          |     | 13:58      | 14:02         | 1:25            | 85    |
|          |     | 15:27      | 15:29         | 1:19            | 79    |
| Aspada   | 55  | 7:57       | 7:59          | 1:32            | 92    |
|          |     | 9:31       | 9:32          | 1:55            | 115   |
|          |     | 11:27      | 11:34         | 2:02            | 122   |
|          |     | 13:36      | 13:39         | 1:33            | 93    |
|          |     | 15:12      | 15:16         | 1:21            | 81    |
| Aspada   | 160 | 8:01       | 8:04          | 1:17            | 77    |
|          |     | 9:21       | 9:25          | 1:47            | 107   |
|          |     | 11:12      | 11:16         | 2:40            | 160   |
|          |     | 13:56      | 13:58         | 2:48            | 168   |
|          |     | 16:46      | 16:50         |                 |       |
| Aspada   | 87  | 8:02       | 8:06          | 1:30            | 90    |
|          |     | 9:36       | 9:38          | 1:57            | 117   |
|          |     | 11:35      | 11:36         | 2:12            | 132   |
|          |     | 13:48      | 13:51         | 1:28            | 88    |
|          |     | 15:19      | 15:21         | 1:41            | 101   |
| Aspada   | 79  | 8:04       | 8:10          | 1:31            | 91    |
|          |     | 9:41       | 9:44          | 1:37            | 97    |
|          |     | 11:21      | 11:25         | 2:48            | 168   |
|          |     | 14:13      | 14:17         |                 |       |
|          |     |            |               |                 |       |
| Aspada   | 33  | 8:09       | 8:11          | 1:34            | 94    |
|          |     | 9:45       | 9:48          | 1:31            | 91    |
|          |     | 11:19      | 11:20         | 2:47            | 167   |
|          |     | 14:07      | 14:11         | 1:20            | 80    |
|          |     | 15:31      | 15:36         | 1:18            | 78    |
| Aspada   | 10  | 8:13       | 8:15          | 1:33            | 93    |
|          |     | 9:48       | 9:50          | 1:35            | 95    |
|          |     | 11:25      | 11:31         | 2:00            | 120   |
|          |     | 13:31      | 13:35         | 1:02            | 62    |
|          |     | 14:37      | 14:39         | 1:34            | 94    |
| Kopata   | 68  | 8:17       | 8:21          | 2:12            | 132   |
|          |     | 10:33      | 10:39         | 1:15            | 75    |
|          |     | 11:54      | 12:01         | 2:09            | 129   |
|          |     | 14:10      | 14:15         | 1:18            | 78    |
|          |     | 15:33      | 15:37         | 1:33            | 93    |
|          |     |            |               |                 |       |
|          |     | 17:10      | 17:14         |                 |       |

| Bis Kota   | Waktu      |               | Waktu Sirkulasi |       |
|------------|------------|---------------|-----------------|-------|
|            | Kedatangan | Keberangkatan | Jam             | Menit |
| Aspada 128 | 8:20       | 8:23          | 1:29            | 89    |
|            | 9:52       | 9:53          |                 |       |
| Kopata 59  | 8:23       | 8:26          | 1:27            | 87    |
|            | 9:53       | 9:56          |                 |       |
| Kopata 70  | 8:29       | 8:31          | 1:30            | 90    |
|            | 10:01      | 10:03         | 1:40            | 100   |
|            | 11:43      | 11:45         |                 |       |
| Aspada 52  | 8:32       | 8:36          | 1:35            | 95    |
|            | 10:11      | 10:16         | 1:33            | 93    |
|            | 11:49      | 11:53         |                 |       |
| Kopata 23  | 8:36       | 8:39          | 1:44            | 104   |
|            | 10:23      | 10:25         | 1:28            | 88    |
|            | 11:53      | 11:56         |                 |       |
| Kopata 120 | 8:41       | 8:43          | 1:20            | 80    |
|            | 10:03      | 10:06         | 1:40            | 100   |
|            | 11:46      | 11:48         |                 |       |
| Kopata 26  | 8:45       | 8:48          | 1:17            | 77    |
|            | 10:05      | 10:09         | 1:39            | 99    |
|            | 11:48      | 11:51         |                 |       |
| Aspada 8   | 8:49       | 8:52          | 1:25            | 85    |
|            | 10:17      | 10:19         | 1:31            | 91    |
|            | 11:50      | 11:54         |                 |       |
| Kopata 119 | 8:54       | 8:57          | 1:32            | 92    |
|            | 10:29      | 10:31         | 1:25            | 85    |
|            | 11:56      | 11:59         | 2:12            | 132   |
|            | 14:11      | 14:14         | 1:28            | 88    |
|            | 15:42      | 15:45         |                 |       |
| Aspada 156 | 9:50       | 9:52          | 1:49            | 109   |
|            | 11:41      | 11:46         | 1:28            | 88    |
| Kopata 143 | 13:14      | 13:19         | 2:10            | 130   |
|            | 15:29      | 15:33         | 1:30            | 90    |
|            | 17:03      | 17:09         |                 |       |
| Aspada 77  | 15:07      | 15:09         | 1:25            | 85    |
|            | 16:34      | 16:36         |                 |       |

## Load Factor Hari Senin

Tgl : June 3, 2002

| No | Ruas Jalan              | Load Factor |           |           |           | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|-----------|-----------|-----------------------|
|    |                         | a           | b         | c         | d         |                       |
| 1  | Terminal                | 3.2051%     | 9.6154%   | 12.8205%  | 19.2308%  | 11.22%                |
| 2  | Jl.Veteran              | 3.2051%     | 16.0256%  | 12.8205%  | 38.4615%  | 17.63%                |
| 3  | Jl.Warung boto          | 3.2051%     | 16.0256%  | 12.8205%  | 38.4615%  | 17.63%                |
| 4  | Jl.Perintis Kemerdekaan | 6.4103%     | 16.0256%  | 32.0513%  | 76.9231%  | 32.85%                |
| 5  | Jl.Ngeksidono           | 6.4103%     | 28.8462%  | 64.1026%  | 83.3333%  | 45.67%                |
| 6  | Jl.Gedong Kuning        | 70.5128%    | 96.1538%  | 102.5641% | 121.7949% | 97.76%                |
| 7  | Jl.Kusuma Negara        | 89.7436%    | 128.2051% | 118.5897% | 131.4103% | 116.99%               |
| 8  | Jl.Sultan Agung         | 83.3333%    | 137.8205% | 115.3846% | 137.8205% | 118.59%               |
| 9  | Jl.Senopati             | 83.3333%    | 137.8205% | 115.3846% | 137.8205% | 118.59%               |
| 10 | Jl.Mayor Suryotomo      | 51.2821%    | 121.7949% | 121.7949% | 141.0256% | 108.97%               |
| 11 | Jl.Mataram              | 60.8974%    | 125.0000% | 137.8205% | 108.9744% | 108.17%               |
| 12 | Jl.Abubakar Ali         | 60.8974%    | 125.0000% | 137.8205% | 108.9744% | 108.17%               |
| 13 | Jl.Kom Yos Sudarso      | 60.8974%    | 125.0000% | 137.8205% | 108.9744% | 108.17%               |
| 14 | Jl.Suroto               | 41.6667%    | 108.9744% | 118.5897% | 108.9744% | 94.55%                |
| 15 | Jl.Cik Di Tiro          | 32.0513%    | 115.3846% | 118.5897% | 96.1538%  | 90.54%                |
| 16 | Jl.Colombo              | 67.3077%    | 102.5641% | 96.1538%  | 89.7436%  | 88.94%                |
| 17 | Jl.Lingkar UGM Penuh    | 70.5128%    | 102.5641% | 80.1282%  | 60.8974%  | 78.53%                |
| 18 | Jl. Kaliurang           | 70.5128%    | 102.5641% | 86.5385%  | 60.8974%  | 80.13%                |
| 19 | Jl.C.Simajuntak         | 108.9744%   | 92.9487%  | 89.7436%  | 89.7436%  | 95.35%                |
| 20 | Jl. Jend.Sudirman       | 108.9744%   | 92.9487%  | 89.7436%  | 89.7436%  | 95.35%                |
| 21 | Jl. P.Mangkubumi        | 89.7436%    | 92.9487%  | 73.7179%  | 99.3590%  | 88.94%                |
| 22 | Jl.Kleringan            | 89.7436%    | 92.9487%  | 73.7179%  | 99.3590%  | 88.94%                |
| 23 | Jl.Taman Garuda         | 89.7436%    | 92.9487%  | 73.7179%  | 99.3590%  | 88.94%                |
| 24 | Jl.Malioboro            | 86.5385%    | 67.3077%  | 64.1026%  | 80.1282%  | 74.52%                |
| 25 | Jl. Jend.A.Yani         | 92.9487%    | 76.9231%  | 64.1026%  | 80.1282%  | 78.53%                |
| 26 | Jl. P.Senopati          | 96.1538%    | 76.9231%  | 64.1026%  | 48.0769%  | 71.31%                |
| 27 | Jl. Sultan Agung        | 92.9487%    | 70.5128%  | 35.2564%  | 44.8718%  | 60.90%                |
| 28 | Jl.Suryopranoto         | 96.1538%    | 70.5128%  | 64.1026%  | 44.8718%  | 68.91%                |
| 29 | Jl.Sukonandi            | 96.1538%    | 70.5128%  | 41.6667%  | 44.8718%  | 63.30%                |
| 30 | Jl.Kusuma Negara        | 96.1538%    | 57.6923%  | 41.6667%  | 38.4615%  | 58.49%                |
| 31 | Jl.Gedong Kuning        | 32.0513%    | 32.0513%  | 6.4103%   | 22.4359%  | 23.24%                |
| 32 | Jl.Ngeksidono           | 19.2308%    | 16.0256%  | 9.6154%   | 19.2308%  | 16.03%                |
| 33 | Jl.P.Kemerdekaan        | 9.6154%     | 16.0256%  | 6.4103%   | 19.2308%  | 12.82%                |
| 34 | Jl.Veteran              | 9.6154%     | 16.0256%  | 6.4103%   | 19.2308%  | 12.82%                |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%   | 0.0000%   | 0.00%                 |

## Load Factor Hari Selasa

Tgl : June 4, 2002

| No | Ruas Jalan              | Load Factor |           |           |           | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|-----------|-----------|-----------------------|
|    |                         | a           | b         | c         | d         |                       |
| 1  | Terminal                | 9.6154%     | 0.0000%   | 19.2308%  | 6.4103%   | 8.81%                 |
| 2  | Jl.Veteran              | 9.6154%     | 6.4103%   | 25.6410%  | 6.4103%   | 12.02%                |
| 3  | Jl.Warung boto          | 9.6154%     | 16.0256%  | 19.2308%  | 6.4103%   | 12.82%                |
| 4  | Jl.Perintis Kemerdekaan | 9.6154%     | 28.8462%  | 38.4615%  | 9.6154%   | 21.63%                |
| 5  | Jl.Ngeksidono           | 54.4872%    | 38.4615%  | 48.0769%  | 6.4103%   | 36.86%                |
| 6  | Jl.Gedong Kuning        | 89.7436%    | 41.6667%  | 60.8974%  | 35.2564%  | 56.89%                |
| 7  | Jl.Kusuma Negara        | 96.1538%    | 64.1026%  | 83.3333%  | 60.8974%  | 76.12%                |
| 8  | Jl.Sultan Agung         | 96.1538%    | 80.1282%  | 102.5641% | 57.6923%  | 84.13%                |
| 9  | Jl.Senopati             | 80.1282%    | 70.5128%  | 70.5128%  | 70.5128%  | 72.92%                |
| 10 | Jl.Mayor Suryotomo      | 80.1282%    | 70.5128%  | 73.7179%  | 67.3077%  | 72.92%                |
| 11 | Jl.Mataram              | 76.9231%    | 67.3077%  | 80.1282%  | 67.3077%  | 72.92%                |
| 12 | Jl.Abubakar Ali         | 41.6667%    | 80.1282%  | 83.3333%  | 67.3077%  | 68.11%                |
| 13 | Jl.Kom Yos Sudarso      | 41.6667%    | 80.1282%  | 83.3333%  | 67.3077%  | 68.11%                |
| 14 | Jl.Suroto               | 41.6667%    | 73.7179%  | 76.9231%  | 67.3077%  | 64.90%                |
| 15 | Jl.Cik Di Tiro          | 41.6667%    | 96.1538%  | 96.1538%  | 76.9231%  | 77.72%                |
| 16 | Jl.Colombo              | 38.4615%    | 96.1538%  | 76.9231%  | 76.9231%  | 72.12%                |
| 17 | Jl.Lingkar UGM Penuh    | 80.1282%    | 86.5385%  | 67.3077%  | 96.1538%  | 82.53%                |
| 18 | Jl. Kaliurang           | 80.1282%    | 76.9231%  | 54.4872%  | 92.9487%  | 76.12%                |
| 19 | Jl.C.Simajuntak         | 112.1795%   | 115.3846% | 73.7179%  | 121.7949% | 105.77%               |
| 20 | Jl. Jend.Sudirman       | 112.1795%   | 105.7692% | 70.5128%  | 118.5897% | 101.76%               |
| 21 | Jl. P.Mangkubumi        | 99.3590%    | 102.5641% | 73.7179%  | 118.5897% | 98.56%                |
| 22 | Jl.Kleringan            | 99.3590%    | 96.1538%  | 73.7179%  | 118.5897% | 96.96%                |
| 23 | Jl.Taman Garuda         | 99.3590%    | 105.7692% | 73.7179%  | 118.5897% | 99.36%                |
| 24 | Jl.Malioboro            | 83.3333%    | 80.1282%  | 73.7179%  | 115.3846% | 88.14%                |
| 25 | Jl. Jend.A.Yani         | 73.7179%    | 105.7692% | 96.1538%  | 128.2051% | 100.96%               |
| 26 | Jl. P.Senopati          | 73.7179%    | 96.1538%  | 108.9744% | 128.2051% | 101.76%               |
| 27 | Jl. Sultan Agung        | 76.9231%    | 76.9231%  | 92.9487%  | 105.7692% | 88.14%                |
| 28 | Jl.Suryopranoto         | 76.9231%    | 67.3077%  | 60.8974%  | 99.3590%  | 76.12%                |
| 29 | Jl.Sukonandi            | 76.9231%    | 54.4872%  | 73.7179%  | 99.3590%  | 76.12%                |
| 30 | Jl.Kusuma Negara        | 76.9231%    | 9.6154%   | 73.7179%  | 96.1538%  | 64.10%                |
| 31 | Jl.Gedong Kuning        | 51.2821%    | 12.8205%  | 32.0513%  | 83.3333%  | 44.87%                |
| 32 | Jl.Ngeksidono           | 25.6410%    | 3.2051%   | 3.2051%   | 48.0769%  | 20.03%                |
| 33 | Jl.P.Kemerdekaan        | 25.6410%    | 0.0000%   | 6.4103%   | 19.2308%  | 12.82%                |
| 34 | Jl.Veteran              | 25.6410%    | 0.0000%   | 9.6154%   | 6.4103%   | 10.42%                |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%   | 0.0000%   | 0.00%                 |

## Load Factor Hari Minggu

Tgl : June 9, 2002

| No | Ruas Jalan              | Load Factor |           |           |           | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|-----------|-----------|-----------------------|
|    |                         | a           | b         | c         | d         |                       |
| 1  | Terminal                | 0.0000%     | 6.4103%   | 0.0000%   | 9.6154%   | 4.01%                 |
| 2  | Jl.Veteran              | 3.2051%     | 6.4103%   | 0.0000%   | 16.0256%  | 6.41%                 |
| 3  | Jl.Warung boto          | 3.2051%     | 9.6154%   | 0.0000%   | 16.0256%  | 7.21%                 |
| 4  | Jl.Perintis Kemerdekaan | 19.2308%    | 12.8205%  | 22.4359%  | 16.0256%  | 17.63%                |
| 5  | Jl.Ngeksidono           | 28.8462%    | 22.4359%  | 28.8462%  | 38.4615%  | 29.65%                |
| 6  | Jl.Gedong Kuning        | 38.4615%    | 67.3077%  | 76.9231%  | 51.2821%  | 58.49%                |
| 7  | Jl.Kusuma Negara        | 76.9231%    | 83.3333%  | 105.7692% | 99.3590%  | 91.35%                |
| 8  | Jl.Sultan Agung         | 64.1026%    | 92.9487%  | 118.5897% | 108.9744% | 96.15%                |
| 9  | Jl.Senopati             | 67.3077%    | 89.7436%  | 121.7949% | 108.9744% | 96.96%                |
| 10 | Jl.Mayor Suryotomo      | 67.3077%    | 89.7436%  | 112.1795% | 108.9744% | 94.55%                |
| 11 | Jl.Mataram              | 51.2821%    | 89.7436%  | 118.5897% | 108.9744% | 92.15%                |
| 12 | Jl.Abubakar Ali         | 51.2821%    | 102.5641% | 80.1282%  | 108.9744% | 85.74%                |
| 13 | Jl.Kom Yos Sudarso      | 51.2821%    | 102.5641% | 70.5128%  | 108.9744% | 83.33%                |
| 14 | Jl.Suroto               | 64.1026%    | 102.5641% | 70.5128%  | 108.9744% | 86.54%                |
| 15 | Jl.Cik Di Tiro          | 60.8974%    | 102.5641% | 99.3590%  | 108.9744% | 92.95%                |
| 16 | Jl.Colombo              | 60.8974%    | 99.3590%  | 99.3590%  | 108.9744% | 92.15%                |
| 17 | Jl.Lingkar UGM Penuh    | 70.5128%    | 102.5641% | 99.3590%  | 108.9744% | 95.35%                |
| 18 | Jl. Kaliurang           | 70.5128%    | 102.5641% | 99.3590%  | 108.9744% | 95.35%                |
| 19 | Jl.C.Simajuntak         | 99.3590%    | 121.7949% | 108.9744% | 96.1538%  | 106.57%               |
| 20 | Jl. Jend.Sudirman       | 96.1538%    | 121.7949% | 102.5641% | 96.1538%  | 104.17%               |
| 21 | Jl. P.Mangkubumi        | 96.1538%    | 121.7949% | 99.3590%  | 96.1538%  | 103.37%               |
| 22 | Jl.Kleringan            | 96.1538%    | 121.7949% | 89.7436%  | 96.1538%  | 100.96%               |
| 23 | Jl.Taman Garuda         | 96.1538%    | 121.7949% | 89.7436%  | 96.1538%  | 100.96%               |
| 24 | Jl.Malioboro            | 83.3333%    | 105.7692% | 54.4872%  | 64.1026%  | 76.92%                |
| 25 | Jl. Jend.A.Yani         | 108.9744%   | 86.5385%  | 70.5128%  | 57.6923%  | 80.93%                |
| 26 | Jl. P.Senopati          | 102.5641%   | 86.5385%  | 76.9231%  | 57.6923%  | 80.93%                |
| 27 | Jl. Sultan Agung        | 83.3333%    | 83.3333%  | 51.2821%  | 64.1026%  | 70.51%                |
| 28 | Jl.Suryopranoto         | 83.3333%    | 83.3333%  | 51.2821%  | 67.3077%  | 71.31%                |
| 29 | Jl.Sukonandi            | 80.1282%    | 76.9231%  | 48.0769%  | 67.3077%  | 68.11%                |
| 30 | Jl.Kusuma Negara        | 64.1026%    | 54.4872%  | 16.0256%  | 54.4872%  | 47.28%                |
| 31 | Jl.Gedong Kuning        | 32.0513%    | 25.6410%  | 3.2051%   | 19.2308%  | 20.03%                |
| 32 | Jl.Ngeksidono           | 22.4359%    | 3.2051%   | 3.2051%   | 3.2051%   | 8.01%                 |
| 33 | Jl.P.Kemerdekaan        | 22.4359%    | 3.2051%   | 3.2051%   | 3.2051%   | 8.01%                 |
| 34 | Jl.Veteran              | 12.8205%    | 0.0000%   | 3.2051%   | 0.0000%   | 4.01%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%   | 0.0000%   | 0.00%                 |



## Load Factor Hari Senin

Tgl : June 10, 2002

| No | Ruas Jalan              | Load Factor |          |          |           | Load Factor Rata-rata |
|----|-------------------------|-------------|----------|----------|-----------|-----------------------|
|    |                         | a           | b        | c        | d         |                       |
| 1  | Terminal                | 19.2308%    | 0.0000%  | 0.0000%  | 9.6154%   | 7.21%                 |
| 2  | Jl.Veteran              | 28.8462%    | 6.4103%  | 9.6154%  | 9.6154%   | 13.62%                |
| 3  | Jl.Warung boto          | 28.8462%    | 6.4103%  | 9.6154%  | 12.8205%  | 14.42%                |
| 4  | Jl.Perintis Kemerdekaan | 28.8462%    | 16.0256% | 22.4359% | 12.8205%  | 20.03%                |
| 5  | Jl.Ngeksidono           | 28.8462%    | 32.0513% | 32.0513% | 25.6410%  | 29.65%                |
| 6  | Jl.Gedong Kuning        | 28.8462%    | 54.4872% | 48.0769% | 25.6410%  | 39.26%                |
| 7  | Jl.Kusuma Negara        | 28.8462%    | 70.5128% | 76.9231% | 67.3077%  | 60.90%                |
| 8  | Jl.Sultan Agung         | 28.8462%    | 86.5385% | 76.9231% | 67.3077%  | 64.90%                |
| 9  | Jl.Senopati             | 28.8462%    | 92.9487% | 86.5385% | 67.3077%  | 68.91%                |
| 10 | Jl.Mayor Suryotomo      | 22.4359%    | 96.1538% | 67.3077% | 76.9231%  | 65.71%                |
| 11 | Jl.Mataram              | 16.0256%    | 76.9231% | 64.1026% | 73.7179%  | 57.69%                |
| 12 | Jl.Abubakar Ali         | 9.6154%     | 80.1282% | 67.3077% | 76.9231%  | 58.49%                |
| 13 | Jl.Kom Yos Sudarso      | 6.4103%     | 80.1282% | 64.1026% | 80.1282%  | 57.69%                |
| 14 | Jl.Suroto               | 6.4103%     | 73.7179% | 67.3077% | 73.7179%  | 55.29%                |
| 15 | Jl.Cik Di Tiro          | 9.6154%     | 73.7179% | 80.1282% | 73.7179%  | 59.29%                |
| 16 | Jl.Colombo              | 0.0000%     | 89.7436% | 67.3077% | 86.5385%  | 60.90%                |
| 17 | Jl.Lingkar UGM Penuh    | 0.0000%     | 76.9231% | 76.9231% | 80.1282%  | 58.49%                |
| 18 | Jl. Kaliurang           | 0.0000%     | 73.7179% | 64.1026% | 96.1538%  | 58.49%                |
| 19 | Jl.C.Simajuntak         | 3.2051%     | 96.1538% | 70.5128% | 96.1538%  | 66.51%                |
| 20 | Jl. Jend.Sudirman       | 3.2051%     | 96.1538% | 67.3077% | 80.1282%  | 61.70%                |
| 21 | Jl. P.Mangkubumi        | 3.2051%     | 99.3590% | 64.1026% | 80.1282%  | 61.70%                |
| 22 | Jl.Kleringan            | 3.2051%     | 89.7436% | 64.1026% | 83.3333%  | 60.10%                |
| 23 | Jl.Taman Garuda         | 3.2051%     | 89.7436% | 76.9231% | 86.5385%  | 64.10%                |
| 24 | Jl.Malioboro            | 12.8205%    | 64.1026% | 67.3077% | 73.7179%  | 54.49%                |
| 25 | Jl. Jend.A.Yani         | 12.8205%    | 80.1282% | 86.5385% | 99.3590%  | 69.71%                |
| 26 | Jl. P.Senopati          | 19.2308%    | 89.7436% | 83.3333% | 92.9487%  | 71.31%                |
| 27 | Jl. Sultan Agung        | 35.2564%    | 70.5128% | 41.6667% | 99.3590%  | 61.70%                |
| 28 | Jl.Suryopranoto         | 28.8462%    | 73.7179% | 41.6667% | 99.3590%  | 60.90%                |
| 29 | Jl.Sukonandi            | 28.8462%    | 73.7179% | 41.6667% | 105.7692% | 62.50%                |
| 30 | Jl.Kusuma Negara        | 19.2308%    | 48.0769% | 22.4359% | 54.4872%  | 36.06%                |
| 31 | Jl.Gedong Kuning        | 16.0256%    | 25.6410% | 12.8205% | 41.6667%  | 24.04%                |
| 32 | Jl.Ngeksidono           | 12.8205%    | 19.2308% | 0.0000%  | 9.6154%   | 10.42%                |
| 33 | Jl.P.Kemerdekaan        | 9.6154%     | 9.6154%  | 6.4103%  | 3.2051%   | 7.21%                 |
| 34 | Jl.Veteran              | 9.6154%     | 0.0000%  | 3.2051%  | 0.0000%   | 3.21%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%  | 0.0000%  | 0.0000%   | 0.00%                 |

## Load Factor Hari Selasa

Tgl : June 11, 2002

| No | Ruas Jalan              | Load Factor |           |           |           | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|-----------|-----------|-----------------------|
|    |                         | a           | b         | c         | d         |                       |
| 1  | Terminal                | 0.0000%     | 6.4103%   | 12.8205%  | 9.6154%   | 7.21%                 |
| 2  | Jl.Veteran              | 0.0000%     | 6.4103%   | 12.8205%  | 9.6154%   | 7.21%                 |
| 3  | Jl.Warung boto          | 0.0000%     | 6.4103%   | 12.8205%  | 12.8205%  | 8.01%                 |
| 4  | Jl.Perintis Kemerdekaan | 0.0000%     | 6.4103%   | 12.8205%  | 12.8205%  | 8.01%                 |
| 5  | Jl.Ngeksidono           | 38.4615%    | 38.4615%  | 38.4615%  | 25.6410%  | 35.26%                |
| 6  | Jl.Gedong Kuning        | 115.3846%   | 64.1026%  | 83.3333%  | 25.6410%  | 72.12%                |
| 7  | Jl.Kusuma Negara        | 166.6667%   | 83.3333%  | 92.9487%  | 67.3077%  | 102.56%               |
| 8  | Jl.Sultan Agung         | 92.9487%    | 92.9487%  | 70.5128%  | 67.3077%  | 80.93%                |
| 9  | Jl.Senopati             | 89.7436%    | 89.7436%  | 70.5128%  | 67.3077%  | 79.33%                |
| 10 | Jl.Mayor Suryotomo      | 89.7436%    | 89.7436%  | 70.5128%  | 76.9231%  | 81.73%                |
| 11 | Jl.Mataram              | 89.7436%    | 92.9487%  | 54.4872%  | 73.7179%  | 77.72%                |
| 12 | Jl.Abubakar Ali         | 70.5128%    | 92.9487%  | 54.4872%  | 76.9231%  | 73.72%                |
| 13 | Jl.Kom Yos Sudarso      | 70.5128%    | 92.9487%  | 54.4872%  | 80.1282%  | 74.52%                |
| 14 | Jl.Suroto               | 54.4872%    | 92.9487%  | 54.4872%  | 73.7179%  | 68.91%                |
| 15 | Jl.Cik Di Tiro          | 80.1282%    | 89.7436%  | 73.7179%  | 73.7179%  | 79.33%                |
| 16 | Jl.Colombo              | 80.1282%    | 92.9487%  | 92.9487%  | 86.5385%  | 88.14%                |
| 17 | Jl.Lingkar UGM Penuh    | 92.9487%    | 108.9744% | 118.5897% | 80.1282%  | 100.16%               |
| 18 | Jl. Kaliurang           | 92.9487%    | 108.9744% | 118.5897% | 96.1538%  | 104.17%               |
| 19 | Jl.C.Simajuntak         | 99.3590%    | 131.4103% | 118.5897% | 96.1538%  | 111.38%               |
| 20 | Jl. Jend.Sudirman       | 80.1282%    | 131.4103% | 118.5897% | 80.1282%  | 102.56%               |
| 21 | Jl. P.Mangkubumi        | 89.7436%    | 115.3846% | 118.5897% | 80.1282%  | 100.96%               |
| 22 | Jl.Kleringan            | 83.3333%    | 112.1795% | 118.5897% | 83.3333%  | 99.36%                |
| 23 | Jl.Taman Garuda         | 83.3333%    | 112.1795% | 118.5897% | 86.5385%  | 100.16%               |
| 24 | Jl.Malioboro            | 70.5128%    | 64.1026%  | 96.1538%  | 73.7179%  | 76.12%                |
| 25 | Jl. Jend.A.Yani         | 86.5385%    | 115.3846% | 96.1538%  | 99.3590%  | 99.36%                |
| 26 | Jl. P.Senopati          | 70.5128%    | 105.7692% | 83.3333%  | 92.9487%  | 88.14%                |
| 27 | Jl. Sultan Agung        | 60.8974%    | 89.7436%  | 48.0769%  | 99.3590%  | 74.52%                |
| 28 | Jl.Suryopranoto         | 60.8974%    | 86.5385%  | 48.0769%  | 99.3590%  | 73.72%                |
| 29 | Jl.Sukonandi            | 60.8974%    | 86.5385%  | 48.0769%  | 105.7692% | 75.32%                |
| 30 | Jl.Kusuma Negara        | 16.0256%    | 41.6667%  | 16.0256%  | 54.4872%  | 32.05%                |
| 31 | Jl.Gedong Kuning        | 16.0256%    | 32.0513%  | 12.8205%  | 41.6667%  | 25.64%                |
| 32 | Jl.Ngeksidono           | 16.0256%    | 32.0513%  | 12.8205%  | 9.6154%   | 17.63%                |
| 33 | Jl.P.Kemerdekaan        | 16.0256%    | 32.0513%  | 12.8205%  | 3.2051%   | 16.03%                |
| 34 | Jl.Veteran              | 12.8205%    | 32.0513%  | 12.8205%  | 0.0000%   | 14.42%                |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%   | 0.0000%   | 0.00%                 |

## Load Factor Hari Minggu

Tgl : June 16, 2002

| No | Ruas Jalan              | Load Factor |          |          |          | Load Factor Rata-rata |
|----|-------------------------|-------------|----------|----------|----------|-----------------------|
|    |                         | a           | b        | c        | d        |                       |
| 1  | Terminal                | 16.0256%    | 0.0000%  | 6.4103%  | 0.0000%  | 5.61%                 |
| 2  | Jl.Veteran              | 16.0256%    | 0.0000%  | 6.4103%  | 0.0000%  | 5.61%                 |
| 3  | Jl.Warung boto          | 16.0256%    | 0.0000%  | 6.4103%  | 0.0000%  | 5.61%                 |
| 4  | Jl.Perintis Kemerdekaan | 22.4359%    | 9.6154%  | 6.4103%  | 16.0256% | 13.62%                |
| 5  | Jl.Ngeksidono           | 64.1026%    | 41.6667% | 16.0256% | 44.8718% | 41.67%                |
| 6  | Jl.Gedong Kuning        | 73.7179%    | 73.7179% | 54.4872% | 48.0769% | 62.50%                |
| 7  | Jl.Kusuma Negara        | 118.5897%   | 73.7179% | 73.7179% | 86.5385% | 88.14%                |
| 8  | Jl.Sultan Agung         | 125.0000%   | 86.5385% | 83.3333% | 83.3333% | 94.55%                |
| 9  | Jl.Senopati             | 112.1795%   | 86.5385% | 73.7179% | 80.1282% | 88.14%                |
| 10 | Jl.Mayor Suryotomo      | 112.1795%   | 86.5385% | 73.7179% | 80.1282% | 88.14%                |
| 11 | Jl.Mataram              | 92.9487%    | 57.6923% | 25.6410% | 54.4872% | 57.69%                |
| 12 | Jl.Abubakar Ali         | 92.9487%    | 64.1026% | 25.6410% | 54.4872% | 59.29%                |
| 13 | Jl.Kom Yos Sudarso      | 92.9487%    | 60.8974% | 25.6410% | 54.4872% | 58.49%                |
| 14 | Jl.Suroto               | 92.9487%    | 60.8974% | 25.6410% | 54.4872% | 58.49%                |
| 15 | Jl.Cik Di Tiro          | 89.7436%    | 60.8974% | 25.6410% | 54.4872% | 57.69%                |
| 16 | Jl.Colombo              | 89.7436%    | 60.8974% | 25.6410% | 32.0513% | 52.08%                |
| 17 | Jl.Lingkar UGM Penuh    | 76.9231%    | 60.8974% | 25.6410% | 32.0513% | 48.88%                |
| 18 | Jl. Kaliurang           | 76.9231%    | 48.0769% | 25.6410% | 22.4359% | 43.27%                |
| 19 | Jl.C.Simajuntak         | 80.1282%    | 89.7436% | 60.8974% | 51.2821% | 70.51%                |
| 20 | Jl. Jend.Sudirman       | 80.1282%    | 89.7436% | 60.8974% | 48.0769% | 69.71%                |
| 21 | Jl. P.Mangkubumi        | 89.7436%    | 89.7436% | 76.9231% | 38.4615% | 73.72%                |
| 22 | Jl.Kleringan            | 89.7436%    | 89.7436% | 76.9231% | 38.4615% | 73.72%                |
| 23 | Jl.Taman Garuda         | 89.7436%    | 89.7436% | 76.9231% | 38.4615% | 73.72%                |
| 24 | Jl.Malioboro            | 70.5128%    | 51.2821% | 35.2564% | 6.4103%  | 40.87%                |
| 25 | Jl. Jend.A.Yani         | 64.1026%    | 64.1026% | 16.0256% | 32.0513% | 44.07%                |
| 26 | Jl. P.Senopati          | 64.1026%    | 64.1026% | 16.0256% | 38.4615% | 45.67%                |
| 27 | Jl. Sultan Agung        | 54.4872%    | 25.6410% | 12.8205% | 9.6154%  | 25.64%                |
| 28 | Jl.Suryopranoto         | 54.4872%    | 19.2308% | 12.8205% | 3.2051%  | 22.44%                |
| 29 | Jl.Sukonandi            | 54.4872%    | 19.2308% | 12.8205% | 3.2051%  | 22.44%                |
| 30 | Jl.Kusuma Negara        | 25.6410%    | 3.2051%  | 0.0000%  | 9.6154%  | 9.62%                 |
| 31 | Jl.Gedong Kuning        | 3.2051%     | 0.0000%  | 3.2051%  | 0.0000%  | 1.60%                 |
| 32 | Jl.Ngeksidono           | 0.0000%     | 0.0000%  | 3.2051%  | 0.0000%  | 0.80%                 |
| 33 | Jl.P.Kemerdekaan        | 0.0000%     | 0.0000%  | 3.2051%  | 0.0000%  | 0.80%                 |
| 34 | Jl.Veteran              | 0.0000%     | 0.0000%  | 3.2051%  | 0.0000%  | 0.80%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%  | 0.0000%  | 0.0000%  | 0.00%                 |

## Load Factor Hari Senin

Tgl : June 17, 2002

| No | Ruas Jalan              | Load Factor |          |           |           | Load Factor Rata-rata |
|----|-------------------------|-------------|----------|-----------|-----------|-----------------------|
|    |                         | a           | b        | c         | d         |                       |
| 1  | Terminal                | 12.8205%    | 9.6154%  | 0.0000%   | 0.0000%   | 5.61%                 |
| 2  | Jl.Veteran              | 22.4359%    | 9.6154%  | 3.2051%   | 9.6154%   | 11.22%                |
| 3  | Jl.Warung boto          | 22.4359%    | 9.6154%  | 3.2051%   | 9.6154%   | 11.22%                |
| 4  | Jl.Perintis Kemerdekaan | 38.4615%    | 28.8462% | 3.2051%   | 25.6410%  | 24.04%                |
| 5  | Jl.Ngeksidono           | 80.1282%    | 44.8718% | 54.4872%  | 67.3077%  | 61.70%                |
| 6  | Jl.Gedong Kuning        | 86.5385%    | 99.3590% | 105.7692% | 96.1538%  | 96.96%                |
| 7  | Jl.Kusuma Negara        | 108.9744%   | 96.1538% | 102.5641% | 115.3846% | 105.77%               |
| 8  | Jl.Sultan Agung         | 125.0000%   | 83.3333% | 83.3333%  | 96.1538%  | 96.96%                |
| 9  | Jl.Senopati             | 118.5897%   | 92.9487% | 92.9487%  | 96.1538%  | 100.16%               |
| 10 | Jl.Mayor Suryotomo      | 118.5897%   | 92.9487% | 92.9487%  | 96.1538%  | 100.16%               |
| 11 | Jl.Mataram              | 115.3846%   | 57.6923% | 57.6923%  | 73.7179%  | 76.12%                |
| 12 | Jl.Abubakar Ali         | 105.7692%   | 57.6923% | 57.6923%  | 73.7179%  | 73.72%                |
| 13 | Jl.Kom Yos Sudarso      | 105.7692%   | 57.6923% | 57.6923%  | 73.7179%  | 73.72%                |
| 14 | Jl.Suroto               | 105.7692%   | 57.6923% | 48.0769%  | 73.7179%  | 71.31%                |
| 15 | Jl.Cik Di Tiro          | 89.7436%    | 76.9231% | 54.4872%  | 54.4872%  | 68.91%                |
| 16 | Jl.Colombo              | 102.5641%   | 76.9231% | 86.5385%  | 96.1538%  | 90.54%                |
| 17 | Jl.Lingkar UGM Penuh    | 99.3590%    | 54.4872% | 86.5385%  | 96.1538%  | 84.13%                |
| 18 | Jl. Kaliurang           | 99.3590%    | 44.8718% | 86.5385%  | 67.3077%  | 74.52%                |
| 19 | Jl.C.Simajuntak         | 86.5385%    | 76.9231% | 99.3590%  | 73.7179%  | 84.13%                |
| 20 | Jl. Jend.Sudirman       | 86.5385%    | 76.9231% | 92.9487%  | 73.7179%  | 82.53%                |
| 21 | Jl. P.Mangkubumi        | 73.7179%    | 64.1026% | 92.9487%  | 76.9231%  | 76.92%                |
| 22 | Jl.Kleringan            | 70.5128%    | 57.6923% | 80.1282%  | 76.9231%  | 71.31%                |
| 23 | Jl.Taman Garuda         | 70.5128%    | 57.6923% | 80.1282%  | 76.9231%  | 71.31%                |
| 24 | Jl.Malioboro            | 57.6923%    | 19.2308% | 44.8718%  | 60.8974%  | 45.67%                |
| 25 | Jl. Jend.A.Yani         | 73.7179%    | 64.1026% | 73.7179%  | 48.0769%  | 64.90%                |
| 26 | Jl. P.Senopati          | 73.7179%    | 60.8974% | 73.7179%  | 48.0769%  | 64.10%                |
| 27 | Jl. Sultan Agung        | 73.7179%    | 28.8462% | 51.2821%  | 38.4615%  | 48.08%                |
| 28 | Jl.Suryopranoto         | 73.7179%    | 12.8205% | 51.2821%  | 38.4615%  | 44.07%                |
| 29 | Jl.Sukonandi            | 73.7179%    | 12.8205% | 51.2821%  | 38.4615%  | 44.07%                |
| 30 | Jl.Kusuma Negara        | 54.4872%    | 9.6154%  | 25.6410%  | 25.6410%  | 28.85%                |
| 31 | Jl.Gedong Kuning        | 16.0256%    | 9.6154%  | 9.6154%   | 0.0000%   | 8.81%                 |
| 32 | Jl.Ngeksidono           | 9.6154%     | 3.2051%  | 9.6154%   | 0.0000%   | 5.61%                 |
| 33 | Jl.P.Kemerdekaan        | 9.6154%     | 3.2051%  | 9.6154%   | 0.0000%   | 5.61%                 |
| 34 | Jl.Veteran              | 9.6154%     | 3.2051%  | 3.2051%   | 0.0000%   | 4.01%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%  | 0.0000%   | 0.0000%   | 0.00%                 |

## Load Factor Hari Selasa

Tgl : June 18, 2002

| No | Ruas Jalan              | Load Factor |           |          |          | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|----------|----------|-----------------------|
|    |                         | a           | b         | c        | d        |                       |
| 1  | Terminal                | 12.8205%    | 6.4103%   | 6.4103%  | 0.0000%  | 6.41%                 |
| 2  | Jl.Veteran              | 22.4359%    | 6.4103%   | 9.6154%  | 3.2051%  | 10.42%                |
| 3  | Jl.Warung boto          | 22.4359%    | 6.4103%   | 9.6154%  | 3.2051%  | 10.42%                |
| 4  | Jl.Perintis Kemerdekaan | 22.4359%    | 6.4103%   | 19.2308% | 9.6154%  | 14.42%                |
| 5  | Jl.Ngeksidono           | 70.5128%    | 38.4615%  | 28.8462% | 19.2308% | 39.26%                |
| 6  | Jl.Gedong Kuning        | 76.9231%    | 64.1026%  | 51.2821% | 22.4359% | 53.69%                |
| 7  | Jl.Kusuma Negara        | 99.3590%    | 83.3333%  | 64.1026% | 41.6667% | 72.12%                |
| 8  | Jl.Sultan Agung         | 92.9487%    | 92.9487%  | 54.4872% | 41.6667% | 70.51%                |
| 9  | Jl.Senopati             | 92.9487%    | 89.7436%  | 48.0769% | 32.0513% | 65.71%                |
| 10 | Jl.Mayor Suryotomo      | 89.7436%    | 89.7436%  | 44.8718% | 32.0513% | 64.10%                |
| 11 | Jl.Mataram              | 80.1282%    | 92.9487%  | 67.3077% | 32.0513% | 68.11%                |
| 12 | Jl.Abubakar Ali         | 80.1282%    | 92.9487%  | 67.3077% | 28.8462% | 67.31%                |
| 13 | Jl.Kom Yos Sudarso      | 80.1282%    | 92.9487%  | 67.3077% | 28.8462% | 67.31%                |
| 14 | Jl.Suroto               | 70.5128%    | 92.9487%  | 57.6923% | 22.4359% | 60.90%                |
| 15 | Jl.Cik Di Tiro          | 54.4872%    | 89.7436%  | 64.1026% | 25.6410% | 58.49%                |
| 16 | Jl.Colombo              | 54.4872%    | 92.9487%  | 70.5128% | 25.6410% | 60.90%                |
| 17 | Jl.Lingkar UGM Penuh    | 89.7436%    | 108.9744% | 99.3590% | 25.6410% | 80.93%                |
| 18 | Jl. Kaliurang           | 108.9744%   | 108.9744% | 89.7436% | 25.6410% | 83.33%                |
| 19 | Jl.C.Simajuntak         | 102.5641%   | 131.4103% | 99.3590% | 51.2821% | 96.15%                |
| 20 | Jl. Jend.Sudirman       | 102.5641%   | 131.4103% | 99.3590% | 57.6923% | 97.76%                |
| 21 | Jl. P.Mangkubumi        | 102.5641%   | 115.3846% | 70.5128% | 57.6923% | 86.54%                |
| 22 | Jl.Kleringan            | 102.5641%   | 112.1795% | 70.5128% | 54.4872% | 84.94%                |
| 23 | Jl.Taman Garuda         | 102.5641%   | 112.1795% | 70.5128% | 54.4872% | 84.94%                |
| 24 | Jl.Malioboro            | 76.9231%    | 64.1026%  | 41.6667% | 38.4615% | 55.29%                |
| 25 | Jl. Jend.A.Yani         | 86.5385%    | 115.3846% | 57.6923% | 54.4872% | 78.53%                |
| 26 | Jl. P.Senopati          | 76.9231%    | 105.7692% | 57.6923% | 57.6923% | 74.52%                |
| 27 | Jl. Sultan Agung        | 96.1538%    | 89.7436%  | 38.4615% | 64.1026% | 72.12%                |
| 28 | Jl.Suryopranoto         | 96.1538%    | 86.5385%  | 38.4615% | 54.4872% | 68.91%                |
| 29 | Jl.Sukonandi            | 96.1538%    | 86.5385%  | 38.4615% | 44.8718% | 66.51%                |
| 30 | Jl.Kusuma Negara        | 54.4872%    | 41.6667%  | 9.6154%  | 19.2308% | 31.25%                |
| 31 | Jl.Gedong Kuning        | 28.8462%    | 32.0513%  | 12.8205% | 9.6154%  | 20.83%                |
| 32 | Jl.Ngeksidono           | 35.2564%    | 32.0513%  | 3.2051%  | 9.6154%  | 20.03%                |
| 33 | Jl.P.Kemerdekaan        | 19.2308%    | 32.0513%  | 3.2051%  | 6.4103%  | 15.22%                |
| 34 | Jl.Veteran              | 16.0256%    | 32.0513%  | 3.2051%  | 6.4103%  | 14.42%                |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%  | 0.0000%  | 0.00%                 |

## Load Factor Hari Minggu

Tgl : June 23, 2002

| No | Ruas Jalan              | Load Factor |          |         |   | Load Factor Rata-rata |
|----|-------------------------|-------------|----------|---------|---|-----------------------|
|    |                         | a           | b        | c       | d |                       |
| 1  | Terminal                | 0.0000%     | 3.2051%  | 0.0000% |   | 1.07%                 |
| 2  | Jl.Veteran              | 6.4103%     | 3.2051%  | 0.0000% |   | 3.21%                 |
| 3  | Jl.Warung boto          | 9.6154%     | 3.2051%  | 0.0000% |   | 4.27%                 |
| 4  | Jl.Perintis Kemerdekaan | 9.6154%     | 6.4103%  | 0.0000% |   | 5.34%                 |
| 5  | Jl.Ngeksidono           | 28.8462%    | 22.4359% | 0.0000% |   | 17.09%                |
| 6  | Jl.Gedong Kuning        | 64.1026%    | 25.6410% | 0.0000% |   | 29.91%                |
| 7  | Jl.Kusuma Negara        | 89.7436%    | 54.4872% | 0.0000% |   | 48.08%                |
| 8  | Jl.Sultan Agung         | 83.3333%    | 67.3077% | 0.0000% |   | 50.21%                |
| 9  | Jl.Senopati             | 73.7179%    | 67.3077% | 0.0000% |   | 47.01%                |
| 10 | Jl.Mayor Suryotomo      | 73.7179%    | 67.3077% | 0.0000% |   | 47.01%                |
| 11 | Jl.Mataram              | 48.0769%    | 86.5385% | 0.0000% |   | 44.87%                |
| 12 | Jl.Abubakar Ali         | 48.0769%    | 83.3333% | 0.0000% |   | 43.80%                |
| 13 | Jl.Kom Yos Sudarso      | 48.0769%    | 83.3333% | 0.0000% |   | 43.80%                |
| 14 | Jl.Suroto               | 38.4615%    | 83.3333% | 0.0000% |   | 40.60%                |
| 15 | Jl.Cik Di Tiro          | 28.8462%    | 99.3590% | 0.0000% |   | 42.74%                |
| 16 | Jl.Colombo              | 48.0769%    | 99.3590% | 0.0000% |   | 49.15%                |
| 17 | Jl.Lingkar UGM Penuh    | 48.0769%    | 99.3590% | 0.0000% |   | 49.15%                |
| 18 | Jl. Kaliurang           | 48.0769%    | 70.5128% | 0.0000% |   | 39.53%                |
| 19 | Jl.C.Simajuntak         | 51.2821%    | 83.3333% | 0.0000% |   | 44.87%                |
| 20 | Jl. Jend.Sudirman       | 51.2821%    | 83.3333% | 0.0000% |   | 44.87%                |
| 21 | Jl. P.Mangkubumi        | 48.0769%    | 76.9231% | 0.0000% |   | 41.67%                |
| 22 | Jl.Kleringan            | 48.0769%    | 76.9231% | 0.0000% |   | 41.67%                |
| 23 | Jl.Taman Garuda         | 48.0769%    | 76.9231% | 0.0000% |   | 41.67%                |
| 24 | Jl.Malioboro            | 32.0513%    | 51.2821% | 0.0000% |   | 27.78%                |
| 25 | Jl. Jend.A.Yani         | 25.6410%    | 51.2821% | 0.0000% |   | 25.64%                |
| 26 | Jl. P.Senopati          | 25.6410%    | 44.8718% | 0.0000% |   | 23.50%                |
| 27 | Jl. Sultan Agung        | 16.0256%    | 35.2564% | 0.0000% |   | 17.09%                |
| 28 | Jl.Suryopranoto         | 16.0256%    | 35.2564% | 0.0000% |   | 17.09%                |
| 29 | Jl.Sukonandi            | 16.0256%    | 32.0513% | 0.0000% |   | 16.03%                |
| 30 | Jl.Kusuma Negara        | 6.4103%     | 9.6154%  | 0.0000% |   | 5.34%                 |
| 31 | Jl.Gedong Kuning        | 0.0000%     | 12.8205% | 0.0000% |   | 4.27%                 |
| 32 | Jl.Ngeksidono           | 3.2051%     | 3.2051%  | 0.0000% |   | 2.14%                 |
| 33 | Jl.P.Kemerdekaan        | 3.2051%     | 3.2051%  | 0.0000% |   | 2.14%                 |
| 34 | Jl.Veteran              | 0.0000%     | 3.2051%  | 0.0000% |   | 1.07%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%  | 0.0000% |   | 0.00%                 |

## Load Factor Hari Senin

Tgl : June 24, 2002

| No | Ruas Jalan              | Load Factor |           |          |          | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|----------|----------|-----------------------|
|    |                         | a           | b         | c        | d        |                       |
| 1  | Terminal                | 19.2308%    | 3.2051%   | 9.6154%  | 9.6154%  | 10.42%                |
| 2  | Jl.Veteran              | 28.8462%    | 3.2051%   | 9.6154%  | 9.6154%  | 12.82%                |
| 3  | Jl.Warung boto          | 28.8462%    | 3.2051%   | 9.6154%  | 9.6154%  | 12.82%                |
| 4  | Jl.Perintis Kemerdekaan | 28.8462%    | 6.4103%   | 9.6154%  | 9.6154%  | 13.62%                |
| 5  | Jl.Ngeksidono           | 28.8462%    | 6.4103%   | 54.4872% | 16.0256% | 26.44%                |
| 6  | Jl.Gedong Kuning        | 28.8462%    | 70.5128%  | 89.7436% | 73.7179% | 65.71%                |
| 7  | Jl.Kusuma Negara        | 28.8462%    | 89.7436%  | 96.1538% | 64.1026% | 69.71%                |
| 8  | Jl.Sultan Agung         | 28.8462%    | 83.3333%  | 96.1538% | 57.6923% | 66.51%                |
| 9  | Jl.Senopati             | 28.8462%    | 83.3333%  | 80.1282% | 48.0769% | 60.10%                |
| 10 | Jl.Mayor Suryotomo      | 22.4359%    | 51.2821%  | 73.7179% | 54.4872% | 50.48%                |
| 11 | Jl.Mataram              | 16.0256%    | 60.8974%  | 54.4872% | 32.0513% | 40.87%                |
| 12 | Jl.Abubakar Ali         | 9.6154%     | 60.8974%  | 19.2308% | 28.8462% | 29.65%                |
| 13 | Jl.Kom Yos Sudarso      | 6.4103%     | 60.8974%  | 19.2308% | 28.8462% | 28.85%                |
| 14 | Jl.Suroto               | 6.4103%     | 41.6667%  | 16.0256% | 25.6410% | 22.44%                |
| 15 | Jl.Cik Di Tiro          | 9.6154%     | 32.0513%  | 16.0256% | 22.4359% | 20.03%                |
| 16 | Jl.Colombo              | 0.0000%     | 67.3077%  | 12.8205% | 12.8205% | 23.24%                |
| 17 | Jl.Lingkar UGM Penuh    | 0.0000%     | 70.5128%  | 54.4872% | 0.0000%  | 31.25%                |
| 18 | Jl. Kaliurang           | 0.0000%     | 70.5128%  | 54.4872% | 3.2051%  | 32.05%                |
| 19 | Jl.C.Simajuntak         | 3.2051%     | 108.9744% | 86.5385% | 6.4103%  | 51.28%                |
| 20 | Jl. Jend.Sudirman       | 3.2051%     | 108.9744% | 86.5385% | 9.6154%  | 52.08%                |
| 21 | Jl. P.Mangkubumi        | 3.2051%     | 89.7436%  | 73.7179% | 12.8205% | 44.87%                |
| 22 | Jl.Kleringan            | 3.2051%     | 89.7436%  | 73.7179% | 12.8205% | 44.87%                |
| 23 | Jl.Taman Garuda         | 3.2051%     | 89.7436%  | 73.7179% | 12.8205% | 44.87%                |
| 24 | Jl.Malioboro            | 12.8205%    | 86.5385%  | 57.6923% | 9.6154%  | 41.67%                |
| 25 | Jl. Jend.A.Yani         | 12.8205%    | 92.9487%  | 48.0769% | 9.6154%  | 40.87%                |
| 26 | Jl. P.Senopati          | 19.2308%    | 96.1538%  | 48.0769% | 12.8205% | 44.07%                |
| 27 | Jl. Sultan Agung        | 35.2564%    | 92.9487%  | 51.2821% | 44.8718% | 56.09%                |
| 28 | Jl.Suryopranoto         | 28.8462%    | 96.1538%  | 51.2821% | 44.8718% | 55.29%                |
| 29 | Jl.Sukonandi            | 28.8462%    | 96.1538%  | 51.2821% | 44.8718% | 55.29%                |
| 30 | Jl.Kusuma Negara        | 19.2308%    | 96.1538%  | 51.2821% | 32.0513% | 49.68%                |
| 31 | Jl.Gedong Kuning        | 16.0256%    | 32.0513%  | 25.6410% | 16.0256% | 22.44%                |
| 32 | Jl.Ngeksidono           | 12.8205%    | 19.2308%  | 25.6410% | 6.4103%  | 16.03%                |
| 33 | Jl.P.Kemerdekaan        | 9.6154%     | 9.6154%   | 25.6410% | 6.4103%  | 12.82%                |
| 34 | Jl.Veteran              | 9.6154%     | 9.6154%   | 25.6410% | 6.4103%  | 12.82%                |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%  | 0.0000%  | 0.00%                 |

## Load Factor Hari Selasa

Tgl : June 25, 2002

| No | Ruas Jalan              | Load Factor |           |          |          | Load Factor Rata-rata |
|----|-------------------------|-------------|-----------|----------|----------|-----------------------|
|    |                         | a           | b         | c        | d        |                       |
| 1  | Terminal                | 0.0000%     | 0.0000%   | 9.6154%  | 0.0000%  | 2.40%                 |
| 2  | Jl.Veteran              | 12.8205%    | 0.0000%   | 9.6154%  | 0.0000%  | 5.61%                 |
| 3  | Jl.Warung boto          | 12.8205%    | 0.0000%   | 9.6154%  | 0.0000%  | 5.61%                 |
| 4  | Jl.Perintis Kemerdekaan | 19.2308%    | 22.4359%  | 22.4359% | 6.4103%  | 17.63%                |
| 5  | Jl.Ngeksidono           | 60.8974%    | 73.7179%  | 44.8718% | 32.0513% | 52.88%                |
| 6  | Jl.Gedong Kuning        | 89.7436%    | 86.5385%  | 76.9231% | 44.8718% | 74.52%                |
| 7  | Jl.Kusuma Negara        | 121.7949%   | 102.5641% | 92.9487% | 25.6410% | 85.74%                |
| 8  | Jl.Sultan Agung         | 108.9744%   | 99.3590%  | 96.1538% | 35.2564% | 84.94%                |
| 9  | Jl.Senopati             | 108.9744%   | 86.5385%  | 96.1538% | 35.2564% | 81.73%                |
| 10 | Jl.Mayor Suryotomo      | 99.3590%    | 86.5385%  | 96.1538% | 38.4615% | 80.13%                |
| 11 | Jl.Mataram              | 89.7436%    | 48.0769%  | 70.5128% | 51.2821% | 64.90%                |
| 12 | Jl.Abubakar Ali         | 89.7436%    | 48.0769%  | 70.5128% | 51.2821% | 64.90%                |
| 13 | Jl.Kom Yos Sudarso      | 89.7436%    | 44.8718%  | 70.5128% | 51.2821% | 64.10%                |
| 14 | Jl.Suroto               | 86.5385%    | 44.8718%  | 64.1026% | 48.0769% | 60.90%                |
| 15 | Jl.Cik Di Tiro          | 86.5385%    | 51.2821%  | 64.1026% | 48.0769% | 62.50%                |
| 16 | Jl.Colombo              | 86.5385%    | 76.9231%  | 96.1538% | 48.0769% | 76.92%                |
| 17 | Jl.Lingkar UGM Penuh    | 92.9487%    | 76.9231%  | 76.9231% | 48.0769% | 73.72%                |
| 18 | Jl. Kaliurang           | 86.5385%    | 76.9231%  | 76.9231% | 48.0769% | 72.12%                |
| 19 | Jl.C.Simajuntak         | 92.9487%    | 73.7179%  | 96.1538% | 67.3077% | 82.53%                |
| 20 | Jl. Jend.Sudirman       | 92.9487%    | 73.7179%  | 96.1538% | 67.3077% | 82.53%                |
| 21 | Jl. P.Mangkubumi        | 76.9231%    | 73.7179%  | 86.5385% | 60.8974% | 74.52%                |
| 22 | Jl.Kleringan            | 51.2821%    | 57.6923%  | 86.5385% | 60.8974% | 64.10%                |
| 23 | Jl.Taman Garuda         | 51.2821%    | 57.6923%  | 86.5385% | 60.8974% | 64.10%                |
| 24 | Jl.Malioboro            | 41.6667%    | 41.6667%  | 60.8974% | 35.2564% | 44.87%                |
| 25 | Jl. Jend.A.Yani         | 44.8718%    | 60.8974%  | 60.8974% | 51.2821% | 54.49%                |
| 26 | Jl. P.Senopati          | 44.8718%    | 64.1026%  | 60.8974% | 51.2821% | 55.29%                |
| 27 | Jl. Sultan Agung        | 32.0513%    | 64.1026%  | 38.4615% | 44.8718% | 44.87%                |
| 28 | Jl.Suryopranoto         | 25.6410%    | 64.1026%  | 38.4615% | 44.8718% | 43.27%                |
| 29 | Jl.Sukonandi            | 19.2308%    | 64.1026%  | 38.4615% | 44.8718% | 41.67%                |
| 30 | Jl.Kusuma Negara        | 19.2308%    | 48.0769%  | 16.0256% | 22.4359% | 26.44%                |
| 31 | Jl.Gedong Kuning        | 9.6154%     | 25.6410%  | 16.0256% | 3.2051%  | 13.62%                |
| 32 | Jl.Ngeksidono           | 6.4103%     | 25.6410%  | 0.0000%  | 3.2051%  | 8.81%                 |
| 33 | Jl.P.Kemerdekaan        | 6.4103%     | 12.8205%  | 3.2051%  | 0.0000%  | 5.61%                 |
| 34 | Jl.Veteran              | 6.4103%     | 6.4103%   | 0.0000%  | 0.0000%  | 3.21%                 |
| 35 | Terminal                | 0.0000%     | 0.0000%   | 0.0000%  | 0.0000%  | 0.00%                 |



## Load Factor Hari Minggu

Tgl : June 30, 2002

| No | Ruas Jalan              | Load Factor |          |          |          | Load Factor Rata-rata |
|----|-------------------------|-------------|----------|----------|----------|-----------------------|
|    |                         | a           | b        | c        | d        |                       |
| 1  | Terminal                | 6.4103%     | 16.0256% | 3.2051%  | 0.0000%  | 6.41%                 |
| 2  | Jl.Veteran              | 6.4103%     | 25.6410% | 3.2051%  | 0.0000%  | 8.81%                 |
| 3  | Jl.Warung boto          | 6.4103%     | 25.6410% | 9.6154%  | 0.0000%  | 10.42%                |
| 4  | Jl.Perintis Kemerdekaan | 12.8205%    | 25.6410% | 9.6154%  | 0.0000%  | 12.02%                |
| 5  | Jl.Ngeksidono           | 12.8205%    | 38.4615% | 9.6154%  | 0.0000%  | 15.22%                |
| 6  | Jl.Gedong Kuning        | 38.4615%    | 76.9231% | 25.6410% | 9.6154%  | 37.66%                |
| 7  | Jl.Kusuma Negara        | 41.6667%    | 73.7179% | 54.4872% | 22.4359% | 48.08%                |
| 8  | Jl.Sultan Agung         | 38.4615%    | 80.1282% | 51.2821% | 12.8205% | 45.67%                |
| 9  | Jl.Senopati             | 38.4615%    | 73.7179% | 54.4872% | 22.4359% | 47.28%                |
| 10 | Jl.Mayor Suryotomo      | 28.8462%    | 44.8718% | 64.1026% | 16.0256% | 38.46%                |
| 11 | Jl.Mataram              | 25.6410%    | 35.2564% | 57.6923% | 6.4103%  | 31.25%                |
| 12 | Jl.Abubakar Ali         | 38.4615%    | 35.2564% | 57.6923% | 12.8205% | 36.06%                |
| 13 | Jl.Kom Yos Sudarso      | 38.4615%    | 35.2564% | 57.6923% | 12.8205% | 36.06%                |
| 14 | Jl.Suroto               | 38.4615%    | 22.4359% | 48.0769% | 12.8205% | 30.45%                |
| 15 | Jl.Cik Di Tiro          | 28.8462%    | 25.6410% | 25.6410% | 6.4103%  | 21.63%                |
| 16 | Jl.Colombo              | 25.6410%    | 25.6410% | 22.4359% | 0.0000%  | 18.43%                |
| 17 | Jl.Lingkar UGM Penuh    | 38.4615%    | 22.4359% | 19.2308% | 16.0256% | 24.04%                |
| 18 | Jl. Kaliurang           | 38.4615%    | 22.4359% | 19.2308% | 16.0256% | 24.04%                |
| 19 | Jl.C.Simajuntak         | 64.1026%    | 67.3077% | 35.2564% | 44.8718% | 52.88%                |
| 20 | Jl. Jend.Sudirman       | 67.3077%    | 60.8974% | 32.0513% | 38.4615% | 49.68%                |
| 21 | Jl. P.Mangkubumi        | 57.6923%    | 70.5128% | 32.0513% | 32.0513% | 48.08%                |
| 22 | Jl.Kleringan            | 57.6923%    | 70.5128% | 35.2564% | 32.0513% | 48.88%                |
| 23 | Jl.Taman Garuda         | 57.6923%    | 70.5128% | 35.2564% | 32.0513% | 48.88%                |
| 24 | Jl.Malioboro            | 54.4872%    | 60.8974% | 38.4615% | 38.4615% | 48.08%                |
| 25 | Jl. Jend.A.Yani         | 54.4872%    | 51.2821% | 73.7179% | 83.3333% | 65.71%                |
| 26 | Jl. P.Senopati          | 57.6923%    | 89.7436% | 73.7179% | 86.5385% | 76.92%                |
| 27 | Jl. Sultan Agung        | 67.3077%    | 86.5385% | 73.7179% | 80.1282% | 76.92%                |
| 28 | Jl.Suryopranoto         | 67.3077%    | 86.5385% | 73.7179% | 80.1282% | 76.92%                |
| 29 | Jl.Sukonandi            | 64.1026%    | 92.9487% | 73.7179% | 80.1282% | 77.72%                |
| 30 | Jl.Kusuma Negara        | 44.8718%    | 44.8718% | 38.4615% | 73.7179% | 50.48%                |
| 31 | Jl.Gedong Kuning        | 25.6410%    | 16.0256% | 25.6410% | 9.6154%  | 19.23%                |
| 32 | Jl.Ngeksidono           | 25.6410%    | 12.8205% | 22.4359% | 3.2051%  | 16.03%                |
| 33 | Jl.P.Kemerdekaan        | 16.0256%    | 12.8205% | 12.8205% | 3.2051%  | 11.22%                |
| 34 | Jl.Veteran              | 16.0256%    | 12.8205% | 12.8205% | 3.2051%  | 11.22%                |
| 35 | Terminal                | 0.0000%     | 0.0000%  | 0.0000%  | 0.0000%  | 0.00%                 |

## Load Factor Rata-rata Senin

| No | Ruas Jalan              | Load Factor |        |         |        | Rata - Rata |
|----|-------------------------|-------------|--------|---------|--------|-------------|
|    |                         | I           | II     | III     | IV     |             |
| 1  | Terminal                | 11.22%      | 7.21%  | 5.61%   | 10.42% | 8.61%       |
| 2  | Jl.Veteran              | 17.63%      | 13.62% | 11.22%  | 12.82% | 13.82%      |
| 3  | Jl.Warung boto          | 17.63%      | 14.42% | 11.22%  | 12.82% | 14.02%      |
| 4  | Jl.Perintis Kemerdekaan | 32.85%      | 20.03% | 24.04%  | 13.62% | 22.64%      |
| 5  | Jl.Ngeksidono           | 45.67%      | 29.65% | 61.70%  | 26.44% | 40.87%      |
| 6  | Jl.Gedong Kuning        | 97.76%      | 39.26% | 96.96%  | 65.71% | 74.92%      |
| 7  | Jl.Kusuma Negara        | 116.99%     | 60.90% | 105.77% | 69.71% | 88.34%      |
| 8  | Jl.Sultan Agung         | 118.59%     | 64.90% | 96.96%  | 66.51% | 86.74%      |
| 9  | Jl.Senopati             | 118.59%     | 68.91% | 100.16% | 60.10% | 86.94%      |
| 10 | Jl.Mayor Suryotomo      | 108.97%     | 65.71% | 100.16% | 50.48% | 81.33%      |
| 11 | Jl.Mataram              | 108.17%     | 57.69% | 76.12%  | 40.87% | 70.71%      |
| 12 | Jl.Abubakar Ali         | 108.17%     | 58.49% | 73.72%  | 29.65% | 67.51%      |
| 13 | Jl.Kom Yos Sudarso      | 108.17%     | 57.69% | 73.72%  | 28.85% | 67.11%      |
| 14 | Jl.Suroto               | 94.55%      | 55.29% | 71.31%  | 22.44% | 60.90%      |
| 15 | Jl.Cik Di Tiro          | 90.54%      | 59.29% | 68.91%  | 20.03% | 59.70%      |
| 16 | Jl.Colombo              | 88.94%      | 60.90% | 90.54%  | 23.24% | 65.91%      |
| 17 | Jl.Lingkar UGM Penuh    | 78.53%      | 58.49% | 84.13%  | 31.25% | 63.10%      |
| 18 | Jl. Kaliurang           | 80.13%      | 58.49% | 74.52%  | 32.05% | 61.30%      |
| 19 | Jl.C.Simajuntak         | 95.35%      | 66.51% | 84.13%  | 51.28% | 74.32%      |
| 20 | Jl. Jend.Sudirman       | 95.35%      | 61.70% | 82.53%  | 52.08% | 72.92%      |
| 21 | Jl. P.Mangkubumi        | 88.94%      | 61.70% | 76.92%  | 44.87% | 68.11%      |
| 22 | Jl.Kleringan            | 88.94%      | 60.10% | 71.31%  | 44.87% | 66.31%      |
| 23 | Jl.Taman Garuda         | 88.94%      | 64.10% | 71.31%  | 44.87% | 67.31%      |
| 24 | Jl.Malioboro            | 74.52%      | 54.49% | 45.67%  | 41.67% | 54.09%      |
| 25 | Jl. Jend.A.Yani         | 78.53%      | 69.71% | 64.90%  | 40.87% | 63.50%      |
| 26 | Jl. P.Senopati          | 71.31%      | 71.31% | 64.10%  | 44.07% | 62.70%      |
| 27 | Jl. Sultan Agung        | 60.90%      | 61.70% | 48.08%  | 56.09% | 56.69%      |
| 28 | Jl.Suryopranoto         | 68.91%      | 60.90% | 44.07%  | 55.29% | 57.29%      |
| 29 | Jl.Sukonandi            | 63.30%      | 62.50% | 44.07%  | 55.29% | 56.29%      |
| 30 | Jl.Kusuma Negara        | 58.49%      | 36.06% | 28.85%  | 49.68% | 43.27%      |
| 31 | Jl.Gedong Kuning        | 23.24%      | 24.04% | 8.81%   | 22.44% | 19.63%      |
| 32 | Jl.Ngeksidono           | 16.03%      | 10.42% | 5.61%   | 16.03% | 12.02%      |
| 33 | Jl.P.Kemerdekaan        | 12.82%      | 7.21%  | 5.61%   | 12.82% | 9.62%       |
| 34 | Jl.Veteran              | 12.82%      | 3.21%  | 4.01%   | 12.82% | 8.21%       |
| 35 | Terminal                | 0.00%       | 0.00%  | 0.00%   | 0.00%  | 0.00%       |

## Load Factor Rata-rata Selasa

| No | Ruas Jalan              | Load Factor |         |        |        | Rata - Rata |
|----|-------------------------|-------------|---------|--------|--------|-------------|
|    |                         | I           | II      | III    | IV     |             |
| 1  | Terminal                | 8.81%       | 7.21%   | 6.41%  | 2.40%  | 6.21%       |
| 2  | Jl.Veteran              | 12.02%      | 7.21%   | 10.42% | 5.61%  | 8.81%       |
| 3  | Jl.Warung boto          | 12.82%      | 8.01%   | 10.42% | 5.61%  | 9.21%       |
| 4  | Jl.Perintis Kemerdekaan | 21.63%      | 8.01%   | 14.42% | 17.63% | 15.42%      |
| 5  | Jl.Ngeksidono           | 36.86%      | 35.26%  | 39.26% | 52.88% | 41.07%      |
| 6  | Jl.Gedong Kuning        | 56.89%      | 72.12%  | 53.69% | 74.52% | 64.30%      |
| 7  | Jl.Kusuma Negara        | 76.12%      | 102.56% | 72.12% | 85.74% | 84.13%      |
| 8  | Jl.Sultan Agung         | 84.13%      | 80.93%  | 70.51% | 84.94% | 80.13%      |
| 9  | Jl.Senopati             | 72.92%      | 79.33%  | 65.71% | 81.73% | 74.92%      |
| 10 | Jl.Mayor Suryotomo      | 72.92%      | 81.73%  | 64.10% | 80.13% | 74.72%      |
| 11 | Jl.Mataram              | 72.92%      | 77.72%  | 68.11% | 64.90% | 70.91%      |
| 12 | Jl.Abubakar Ali         | 68.11%      | 73.72%  | 67.31% | 64.90% | 68.51%      |
| 13 | Jl.Kom Yos Sudarso      | 68.11%      | 74.52%  | 67.31% | 64.10% | 68.51%      |
| 14 | Jl.Suroto               | 64.90%      | 68.91%  | 60.90% | 60.90% | 63.90%      |
| 15 | Jl.Cik Di Tiro          | 77.72%      | 79.33%  | 58.49% | 62.50% | 69.51%      |
| 16 | Jl.Colombo              | 72.12%      | 88.14%  | 60.90% | 76.92% | 74.52%      |
| 17 | Jl.Lingkar UGM Penuh    | 82.53%      | 100.16% | 80.93% | 73.72% | 84.33%      |
| 18 | Jl. Kaliurang           | 76.12%      | 104.17% | 83.33% | 72.12% | 83.93%      |
| 19 | Jl.C.Simajuntak         | 105.77%     | 111.38% | 96.15% | 82.53% | 98.96%      |
| 20 | Jl. Jend.Sudirman       | 101.76%     | 102.56% | 97.76% | 82.53% | 96.15%      |
| 21 | Jl. P.Mangkubumi        | 98.56%      | 100.96% | 86.54% | 74.52% | 90.14%      |
| 22 | Jl.Kleringan            | 96.96%      | 99.36%  | 84.94% | 64.10% | 86.34%      |
| 23 | Jl.Taman Garuda         | 99.36%      | 100.16% | 84.94% | 64.10% | 87.14%      |
| 24 | Jl.Malioboro            | 88.14%      | 76.12%  | 55.29% | 44.87% | 66.11%      |
| 25 | Jl. Jend.A.Yani         | 100.96%     | 99.36%  | 78.53% | 54.49% | 83.33%      |
| 26 | Jl. P.Senopati          | 101.76%     | 88.14%  | 74.52% | 55.29% | 79.93%      |
| 27 | Jl. Sultan Agung        | 88.14%      | 74.52%  | 72.12% | 44.87% | 69.91%      |
| 28 | Jl.Suryopranoto         | 76.12%      | 73.72%  | 68.91% | 43.27% | 65.50%      |
| 29 | Jl.Sukonandi            | 76.12%      | 75.32%  | 66.51% | 41.67% | 64.90%      |
| 30 | Jl.Kusuma Negara        | 64.10%      | 32.05%  | 31.25% | 26.44% | 38.46%      |
| 31 | Jl.Gedong Kuning        | 44.87%      | 25.64%  | 20.83% | 13.62% | 26.24%      |
| 32 | Jl.Ngeksidono           | 20.03%      | 17.63%  | 20.03% | 8.81%  | 16.63%      |
| 33 | Jl.P.Kemerdekaan        | 12.82%      | 16.03%  | 15.22% | 5.61%  | 12.42%      |
| 34 | Jl.Veteran              | 10.42%      | 14.42%  | 14.42% | 3.21%  | 10.62%      |
| 35 | Terminal                | 0.00%       | 0.00%   | 0.00%  | 0.00%  | 0.00%       |

## Load Factor Rata-rata Minggu

| No | Ruas Jalan              | Load Factor |        |        |        | Rata - Rata |
|----|-------------------------|-------------|--------|--------|--------|-------------|
|    |                         | I           | II     | III    | IV     |             |
| 1  | Terminal                | 4.01%       | 5.61%  | 1.07%  | 6.41%  | 4.27%       |
| 2  | Jl.Veteran              | 6.41%       | 5.61%  | 3.21%  | 8.81%  | 6.01%       |
| 3  | Jl.Warung boto          | 7.21%       | 5.61%  | 4.27%  | 10.42% | 6.88%       |
| 4  | Jl.Perintis Kemerdekaan | 17.63%      | 13.62% | 5.34%  | 12.02% | 12.15%      |
| 5  | Jl.Ngeksidono           | 29.65%      | 41.67% | 17.09% | 15.22% | 25.91%      |
| 6  | Jl.Gedong Kuning        | 58.49%      | 62.50% | 29.91% | 37.66% | 47.14%      |
| 7  | Jl.Kusuma Negara        | 91.35%      | 88.14% | 48.08% | 48.08% | 68.91%      |
| 8  | Jl.Sultan Agung         | 96.15%      | 94.55% | 50.21% | 45.67% | 71.65%      |
| 9  | Jl.Senopati             | 96.96%      | 88.14% | 47.01% | 47.28% | 69.85%      |
| 10 | Jl.Mayor Suryotomo      | 94.55%      | 88.14% | 47.01% | 38.46% | 67.04%      |
| 11 | Jl.Mataram              | 92.15%      | 57.69% | 44.87% | 31.25% | 56.49%      |
| 12 | Jl.Abubakar Ali         | 85.74%      | 59.29% | 43.80% | 36.06% | 56.22%      |
| 13 | Jl.Kom Yos Sudarso      | 83.33%      | 58.49% | 43.80% | 36.06% | 55.42%      |
| 14 | Jl.Suroto               | 86.54%      | 58.49% | 40.60% | 30.45% | 54.02%      |
| 15 | Jl.Cik Di Tiro          | 92.95%      | 57.69% | 42.74% | 21.63% | 53.75%      |
| 16 | Jl.Colombo              | 92.15%      | 52.08% | 49.15% | 18.43% | 52.95%      |
| 17 | Jl.Lingkar UGM Penuh    | 95.35%      | 48.88% | 49.15% | 24.04% | 54.35%      |
| 18 | Jl. Kaliurang           | 95.35%      | 43.27% | 39.53% | 24.04% | 50.55%      |
| 19 | Jl.C.Simajuntak         | 106.57%     | 70.51% | 44.87% | 52.88% | 68.71%      |
| 20 | Jl. Jend.Sudirman       | 104.17%     | 69.71% | 44.87% | 49.68% | 67.11%      |
| 21 | Jl. P.Mangkubumi        | 103.37%     | 73.72% | 41.67% | 48.08% | 66.71%      |
| 22 | Jl.Kleringan            | 100.96%     | 73.72% | 41.67% | 48.88% | 66.31%      |
| 23 | Jl.Taman Garuda         | 100.96%     | 73.72% | 41.67% | 48.88% | 66.31%      |
| 24 | Jl.Malioboro            | 76.92%      | 40.87% | 27.78% | 48.08% | 48.41%      |
| 25 | Jl. Jend.A.Yani         | 80.93%      | 44.07% | 25.64% | 65.71% | 54.09%      |
| 26 | Jl. P.Senopati          | 80.93%      | 45.67% | 23.50% | 76.92% | 56.76%      |
| 27 | Jl. Sultan Agung        | 70.51%      | 25.64% | 17.09% | 76.92% | 47.54%      |
| 28 | Jl.Suryopranoto         | 71.31%      | 22.44% | 17.09% | 76.92% | 46.94%      |
| 29 | Jl.Sukonandi            | 68.11%      | 22.44% | 16.03% | 77.72% | 46.07%      |
| 30 | Jl.Kusuma Negara        | 47.28%      | 9.62%  | 5.34%  | 50.48% | 28.18%      |
| 31 | Jl.Gedong Kuning        | 20.03%      | 1.60%  | 4.27%  | 19.23% | 11.28%      |
| 32 | Jl.Ngeksidono           | 8.01%       | 0.80%  | 2.14%  | 16.03% | 6.74%       |
| 33 | Jl.P.Kemerdekaan        | 8.01%       | 0.80%  | 2.14%  | 11.22% | 5.54%       |
| 34 | Jl.Veteran              | 4.01%       | 0.80%  | 1.07%  | 11.22% | 4.27%       |
| 35 | Terminal                | 0.00%       | 0.00%  | 0.00%  | 0.00%  | 0.00%       |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                       |                       |         |
|-----------------------|-----------------------|---------|
| Hari : Senin          | Kapasitas Bis :       | Duduk   |
| Tanggal : 3 Juni 2002 |                       | Berdiri |
| Putaran : Ia          | Waktu Keberangkatan : | 7:40    |
| Bis : Kopata 122      | Waktu Kedatangan :    | 9:15    |

| No            | Ruas Jalan              | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|-------------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                         |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal                |             | 00:00.0        | 0           | 0         | 1              | 0         | 1                | 3.2051%         |
| 2             | Jl.Veteran              | 0.60        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 3             | Jl.Warung boto          | 0.35        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 4             | Jl.Perintis Kemerdekaan | 0.50        | 00:08.3        | 1           | 0         | 0              | 0         | 2                | 6.4103%         |
| 5             | Jl.Ngeksidono           | 0.70        | 00:00.0        | 0           | 0         | 0              | 0         | 2                | 6.4103%         |
| 6             | Jl.Gedong Kuning        | 2.00        | 03:52.7        | 6           | 0         | 14             | 0         | 22               | 70.5128%        |
| 7             | Jl.Kusuma Negara        | 2.40        | 01:35.8        | 7           | 1         | 5              | 5         | 28               | 89.7436%        |
| 8             | Jl.Sultan Agung         | 1.20        | 01:04.6        | 1           | 3         | 0              | 0         | 26               | 83.3333%        |
| 9             | Jl.Senopati             | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 26               | 83.3333%        |
| 10            | Jl.Mayor Suryotomo      | 0.50        | 00:19.5        | 0           | 7         | 0              | 3         | 16               | 51.2821%        |
| 11            | Jl.Mataram              | 0.85        | 00:21.1        | 3           | 0         | 2              | 2         | 19               | 60.8974%        |
| 12            | Jl.Abubakar Ali         | 0.75        | 00:00.0        | 0           | 0         | 0              | 0         | 19               | 60.8974%        |
| 13            | Jl.Kom Yos Sudarso      | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 19               | 60.8974%        |
| 14            | Jl.Suroto               | 0.55        | 00:15.1        | 0           | 6         | 1              | 1         | 13               | 41.6667%        |
| 15            | Jl.Cik Di Tiro          | 0.80        | 00:08.4        | 2           | 5         | 0              | 0         | 10               | 32.0513%        |
| 16            | Jl.Colombo              | 0.40        | 00:06.1        | 14          | 3         | 0              | 0         | 21               | 67.3077%        |
| 17            | Jl.Lingkar UGM Penuh    | 3.00        | 04:22.3        | 0           | 1         | 3              | 1         | 22               | 70.5128%        |
| 18            | Jl. Kaliurang           | 0.40        | 0:00:00        | 0           | 0         | 0              | 0         | 22               | 70.5128%        |
| 19            | Jl.C.Simajuntak         | 1.40        | 07:05.8        | 8           | 3         | 8              | 1         | 34               | 108.9744%       |
| 20            | Jl. Jend.Sudirman       | 0.55        | 00:03.9        | 0           | 0         | 0              | 0         | 34               | 108.9744%       |
| 21            | Jl. P.Mangkubumi        | 0.85        | 00:36.1        | 4           | 11        | 3              | 2         | 28               | 89.7436%        |
| 22            | Jl.Kleringan            | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 28               | 89.7436%        |
| 23            | Jl.Taman Garuda         | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 28               | 89.7436%        |
| 24            | Jl.Malioboro            | 0.25        | 03:03.0        | 7           | 8         | 2              | 2         | 27               | 86.5385%        |
| 25            | Jl. Jend.A.Yani         | 0.80        | 02:14.2        | 0           | 0         | 5              | 3         | 29               | 92.9487%        |
| 26            | Jl. P.Senopati          | 0.15        | 01:48.7        | 3           | 2         | 0              | 0         | 30               | 96.1538%        |
| 27            | Jl. Sultan Agung        | 0.90        | 00:05.7        | 1           | 2         | 0              | 0         | 29               | 92.9487%        |
| 28            | Jl.Suryopranoto         | 0.40        | 00:04.2        | 1           | 1         | 1              | 0         | 30               | 96.1538%        |
| 29            | Jl.Sukonandi            | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 30               | 96.1538%        |
| 30            | Jl.Kusuma Negara        | 2.25        | 02:01.2        | 3           | 2         | 1              | 2         | 30               | 96.1538%        |
| 31            | Jl.Gedong Kuning        | 2.10        | 0:09:26        | 2           | 14        | 0              | 8         | 10               | 32.0513%        |
| 32            | Jl.Ngeksidono           | 0.70        | 00:44.4        | 0           | 4         | 0              | 0         | 6                | 19.2308%        |
| 33            | Jl.P.Kemerdekaan        | 1.15        | 01:26.0        | 0           | 1         | 0              | 2         | 3                | 9.6154%         |
| 34            | Jl.Veteran              | 0.25        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 35            | Terminal                |             | 00:00.0        | 0           | 0         | 0              | 3         | 0                | 0.0000%         |
| <b>Jumlah</b> |                         | <b>28.6</b> | <b>0:40:53</b> | <b>63</b>   | <b>74</b> | <b>46</b>      | <b>35</b> |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                       |                       |         |
|-----------------------|-----------------------|---------|
| Hari : Senin          | Kapasitas Bis :       | Duduk   |
| Tanggal : 3 Juni 2002 |                       | Berdiri |
| Putaran : I b         | Waktu Keberangkatan : | 9:49    |
| Bis : Aspada 108      | Waktu Kedatangan :    | 11:24   |

| No            | Ruas Jalan              | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|-------------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                         |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
| 1             | Terminal                |               | 00:00.0           | 0           | 0         | 3              | 0         | 3                   | 9.6154%            |
| 2             | Jl.Veteran              | 0.60          | 00:36.8           | 2           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 3             | Jl.Warung boto          | 0.35          | 00:00.0           | 0           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 4             | Jl.Perintis Kemerdekaan | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 5             | Jl.Ngeksidono           | 0.70          | 00:41.5           | 4           | 0         | 0              | 0         | 9                   | 28.8462%           |
| 6             | Jl.Gedong Kuning        | 2.00          | 02:26.7           | 10          | 1         | 12             | 0         | 30                  | 96.1538%           |
| 7             | Jl.Kusuma Negara        | 2.40          | 01:52.4           | 13          | 4         | 9              | 8         | 40                  | 128.2051%          |
| 8             | Jl.Sultan Agung         | 1.20          | 00:46.9           | 4           | 2         | 7              | 6         | 43                  | 137.8205%          |
| 9             | Jl.Senopati             | 0.15          | 00:00.0           | 0           | 0         | 0              | 0         | 43                  | 137.8205%          |
| 10            | Jl.Mayor Suryotomo      | 0.50          | 00:44.3           | 0           | 3         | 0              | 2         | 38                  | 121.7949%          |
| 11            | Jl.Mataram              | 0.85          | 01:10.9           | 5           | 6         | 10             | 8         | 39                  | 125.0000%          |
| 12            | Jl.Abubakar Ali         | 0.75          | 00:00.0           | 0           | 0         | 0              | 0         | 39                  | 125.0000%          |
| 13            | Jl.Kom Yos Sudarso      | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 39                  | 125.0000%          |
| 14            | Jl.Suroto               | 0.55          | 00:30.9           | 0           | 0         | 0              | 5         | 34                  | 108.9744%          |
| 15            | Jl.Cik Di Tiro          | 0.80          | 00:38.4           | 0           | 0         | 6              | 4         | 36                  | 115.3846%          |
| 16            | Jl.Colombo              | 0.40          | 03:21.6           | 0           | 8         | 4              | 0         | 32                  | 102.5641%          |
| 17            | Jl.Lingkar UGM Penuh    | 3.00          | 01:25.7           | 4           | 2         | 8              | 10        | 32                  | 102.5641%          |
| 18            | Jl. Kaliurang           | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 32                  | 102.5641%          |
| 19            | Jl.C.Simajuntak         | 1.40          | 02:19.2           | 2           | 1         | 0              | 4         | 29                  | 92.9487%           |
| 20            | Jl. Jend.Sudirman       | 0.55          | 00:00.0           | 0           | 0         | 0              | 0         | 29                  | 92.9487%           |
| 21            | Jl. P.Mangkubumi        | 0.85          | 00:00.0           | 0           | 0         | 0              | 0         | 29                  | 92.9487%           |
| 22            | Jl.Kleringan            | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 29                  | 92.9487%           |
| 23            | Jl.Taman Garuda         | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 29                  | 92.9487%           |
| 24            | Jl.Malioboro            | 0.25          | 00:54.6           | 0           | 9         | 5              | 4         | 21                  | 67.3077%           |
| 25            | Jl. Jend.A.Yani         | 0.80          | 02:18.3           | 6           | 0         | 4              | 7         | 24                  | 76.9231%           |
| 26            | Jl. P.Senopati          | 0.15          | 00:00.0           | 0           | 0         | 0              | 0         | 24                  | 76.9231%           |
| 27            | Jl. Sultan Agung        | 0.90          | 00:38.4           | 0           | 0         | 4              | 6         | 22                  | 70.5128%           |
| 28            | Jl.Suryopranoto         | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 22                  | 70.5128%           |
| 29            | Jl.Sukonandi            | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 22                  | 70.5128%           |
| 30            | Jl.Kusuma Negara        | 2.25          | 00:49.7           | 5           | 6         | 8              | 11        | 18                  | 57.6923%           |
| 31            | Jl.Gedong Kuning        | 2.10          | 00:51.7           | 2           | 4         | 5              | 11        | 10                  | 32.0513%           |
| 32            | Jl.Ngeksidono           | 0.70          | 00:39.7           | 0           | 4         | 0              | 1         | 5                   | 16.0256%           |
| 33            | Jl.P.Kemerdekaan        | 1.15          | 00:00.0           | 0           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 34            | Jl.Veteran              | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 35            | Terminal                |               | 00:00.0           | 0           | 2         | 0              | 3         | 0                   | 0.0000%            |
| <b>Jumlah</b> |                         | <b>28.6</b>   | <b>22:47.7</b>    | <b>57</b>   | <b>52</b> | <b>85</b>      | <b>90</b> |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                       |                       |         |
|-----------------------|-----------------------|---------|
| Hari : Senin          | Kapasitas Bis :       | Duduk   |
| Tanggal : 3 Juni 2002 |                       | Berdiri |
| Putaran : Ic          | Waktu Keberangkatan : | 13:09   |
| Bis : Kopata 115      | Waktu Kedatangan :    | 14:41   |

| No            | Ruas Jalan               | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|--------------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                          |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal                 |             | 00:00.0        | 3           | 0         | 1              | 0         | 4                | 12.8205%        |
| 2             | Jl. Veteran              | 0.60        | 00:00.0        | 0           | 0         | 0              | 0         | 4                | 12.8205%        |
| 3             | Jl. Warung boto          | 0.35        | 00:00.0        | 0           | 0         | 0              | 0         | 4                | 12.8205%        |
| 4             | Jl. Perintis Kemerdekaan | 0.50        | 00:00.0        | 6           | 0         | 0              | 0         | 10               | 32.0513%        |
| 5             | Jl. Ngeksidono           | 0.70        | 40:42.9        | 7           | 0         | 3              | 0         | 20               | 64.1026%        |
| 6             | Jl. Gedong Kuning        | 2.00        | 03:29.4        | 13          | 5         | 4              | 0         | 32               | 102.5641%       |
| 7             | Jl. Kusuma Negara        | 2.40        | 02:14.7        | 9           | 10        | 14             | 8         | 37               | 118.5897%       |
| 8             | Jl. Sultan Agung         | 1.20        | 01:01.3        | 8           | 6         | 4              | 7         | 36               | 115.3846%       |
| 9             | Jl. Senopati             | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 36               | 115.3846%       |
| 10            | Jl. Mayor Suryotomo      | 0.50        | 00:39.4        | 2           | 0         | 0              | 0         | 38               | 121.7949%       |
| 11            | Jl. Mataram              | 0.85        | 02:18.9        | 0           | 0         | 9              | 4         | 43               | 137.8205%       |
| 12            | Jl. Abubakar Ali         | 0.75        | 00:00.0        | 0           | 0         | 0              | 0         | 43               | 137.8205%       |
| 13            | Jl. Kom Yos Sudarso      | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 43               | 137.8205%       |
| 14            | Jl. Suroto               | 0.55        | 00:35.7        | 0           | 6         | 0              | 0         | 37               | 118.5897%       |
| 15            | Jl. Cik Di Tiro          | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 37               | 118.5897%       |
| 16            | Jl. Colombo              | 0.40        | 00:49.7        | 0           | 9         | 2              | 0         | 30               | 96.1538%        |
| 17            | Jl. Lingkar UGM Penuh    | 3.00        | 04:16.4        | 0           | 4         | 2              | 3         | 25               | 80.1282%        |
| 18            | Jl. Kaliurang            | 0.40        | 00:00.0        | 0           | 0         | 2              | 0         | 27               | 86.5385%        |
| 19            | Jl. C. Simajuntak        | 1.40        | 02:32.6        | 1           | 0         | 0              | 0         | 28               | 89.7436%        |
| 20            | Jl. Jend. Sudirman       | 0.55        | 00:00.0        | 0           | 0         | 0              | 0         | 28               | 89.7436%        |
| 21            | Jl. P. Mangkubumi        | 0.85        | 00:38.5        | 0           | 2         | 0              | 3         | 23               | 73.7179%        |
| 22            | Jl. Kleringan            | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 23               | 73.7179%        |
| 23            | Jl. Taman Garuda         | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 23               | 73.7179%        |
| 24            | Jl. Malioboro            | 0.25        | 00:37.3        | 0           | 3         | 0              | 0         | 20               | 64.1026%        |
| 25            | Jl. Jend. A. Yani        | 0.80        | 02:25.4        | 0           | 0         | 0              | 0         | 20               | 64.1026%        |
| 26            | Jl. P. Senopati          | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 20               | 64.1026%        |
| 27            | Jl. Sultan Agung         | 0.90        | 00:49.4        | 0           | 5         | 0              | 4         | 11               | 35.2564%        |
| 28            | Jl. Suryopranoto         | 0.40        | 00:51.7        | 8           | 0         | 4              | 3         | 20               | 64.1026%        |
| 29            | Jl. Sukonandi            | 0.80        | 00:43.8        | 0           | 6         | 0              | 1         | 13               | 41.6667%        |
| 30            | Jl. Kusuma Negara        | 2.25        | 00:54.3        | 10          | 8         | 1              | 3         | 13               | 41.6667%        |
| 31            | Jl. Gedong Kuning        | 2.10        | 00:56.2        | 0           | 9         | 0              | 2         | 2                | 6.4103%         |
| 32            | Jl. Ngeksidono           | 0.70        | 00:21.4        | 1           | 0         | 0              | 0         | 3                | 9.6154%         |
| 33            | Jl. P. Kemerdekaan       | 1.15        | 00:23.1        | 0           | 0         | 0              | 1         | 2                | 6.4103%         |
| 34            | Jl. Veteran              | 0.25        | 00:00.0        | 0           | 0         | 0              | 0         | 2                | 6.4103%         |
| 35            | Terminal                 |             | 00:00.0        | 0           | 2         | 0              | 0         | 0                | 0.0000%         |
| <b>Jumlah</b> |                          | <b>28.6</b> | <b>07:22.1</b> | <b>68</b>   | <b>75</b> | <b>46</b>      | <b>39</b> |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                       |                       |         |
|-----------------------|-----------------------|---------|
| Hari : Senin          | Kapasitas Bis :       | Duduk   |
| Tanggal : 3 Juni 2002 |                       | Berdiri |
| Putaran : Id          | Waktu Keberangkatan : | 14:35   |
| Bis : Aspada 81       | Waktu Kedatangan :    | 16:03   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 2           | 0     | 4              | 0     | 6                | 19.2308%        |
| 2      | Jl.Veteran              | 0.60       | 00:39.7        | 6           | 0     | 0              | 0     | 12               | 38.4615%        |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 12               | 38.4615%        |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:42.6        | 2           | 0     | 10             | 0     | 24               | 76.9231%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:55.9        | 11          | 6     | 0              | 3     | 26               | 83.3333%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 03:12.6        | 3           | 0     | 9              | 0     | 38               | 121.7949%       |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:58.3        | 13          | 8     | 2              | 4     | 41               | 131.4103%       |
| 8      | Jl.Sultan Agung         | 1.20       | 00:43.7        | 1           | 2     | 3              | 0     | 43               | 137.8205%       |
| 9      | Jl.Senopati             | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 43               | 137.8205%       |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:34.2        | 0           | 0     | 1              | 0     | 44               | 141.0256%       |
| 11     | Jl.Mataram              | 0.85       | 01:19.4        | 2           | 3     | 0              | 9     | 34               | 108.9744%       |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 14     | Jl.Suroto               | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:34.8        | 0           | 0     | 0              | 4     | 30               | 96.1538%        |
| 16     | Jl.Colombo              | 0.40       | 00:29.7        | 0           | 2     | 0              | 0     | 28               | 89.7436%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 02:15.8        | 0           | 4     | 0              | 5     | 19               | 60.8974%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 02:51.6        | 4           | 0     | 5              | 0     | 28               | 89.7436%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:38.6        | 3           | 0     | 0              | 0     | 31               | 99.3590%        |
| 22     | Jl.Kleringan            | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 24     | Jl.Malioboro            | 0.25       | 00:54.7        | 1           | 2     | 0              | 5     | 25               | 80.1282%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 04:16.3        | 4           | 5     | 3              | 2     | 25               | 80.1282%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:41.6        | 0           | 2     | 0              | 8     | 15               | 48.0769%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:36.1        | 1           | 2     | 0              | 0     | 14               | 44.8718%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 14               | 44.8718%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 14               | 44.8718%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:58.4        | 6           | 5     | 0              | 3     | 12               | 38.4615%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:47.3        | 0           | 0     | 0              | 5     | 7                | 22.4359%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:19.2        | 0           | 1     | 0              | 0     | 6                | 19.2308%        |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 6                | 19.2308%        |
| 34     | Jl.Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 6                | 19.2308%        |
| 35     | Terminal                |            | 00:00.0        | 0           | 2     | 0              | 4     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 24:30.5        | 59          | 44    | 37             | 52    |                  |                 |



**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 10 Juni 2002 |                       | Berdiri |
| Putaran : II a         | Waktu Keberangkatan : | 7:45    |
| Bis : Aspada 111       | Waktu Kedatangan :    | 9:21    |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 6              | 0     | 6                | 19.2308%        |
| 2      | Jl.Veteran              | 0.60       | 00:42.0        | 3           | 0     | 0              | 0     | 9                | 28.8462%        |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:25.7        | 1           | 0     | 0              | 1     | 9                | 28.8462%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 02:21.9        | 3           | 4     | 2              | 1     | 9                | 28.8462%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:54.9        | 0           | 1     | 2              | 1     | 9                | 28.8462%        |
| 8      | Jl.Sultan Agung         | 1.20       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 9      | Jl.Senopati             | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:48.7        | 2           | 3     | 1              | 2     | 7                | 22.4359%        |
| 11     | Jl.Mataram              | 0.85       | 00:32.4        | 0           | 1     | 0              | 1     | 5                | 16.0256%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:31.5        | 0           | 0     | 0              | 2     | 3                | 9.6154%         |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:19.8        | 0           | 1     | 0              | 0     | 2                | 6.4103%         |
| 14     | Jl.Suroto               | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:41.3        | 2           | 1     | 0              | 0     | 3                | 9.6154%         |
| 16     | Jl.Colombo              | 0.40       | 02:21.5        | 1           | 3     | 0              | 1     | 0                | 0.0000%         |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 00:51.6        | 0           | 0     | 1              | 1     | 0                | 0.0000%         |
| 18     | Jl. Kaliurang           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 19     | Jl.C.Simajuntak         | 1.40       | 03:20.4        | 0           | 1     | 5              | 3     | 1                | 3.2051%         |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 22     | Jl.Kleringan            | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 24     | Jl.Malioboro            | 0.25       | 00:48.9        | 7           | 0     | 0              | 4     | 4                | 12.8205%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 05:21.6        | 0           | 0     | 3              | 3     | 4                | 12.8205%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:35.4        | 2           | 0     | 0              | 0     | 6                | 19.2308%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:40.3        | 5           | 0     | 0              | 0     | 11               | 35.2564%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:36.7        | 0           | 2     | 0              | 0     | 9                | 28.8462%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:51.6        | 1           | 1     | 0              | 3     | 6                | 19.2308%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:50.9        | 4           | 2     | 1              | 4     | 5                | 16.0256%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:46.8        | 1           | 2     | 0              | 0     | 4                | 12.8205%        |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:23.5        | 0           | 1     | 0              | 0     | 3                | 9.6154%         |
| 34     | Jl.Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 3     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 24:47.4        | 32          | 26    | 21             | 27    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 10 Juni 2002 |                       | Berdiri |
| Putaran : II b         | Waktu Keberangkatan : | 10:04   |
| Bis : Kopata 125       | Waktu Kedatangan :    | 11:40   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran              | 0.60       | 00:41.6        | 2           | 0     | 0              | 0     | 2                | 6.4103%         |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:31.6        | 1           | 1     | 3              | 0     | 5                | 16.0256%        |
| 5      | Jl.Ngeksidono           | 0.70       | 03:35.4        | 5           | 1     | 6              | 5     | 10               | 32.0513%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 00:53.7        | 2           | 0     | 5              | 0     | 17               | 54.4872%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:59.4        | 4           | 3     | 8              | 4     | 22               | 70.5128%        |
| 8      | Jl.Sultan Agung         | 1.20       | 00:46.9        | 2           | 0     | 5              | 2     | 27               | 86.5385%        |
| 9      | Jl.Senopati             | 0.15       | 00:55.4        | 1           | 1     | 2              | 0     | 29               | 92.9487%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:27.6        | 0           | 0     | 1              | 0     | 30               | 96.1538%        |
| 11     | Jl.Mataram              | 0.85       | 00:31.5        | 1           | 2     | 0              | 5     | 24               | 76.9231%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:31.1        | 0           | 0     | 1              | 0     | 25               | 80.1282%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 14     | Jl.Suroto               | 0.55       | 00:40.3        | 0           | 0     | 0              | 2     | 23               | 73.7179%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:42.1        | 2           | 1     | 3              | 4     | 23               | 73.7179%        |
| 16     | Jl.Colombo              | 0.40       | 00:46.3        | 1           | 0     | 4              | 0     | 28               | 89.7436%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 02:34.5        | 2           | 6     | 5              | 5     | 24               | 76.9231%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:23.4        | 0           | 0     | 0              | 1     | 23               | 73.7179%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 02:31.6        | 5           | 2     | 8              | 4     | 30               | 96.1538%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:19.6        | 0           | 0     | 1              | 0     | 31               | 99.3590%        |
| 22     | Jl.Kleringan            | 0.50       | 00:25.8        | 0           | 1     | 0              | 2     | 28               | 89.7436%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        |             | 0     | 0              | 0     | 28               | 89.7436%        |
| 24     | Jl.Malioboro            | 0.25       | 01:25.1        | 2           | 6     | 4              | 8     | 20               | 64.1026%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 02:29.7        | 5           | 3     | 8              | 5     | 25               | 80.1282%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:41.5        | 2           | 0     | 1              | 0     | 28               | 89.7436%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:44.9        | 1           | 4     | 3              | 6     | 22               | 70.5128%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:23.4        | 1           | 0     | 0              | 0     | 23               | 73.7179%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:54.6        | 2           | 4     | 4              | 10    | 15               | 48.0769%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:53.2        | 1           | 6     | 6              | 8     | 8                | 25.6410%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:39.8        | 0           | 0     | 1              | 3     | 6                | 19.2308%        |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:31.4        | 0           | 2     | 0              | 1     | 3                | 9.6154%         |
| 34     | Jl.Veteran              | 0.25       | 00:33.6        | 0           | 2     | 0              | 1     | 0                | 0.0000%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 27:35.0        | 42          | 45    | 79             | 76    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 10 Juni 2002 |                       | Berdiri |
| Putaran : II c         | Waktu Keberangkatan : | 13:12   |
| Bis : Kopata 86        | Waktu Kedatangan :    | 14:46   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran              | 0.60       | 00:39.7        | 1           | 0     | 2              | 0     | 3                | 9.6154%         |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:40.6        | 3           | 0     | 1              | 0     | 7                | 22.4359%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:46.8        | 1           | 2     | 4              | 0     | 10               | 32.0513%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 02:13.4        | 2           | 1     | 5              | 1     | 15               | 48.0769%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:50.7        | 4           | 1     | 8              | 2     | 24               | 76.9231%        |
| 8      | Jl.Sultan Agung         | 1.20       | 00:49.3        | 1           | 0     | 2              | 3     | 24               | 76.9231%        |
| 9      | Jl.Senopati             | 0.15       | 00:52.4        | 1           | 0     | 2              | 0     | 27               | 86.5385%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:41.9        | 0           | 2     | 0              | 4     | 21               | 67.3077%        |
| 11     | Jl.Mataram              | 0.85       | 01:31.8        | 2           | 0     | 0              | 3     | 20               | 64.1026%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:29.7        | 0           | 0     | 1              | 0     | 21               | 67.3077%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:22.3        | 0           | 0     | 0              | 1     | 20               | 64.1026%        |
| 14     | Jl.Suroto               | 0.55       | 00:30.6        | 1           | 0     | 0              | 0     | 21               | 67.3077%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:57.1        | 2           | 1     | 3              | 0     | 25               | 80.1282%        |
| 16     | Jl.Colombo              | 0.40       | 00:49.7        | 0           | 2     | 2              | 4     | 21               | 67.3077%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 02:26.4        | 2           | 0     | 1              | 0     | 24               | 76.9231%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:29.7        | 0           | 1     | 0              | 3     | 20               | 64.1026%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 01:58.4        | 3           | 3     | 4              | 2     | 22               | 70.5128%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:41.6        | 0           | 2     | 1              | 0     | 21               | 67.3077%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:40.1        | 1           | 1     | 0              | 1     | 20               | 64.1026%        |
| 22     | Jl.Kleringan            | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 20               | 64.1026%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:55.3        | 1           | 0     | 3              | 0     | 24               | 76.9231%        |
| 24     | Jl.Malioboro            | 0.25       | 00:58.6        | 2           | 4     | 5              | 6     | 21               | 67.3077%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 03:45.8        | 2           | 0     | 4              | 0     | 27               | 86.5385%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:40.9        | 3           | 1     | 0              | 3     | 26               | 83.3333%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:50.8        | 0           | 8     | 0              | 5     | 13               | 41.6667%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:59.3        | 4           | 7     | 5              | 8     | 7                | 22.4359%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:57.6        | 4           | 5     | 1              | 3     | 4                | 12.8205%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:41.3        | 0           | 4     | 0              | 0     | 0                | 0.0000%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:38.6        | 0           | 0     | 2              | 0     | 2                | 6.4103%         |
| 34     | Jl.Veteran              | 0.25       | 00:23.4        | 0           | 0     | 0              | 1     | 1                | 3.2051%         |
| 35     | Terminal                |            | 00:25.1        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 29:48.9        | 40          | 46    | 56             | 50    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 10 Juni 2002 |                       | Berdiri |
| Putaran : II d         | Waktu Keberangkatan : | 15:06   |
| Bis : Kopata 100       | Waktu Kedatangan :    | 16:43   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 2           | 0     | 1              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran              | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 3      | Jl.Warung boto          | 0.35       | 00:29.5        | 1           | 0     | 0              | 0     | 4                | 12.8205%        |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:54.1        | 4           | 0     | 2              | 2     | 8                | 25.6410%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 02:15.6        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 01:16.8        | 5           | 1     | 12             | 3     | 21               | 67.3077%        |
| 8      | Jl.Sultan Agung         | 1.20       | 00:55.7        | 4           | 5     | 8              | 7     | 21               | 67.3077%        |
| 9      | Jl.Senopati             | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 21               | 67.3077%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:46.3        | 3           | 1     | 2              | 1     | 24               | 76.9231%        |
| 11     | Jl.Mataram              | 0.85       | 00:00.0        | 0           | 0     | 0              | 1     | 23               | 73.7179%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:41.5        | 2           | 0     | 2              | 3     | 24               | 76.9231%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:29.1        | 0           | 0     | 1              | 0     | 25               | 80.1282%        |
| 14     | Jl.Suroto               | 0.55       | 01:12.3        | 1           | 2     | 4              | 5     | 23               | 73.7179%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 16     | Jl.Colombo              | 0.40       | 00:58.1        | 2           | 1     | 3              | 0     | 27               | 86.5385%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 00:58.6        | 0           | 0     | 0              | 2     | 25               | 80.1282%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:56.3        | 1           | 0     | 4              | 0     | 30               | 96.1538%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:46.8        | 1           | 3     | 2              | 5     | 25               | 80.1282%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 22     | Jl.Kleringan            | 0.50       | 00:19.3        | 1           | 0     | 0              | 0     | 26               | 83.3333%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 1              | 0     | 27               | 86.5385%        |
| 24     | Jl.Malioboro            | 0.25       | 01:16.8        | 4           | 4     | 2              | 6     | 23               | 73.7179%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 02:16.8        | 2           | 0     | 6              | 0     | 31               | 99.3590%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:31.5        | 0           | 0     | 0              | 2     | 29               | 92.9487%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:34.5        | 2           | 0     | 0              | 0     | 31               | 99.3590%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:40.6        | 0           | 0     | 3              | 1     | 33               | 105.7692%       |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:58.4        | 2           | 8     | 0              | 10    | 17               | 54.4872%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:44.7        | 1           | 2     | 2              | 5     | 13               | 41.6667%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:40.3        | 0           | 1     | 0              | 9     | 3                | 9.6154%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:25.4        | 0           | 0     | 0              | 2     | 1                | 3.2051%         |
| 34     | Jl.Veteran              | 0.25       | 00:20.3        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 21:29.3        | 38          | 29    | 55             | 64    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 17 Juni 2002 |                       | Berdiri |
| Putaran : III a        | Waktu Keberangkatan : | 7:41    |
| Bis : Aspada 51        | Waktu Kedatangan :    | 9:17    |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 2           | 0     | 2              | 0     | 4                | 12.8205%        |
| 2      | Jl.Veteran              | 0.60       | 00:30.9        | 0           | 0     | 3              | 0     | 7                | 22.4359%        |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 7                | 22.4359%        |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:41.7        | 1           | 0     | 4              | 0     | 12               | 38.4615%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:55.2        | 10          | 0     | 3              | 0     | 25               | 80.1282%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 03:32.6        | 6           | 4     | 0              | 0     | 27               | 86.5385%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:45.8        | 8           | 3     | 11             | 9     | 34               | 108.9744%       |
| 8      | Jl.Sultan Agung         | 1.20       | 00:39.7        | 2           | 0     | 3              | 0     | 39               | 125.0000%       |
| 9      | Jl.Senopati             | 0.15       | 00:30.6        | 0           | 2     | 0              | 0     | 37               | 118.5897%       |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 11     | Jl.Mataram              | 0.85       | 01:58.4        | 3           | 4     | 6              | 6     | 36               | 115.3846%       |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:32.9        | 0           | 0     | 0              | 3     | 33               | 105.7692%       |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 33               | 105.7692%       |
| 14     | Jl.Suroto               | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 33               | 105.7692%       |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:42.5        | 0           | 2     | 0              | 3     | 28               | 89.7436%        |
| 16     | Jl.Colombo              | 0.40       | 00:38.3        | 4           | 0     | 0              | 0     | 32               | 102.5641%       |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 01:38.1        | 0           | 0     | 3              | 4     | 31               | 99.3590%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 03:15.7        | 3           | 5     | 8              | 10    | 27               | 86.5385%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:36.8        | 0           | 4     | 0              | 0     | 23               | 73.7179%        |
| 22     | Jl.Kleringan            | 0.50       | 00:21.4        | 0           | 0     | 0              | 1     | 22               | 70.5128%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 24     | Jl.Malioboro            | 0.25       | 01:31.2        | 0           | 1     | 0              | 3     | 18               | 57.6923%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 02:35.8        | 6           | 3     | 4              | 2     | 23               | 73.7179%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:57.3        | 3           | 5     | 2              | 0     | 23               | 73.7179%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:49.1        | 3           | 4     | 3              | 8     | 17               | 54.4872%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:55.6        | 0           | 4     | 0              | 8     | 5                | 16.0256%        |
| 32     | Jl.Ngeksidono           | 0.70       | 00:26.8        | 0           | 2     | 0              | 0     | 3                | 9.6154%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 34     | Jl.Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 1     | 0              | 2     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 24:36.4        | 51          | 44    | 52             | 59    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 17 Juni 2002 |                       | Berdiri |
| Putaran : III b        | Waktu Keberangkatan : | 9:41    |
| Bis : Kopata 26        | Waktu Kedatangan :    | 11:29   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 3              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran              | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:49.7        | 2           | 0     | 4              | 0     | 9                | 28.8462%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:51.6        | 3           | 0     | 2              | 0     | 14               | 44.8718%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 02:11.6        | 8           | 0     | 9              | 0     | 31               | 99.3590%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:50.9        | 3           | 6     | 5              | 3     | 30               | 96.1538%        |
| 8      | Jl.Sultan Agung         | 1.20       | 00:49.1        | 0           | 2     | 3              | 5     | 26               | 83.3333%        |
| 9      | Jl.Senopati             | 0.15       | 00:54.4        | 0           | 0     | 4              | 1     | 29               | 92.9487%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 11     | Jl.Mataram              | 0.85       | 03:19.3        | 0           | 8     | 0              | 3     | 18               | 57.6923%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 14     | Jl.Suroto               | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 01:12.3        | 4           | 0     | 2              | 0     | 24               | 76.9231%        |
| 16     | Jl.Colombo              | 0.40       | 00:57.2        | 2           | 0     | 1              | 3     | 24               | 76.9231%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 03:41.6        | 0           | 10    | 5              | 2     | 17               | 54.4872%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:54.6        | 0           | 0     | 0              | 3     | 14               | 44.8718%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 02:46.7        | 8           | 0     | 2              | 0     | 24               | 76.9231%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:46.8        | 0           | 4     | 0              | 0     | 20               | 64.1026%        |
| 22     | Jl.Kleringan            | 0.50       | 00:35.6        | 0           | 0     | 0              | 2     | 18               | 57.6923%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 24     | Jl.Malioboro            | 0.25       | 01:11.4        | 0           | 8     | 1              | 5     | 6                | 19.2308%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 04:15.3        | 10          | 0     | 4              | 0     | 20               | 64.1026%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:48.7        | 2           | 0     | 0              | 3     | 19               | 60.8974%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:54.3        | 0           | 8     | 0              | 2     | 9                | 28.8462%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:53.1        | 1           | 6     | 0              | 0     | 4                | 12.8205%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:57.6        | 0           | 5     | 4              | 0     | 3                | 9.6154%         |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 32     | Jl.Ngeksidono           | 0.70       | 00:28.7        | 0           | 1     | 0              | 1     | 1                | 3.2051%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 30:10.5        | 43          | 58    | 49             | 34    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 17 Juni 2002 |                       | Berdiri |
| Putaran : III c        | Waktu Keberangkatan : | 13:45   |
| Bis : Aspada 151       | Waktu Kedatangan :    | 15:25   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran              | 0.60       | 00:00.0        | 0           | 0     | 1              | 0     | 1                | 3.2051%         |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 5      | Jl.Ngeksidono           | 0.70       | 04:32.5        | 6           | 0     | 10             | 0     | 17               | 54.4872%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 57:42.4        | 13          | 0     | 6              | 3     | 33               | 105.7692%       |
| 7      | Jl.Kusuma Negara        | 2.40       | 01:14.4        | 8           | 7     | 9              | 11    | 32               | 102.5641%       |
| 8      | Jl.Sultan Agung         | 1.20       | 00:58.4        | 1           | 4     |                | 3     | 26               | 83.3333%        |
| 9      | Jl.Senopati             | 0.15       | 00:43.6        | 0           | 0     | 3              | 0     | 29               | 92.9487%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 11     | Jl.Mataram              | 0.85       | 01:24.1        | 0           | 5     | 2              | 8     | 18               | 57.6923%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 14     | Jl.Suroto               | 0.55       | 00:30.5        | 0           | 3     | 0              | 0     | 15               | 48.0769%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:56.7        | 2           | 0     | 0              | 0     | 17               | 54.4872%        |
| 16     | Jl.Colombo              | 0.40       | 00:59.1        | 8           | 0     | 2              | 0     | 27               | 86.5385%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 01:14.6        | 2           | 5     | 7              | 0     | 31               | 99.3590%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:35.8        | 0           | 2     | 0              | 0     | 29               | 92.9487%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 22     | Jl.Kleringan            | 0.50       | 00:54.6        | 0           | 0     | 1              | 5     | 25               | 80.1282%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 24     | Jl.Malioboro            | 0.25       | 01:00.4        | 0           | 8     | 0              | 3     | 14               | 44.8718%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 03:19.4        | 7           | 3     | 6              | 1     | 23               | 73.7179%        |
| 26     | Jl. P. Senopati         | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 27     | Jl. Sultan Agung        | 0.90       | 3.3375         | 0           | 6     | 4              | 5     | 16               | 51.2821%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:22.4        | 1           | 1     | 0              | 0     | 16               | 51.2821%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 16               | 51.2821%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:38.4        | 2           | 2     | 0              | 8     | 8                | 25.6410%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:44.9        | 0           | 4     | 0              | 1     | 3                | 9.6154%         |
| 32     | Jl.Ngeksidono           | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 34     | Jl.Veteran              | 0.25       | 00:33.4        | 0           | 2     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 24:25.6        | 50          | 52    | 51             | 49    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 17 Juni 2002 |                       | Berdiri |
| Putaran : III d        | Waktu Keberangkatan : | 15:33   |
| Bis :Kopata 81         | Waktu Kedatangan :    | 17:11   |

| No     | Ruas Jalan              | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|-------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                         |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran              | 0.60       | 00:40.6        | 1           | 0     | 2              | 0     | 3                | 9.6154%         |
| 3      | Jl.Warung boto          | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.Perintis Kemerdekaan | 0.50       | 00:43.1        | 5           | 0     | 0              | 0     | 8                | 25.6410%        |
| 5      | Jl.Ngeksidono           | 0.70       | 00:54.6        | 8           | 0     | 6              | 1     | 21               | 67.3077%        |
| 6      | Jl.Gedong Kuning        | 2.00       | 02:31.5        | 4           | 2     | 7              | 0     | 30               | 96.1538%        |
| 7      | Jl.Kusuma Negara        | 2.40       | 00:48.2        | 0           | 3     | 9              | 0     | 36               | 115.3846%       |
| 8      | Jl.Sultan Agung         | 1.20       | 00:57.6        | 0           | 4     | 1              | 3     | 30               | 96.1538%        |
| 9      | Jl.Senopati             | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 10     | Jl.Mayor Suryotomo      | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 11     | Jl.Mataram              | 0.85       | 01:19.4        | 0           | 3     | 1              | 5     | 23               | 73.7179%        |
| 12     | Jl.Abubakar Ali         | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 13     | Jl.Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 14     | Jl.Suroto               | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 15     | Jl.Cik Di Tiro          | 0.80       | 00:46.3        | 0           | 2     | 0              | 4     | 17               | 54.4872%        |
| 16     | Jl.Colombo              | 0.40       | 00:55.2        | 8           | 0     | 5              | 0     | 30               | 96.1538%        |
| 17     | Jl.Lingkar UGM Penuh    | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 18     | Jl. Kaliurang           | 0.40       | 00:00.0        | 0           | 5     | 0              | 4     | 21               | 67.3077%        |
| 19     | Jl.C.Simajuntak         | 1.40       | 02:23.4        | 1           | 0     | 1              | 0     | 23               | 73.7179%        |
| 20     | Jl. Jend.Sudirman       | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 21     | Jl. P.Mangkubumi        | 0.85       | 00:48.1        | 0           | 3     | 4              | 0     | 24               | 76.9231%        |
| 22     | Jl.Kleringan            | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 23     | Jl.Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 24     | Jl.Malioboro            | 0.25       | 00:58.9        | 2           | 6     | 1              | 2     | 19               | 60.8974%        |
| 25     | Jl. Jend.A.Yani         | 0.80       | 03:14.7        | 4           | 3     | 0              | 5     | 15               | 48.0769%        |
| 26     | Jl. P.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 15               | 48.0769%        |
| 27     | Jl. Sultan Agung        | 0.90       | 00:37.6        | 0           | 0     | 1              | 4     | 12               | 38.4615%        |
| 28     | Jl.Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 12               | 38.4615%        |
| 29     | Jl.Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 12               | 38.4615%        |
| 30     | Jl.Kusuma Negara        | 2.25       | 00:45.8        | 2           | 5     | 3              | 4     | 8                | 25.6410%        |
| 31     | Jl.Gedong Kuning        | 2.10       | 00:40.7        | 0           | 2     | 0              | 6     | 0                | 0.0000%         |
| 32     | Jl.Ngeksidono           | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 33     | Jl.P.Kemerdekaan        | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 34     | Jl.Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 35     | Terminal                |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                         | 28.6       | 19:05.7        | 35          | 38    | 41             | 38    |                  |                 |



**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 24 Juni 2002 |                       | Berdiri |
| Putaran : IV a         | Waktu Keberangkatan : | 7:53    |
| Bis : Kopata 122       | Waktu Kedatangan :    | 9:29    |

| No            | Ruas Jalan               | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|--------------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                          |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal                 |             | 00:00.0        | 0           | 0         | 6              | 0         | 6                | 19.2308%        |
| 2             | Jl. Veteran              | 0.60        | 00:05.0        | 3           | 0         | 0              | 0         | 9                | 28.8462%        |
| 3             | Jl. Warung boto          | 0.35        | 00:00.0        | 0           | 0         | 0              | 0         | 9                | 28.8462%        |
| 4             | Jl. Perintis kemerdekaan | 0.50        | 00:08.7        | 1           | 0         | 0              | 1         | 9                | 28.8462%        |
| 5             | Jl. Ngeksidono           | 0.70        | 00:01.0        | 0           | 0         | 0              | 0         | 9                | 28.8462%        |
| 6             | Jl. Gedong Kuning        | 2.00        | 00:59.5        | 3           | 4         | 2              | 1         | 9                | 28.8462%        |
| 7             | Jl. Kusuma Negara        | 2.40        | 00:54.3        | 0           | 1         | 2              | 1         | 9                | 28.8462%        |
| 8             | Jl. Sultan Agung         | 1.20        | 00:28.0        | 0           | 0         | 0              | 0         | 9                | 28.8462%        |
| 9             | Jl. Senopati             | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 9                | 28.8462%        |
| 10            | Jl. Mayor Suryotomo      | 0.50        | 01:30.7        | 2           | 3         | 1              | 2         | 7                | 22.4359%        |
| 11            | Jl. Mataram              | 0.85        | 00:09.0        | 0           | 1         | 0              | 1         | 5                | 16.0256%        |
| 12            | Jl. Abubakar Ali         | 0.75        | 00:02.4        | 0           | 0         | 0              | 2         | 3                | 9.6154%         |
| 13            | Jl. Kom Yos Sudarso      | 0.20        | 00:00.0        | 0           | 1         | 0              | 0         | 2                | 6.4103%         |
| 14            | Jl. Suroto               | 0.55        | 00:01.5        | 0           | 0         | 0              | 0         | 2                | 6.4103%         |
| 15            | Jl. Cik Di Tiro          | 0.80        | 00:05.5        | 2           | 1         | 0              | 0         | 3                | 9.6154%         |
| 16            | Jl. Colombo              | 0.40        | 00:03.3        | 1           | 3         | 0              | 1         | 0                | 0.0000%         |
| 17            | Jl. Lingkar UGM Penuh    | 3.00        | 00:42.3        | 0           | 0         | 1              | 1         | 0                | 0.0000%         |
| 18            | Jl. Kaliurang            | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 0                | 0.0000%         |
| 19            | Jl. C Simanjuntak        | 1.40        | 04:01.2        | 0           | 1         | 5              | 3         | 1                | 3.2051%         |
| 20            | Jl. Jend. Sudirman       | 0.55        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 21            | Jl. P Mangkubumi         | 0.85        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 22            | Jl. Kleringan            | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 23            | Jl. Taman Garuda         | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 24            | Jl. Malioboro            | 0.25        | 01:50.5        | 7           | 0         | 0              | 4         | 4                | 12.8205%        |
| 25            | Jl. Jend. A. Yani        | 0.80        | 00:00.0        | 0           | 0         | 3              | 3         | 4                | 12.8205%        |
| 26            | Jl. P. Senopati          | 0.15        | 00:39.4        | 2           | 0         | 0              | 0         | 6                | 19.2308%        |
| 27            | Jl. Sultan Agung         | 0.90        | 00:48.8        | 5           | 0         | 0              | 0         | 11               | 35.2564%        |
| 28            | Jl. Suryopranoto         | 0.40        | 00:05.6        | 0           | 2         | 0              | 0         | 9                | 28.8462%        |
| 29            | Jl. Sukonandi            | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 9                | 28.8462%        |
| 30            | Jl. Kusuma Negara        | 2.25        | 00:07.1        | 1           | 1         | 0              | 3         | 6                | 19.2308%        |
| 31            | Jl. Gedong Kuning        | 2.10        | 00:59.6        | 4           | 2         | 1              | 4         | 5                | 16.0256%        |
| 32            | Jl. Ngeksidono           | 0.70        | 00:24.5        | 1           | 2         | 0              | 0         | 4                | 12.8205%        |
| 33            | Jl. P. Kemerdekaan       | 1.15        | 00:52.2        | 0           | 1         | 0              | 0         | 3                | 9.6154%         |
| 34            | Jl. Veteran              | 0.25        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 35            | Terminal                 |             | 00:00.0        | 0           | 3         | 0              | 0         | 0                | 0.0000%         |
| <b>JUMLAH</b> |                          | <b>28.6</b> | <b>15:00.1</b> | <b>32</b>   | <b>26</b> | <b>21</b>      | <b>27</b> |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 24 Juni 2002 |                       | Berdiri |
| Putaran : IV b         | Waktu Keberangkatan : | 9:52    |
| Bis : Kopata 62        | Waktu Kedatangan :    | 11:25   |

| No            | Ruas Jalan               | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|--------------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                          |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal                 |             | 00:00.0        | 0           | 0         | 1              | 0         | 1                | 3.2051%         |
| 2             | Jl. Veteran              | 0.60        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 3             | Jl. Warung boto          | 0.35        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 4             | Jl. Perintis kemerdekaan | 0.50        | 00:00.0        | 1           | 0         | 0              | 0         | 2                | 6.4103%         |
| 5             | Jl. Ngeksidono           | 0.70        | 00:00.0        | 0           | 0         | 0              | 0         | 2                | 6.4103%         |
| 6             | Jl. Gedong Kuning        | 2.00        | 03:52.7        | 6           | 0         | 14             | 0         | 22               | 70.5128%        |
| 7             | Jl. Kusuma Negara        | 2.40        | 01:35.8        | 7           | 1         | 5              | 5         | 28               | 89.7436%        |
| 8             | Jl. Sultan Agung         | 1.20        | 01:04.6        | 1           | 3         | 0              | 0         | 26               | 83.3333%        |
| 9             | Jl. Senopati             | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 26               | 83.3333%        |
| 10            | Jl. Mayor Suryotomo      | 0.50        | 00:19.5        | 0           | 7         | 0              | 3         | 16               | 51.2821%        |
| 11            | Jl. Mataram              | 0.85        | 00:21.1        | 3           | 0         | 2              | 2         | 19               | 60.8974%        |
| 12            | Jl. Abubakar Ali         | 0.75        | 00:00.0        | 0           | 0         | 0              | 0         | 19               | 60.8974%        |
| 13            | Jl. Kom Yos Sudarso      | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 19               | 60.8974%        |
| 14            | Jl. Suroto               | 0.55        | 00:15.1        | 0           | 6         | 1              | 1         | 13               | 41.6667%        |
| 15            | Jl. Cik Di Tiro          | 0.80        | 00:08.4        | 2           | 5         | 0              | 0         | 10               | 32.0513%        |
| 16            | Jl. Colombo              | 0.40        | 00:06.1        | 14          | 3         | 0              | 0         | 21               | 67.3077%        |
| 17            | Jl. Lingkar UGM Penuh    | 3.00        | 04:22.3        | 0           | 1         | 3              | 1         | 22               | 70.5128%        |
| 18            | Jl. Kaliurang            | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 22               | 70.5128%        |
| 19            | Jl. C Simanjuntak        | 1.40        | 07:05.8        | 8           | 3         | 8              | 1         | 34               | 108.9744%       |
| 20            | Jl. Jend. Sudirman       | 0.55        | 00:03.9        | 0           | 0         | 0              | 0         | 34               | 108.9744%       |
| 21            | Jl. P Mangkubumi         | 0.85        | 00:36.1        | 4           | 11        | 3              | 2         | 28               | 89.7436%        |
| 22            | Jl. Kleringan            | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 28               | 89.7436%        |
| 23            | Jl. Taman Garuda         | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 28               | 89.7436%        |
| 24            | Jl. Malioboro            | 0.25        | 03:03.0        | 7           | 8         | 2              | 2         | 27               | 86.5385%        |
| 25            | Jl. Jend. A. Yani        | 0.80        | 00:00.0        | 0           | 0         | 5              | 3         | 29               | 92.9487%        |
| 26            | Jl. P. Senopati          | 0.15        | 01:48.7        | 3           | 2         | 0              | 0         | 30               | 96.1538%        |
| 27            | Jl. Sultan Agung         | 0.90        | 00:05.7        | 1           | 2         | 0              | 0         | 29               | 92.9487%        |
| 28            | Jl. Suryopranoto         | 0.40        | 00:04.2        | 1           | 1         | 1              | 0         | 30               | 96.1538%        |
| 29            | Jl. Sukonandi            | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 30               | 96.1538%        |
| 30            | Jl. Kusuma Negara        | 2.25        | 02:01.2        | 3           | 2         | 1              | 2         | 30               | 96.1538%        |
| 31            | Jl. Gedong Kuning        | 2.10        | 00:59.6        | 2           | 14        | 0              | 8         | 10               | 32.0513%        |
| 32            | Jl. Ngeksidono           | 0.70        | 00:44.4        | 0           | 4         | 0              | 0         | 6                | 19.2308%        |
| 33            | Jl. P. Kemerdekaan       | 1.15        | 01:26.0        | 0           | 1         | 0              | 2         | 3                | 9.6154%         |
| 34            | Jl. Veteran              | 0.25        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 35            | Terminal                 |             | 00:00.0        | 0           | 0         | 0              | 3         | 0                | 0.0000%         |
| <b>JUMLAH</b> |                          | <b>28.6</b> | <b>30:03.8</b> | <b>63</b>   | <b>74</b> | <b>46</b>      | <b>35</b> |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 24 Juni 2002 |                       | Berdiri |
| Putaran : IV c         | Waktu Keberangkatan : | 12:44   |
| Bis : Aspada 55        | Waktu Kedatangan :    | 14:33   |

| No            | Ruas Jalan               | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|--------------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                          |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal                 |             | 00:00.0        | 2           | 0         | 1              | 0         | 3                | 9.6154%         |
| 2             | Jl. Veteran              | 0.60        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 3             | Jl. Warung boto          | 0.35        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 4             | Jl. Perintis kemerdekaan | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 5             | Jl. Ngeksidono           | 0.70        | 00:29.4        | 10          | 0         | 4              | 0         | 17               | 54.4872%        |
| 6             | Jl. Gedong Kuning        | 2.00        | 02:28.9        | 6           | 0         | 6              | 1         | 28               | 89.7436%        |
| 7             | Jl. Kusuma Negara        | 2.40        | 00:33.2        | 5           | 4         | 5              | 4         | 30               | 96.1538%        |
| 8             | Jl. Sultan Agung         | 1.20        | 00:00.0        | 0           | 0         | 0              | 0         | 30               | 96.1538%        |
| 9             | Jl. Senopati             | 0.15        | 01:05.1        | 2           | 7         | 0              | 0         | 25               | 80.1282%        |
| 10            | Jl. Mayor Suryotomo      | 0.50        | 00:00.0        | 0           | 0         | 0              | 2         | 23               | 73.7179%        |
| 11            | Jl. Mataram              | 0.85        | 00:30.7        | 5           | 6         | 0              | 5         | 17               | 54.4872%        |
| 12            | Jl. Abubakar Ali         | 0.75        | 00:43.2        | 2           | 15        | 3              | 1         | 6                | 19.2308%        |
| 13            | Jl. Kom Yos Sudarso      | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 6                | 19.2308%        |
| 14            | Jl. Suroto               | 0.55        | 00:00.0        | 0           | 0         | 0              | 1         | 5                | 16.0256%        |
| 15            | Jl. Cik Di Tiro          | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 5                | 16.0256%        |
| 16            | Jl. Colombo              | 0.40        | 00:00.0        | 0           | 0         | 2              | 3         | 4                | 12.8205%        |
| 17            | Jl. Lingkar UGM Penuh    | 3.00        | 08:42.0        | 21          | 8         | 0              | 0         | 17               | 54.4872%        |
| 18            | Jl. Kaliurang            | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 17               | 54.4872%        |
| 19            | Jl. C Simanjuntak        | 1.40        | 00:00.0        | 0           | 0         | 11             | 1         | 27               | 86.5385%        |
| 20            | Jl. Jend. Sudirman       | 0.55        | 00:00.0        | 0           | 0         | 0              | 0         | 27               | 86.5385%        |
| 21            | Jl. P Mangkubumi         | 0.85        | 00:44.5        | 5           | 6         | 0              | 3         | 23               | 73.7179%        |
| 22            | Jl. Kleringan            | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 23               | 73.7179%        |
| 23            | Jl. Taman Garuda         | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 23               | 73.7179%        |
| 24            | Jl. Malioboro            | 0.25        | 01:25.3        | 7           | 10        | 5              | 7         | 18               | 57.6923%        |
| 25            | Jl. Jend. A. Yani        | 0.80        | 01:06.3        | 0           | 3         | 0              | 0         | 15               | 48.0769%        |
| 26            | Jl. P. Senopati          | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 27            | Jl. Sultan Agung         | 0.90        | 03:02.9        | 6           | 6         | 1              | 0         | 16               | 51.2821%        |
| 28            | Jl. Suryopranoto         | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 16               | 51.2821%        |
| 29            | Jl. Sukonandi            | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 16               | 51.2821%        |
| 30            | Jl. Kusuma Negara        | 2.25        | 00:00.0        | 0           | 0         | 2              | 2         | 16               | 51.2821%        |
| 31            | Jl. Gedong Kuning        | 2.10        | 02:32.3        | 2           | 11        | 3              | 2         | 8                | 25.6410%        |
| 32            | Jl. Ngeksidono           | 0.70        | 00:00.0        | 0           | 0         | 0              | 0         | 8                | 25.6410%        |
| 33            | Jl. P. Kemerdekaan       | 1.15        | 00:00.0        | 0           | 0         | 0              | 0         | 8                | 25.6410%        |
| 34            | Jl. Veteran              | 0.25        | 00:00.0        | 0           | 0         | 0              | 0         | 8                | 25.6410%        |
| 35            | Terminal                 |             |                | 0           | 5         | 0              | 3         | 0                | 0.0000%         |
| <b>JUMLAH</b> |                          | <b>28.6</b> | <b>23:23.8</b> | <b>73</b>   | <b>81</b> | <b>43</b>      | <b>35</b> |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Senin           | Kapasitas Bis :       | Duduk   |
| Tanggal : 24 Juni 2002 |                       | Berdiri |
| Putaran : IV d         | Waktu Keberangkatan : | 15:15   |
| Bis : Aspada 87        | Waktu Kedatangan :    | 16:55   |

| No            | Ruas Jalan               | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|--------------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                          |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
|               | Terminal                 |               | 00:00.0           | 0           | 0         | 3              | 0         | 3                   | 9.6154%            |
|               | Jl. Veteran              | 0.60          | 00:00.0           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
|               | Jl. Warung boto          | 0.35          | 00:00.0           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
|               | Jl. Perintis kemerdekaan | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
|               | Jl. Ngeksidono           | 0.70          | 00:12.7           | 1           | 0         | 1              | 0         | 5                   | 16.0256%           |
|               | Jl. Gedong Kuning        | 2.00          | 01:46.3           | 11          | 0         | 7              | 0         | 23                  | 73.7179%           |
|               | Jl. Kusuma Negara        | 2.40          | 01:34.4           | 1           | 3         | 1              | 2         | 20                  | 64.1026%           |
|               | Jl. Sultan Agung         | 1.20          | 00:03.2           | 0           | 2         | 0              | 0         | 18                  | 57.6923%           |
|               | Jl. Senopati             | 0.15          | 01:24.5           | 0           | 3         | 0              | 0         | 15                  | 48.0769%           |
|               | Jl. Mayor Suryotomo      | 0.50          | 00:50.7           | 4           | 1         | 1              | 2         | 17                  | 54.4872%           |
|               | Jl. Mataram              | 0.85          | 00:11.3           | 0           | 4         | 0              | 3         | 10                  | 32.0513%           |
|               | Jl. Abubakar Ali         | 0.75          | 00:03.0           | 0           | 1         | 0              | 0         | 9                   | 28.8462%           |
|               | Jl. Kom Yos Sudarso      | 0.20          | 00:52.2           | 1           | 1         | 0              | 0         | 9                   | 28.8462%           |
|               | Jl. Suroto               | 0.55          | 00:00.0           | 0           | 0         | 0              | 1         | 8                   | 25.6410%           |
|               | Jl. Cik Di Tiro          | 0.80          | 00:07.0           | 0           | 1         | 0              | 0         | 7                   | 22.4359%           |
|               | Jl. Colombo              | 0.40          | 00:18.3           | 0           | 3         | 0              | 0         | 4                   | 12.8205%           |
|               | Jl. Lingkar UGM Penuh    | 3.00          | 00:20.1           | 0           | 4         | 0              | 0         | 0                   | 0.0000%            |
|               | Jl. Kaliurang            | 0.40          | 00:00.0           | 0           | 0         | 1              | 0         | 1                   | 3.2051%            |
|               | Jl. C Simanjuntak        | 1.40          | 02:22.4           | 0           | 1         | 2              | 0         | 2                   | 6.4103%            |
|               | Jl. Jend. Sudirman       | 0.55          | 00:17.1           | 1           | 0         | 2              | 2         | 3                   | 9.6154%            |
|               | Jl. P Mangkubumi         | 0.85          | 00:13.5           | 3           | 3         | 1              | 0         | 4                   | 12.8205%           |
|               | Jl. Kleringan            | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
|               | Jl. Taman Garuda         | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
|               | Jl. Malioboro            | 0.25          | 02:04.6           | 4           | 3         |                | 2         | 3                   | 9.6154%            |
|               | Jl. Jend. A. Yani        | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
|               | Jl. P. Senopati          | 0.15          | 01:42.1           | 4           | 3         | 0              | 0         | 4                   | 12.8205%           |
|               | Jl. Sultan Agung         | 0.90          | 00:22.8           | 8           | 0         | 3              | 1         | 14                  | 44.8718%           |
|               | Jl. Suryopranoto         | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 14                  | 44.8718%           |
|               | Jl. Sukonandi            | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 14                  | 44.8718%           |
|               | Jl. Kusuma Negara        | 2.25          | 00:18.1           | 2           | 6         | 0              | 0         | 10                  | 32.0513%           |
|               | Jl. Gedong Kuning        | 2.10          | 00:50.5           | 3           | 6         | 0              | 2         | 5                   | 16.0256%           |
|               | Jl. Ngeksidono           | 0.70          | 00:15.3           | 0           | 3         | 0              | 0         | 2                   | 6.4103%            |
|               | Jl. P. Kemerdekaan       | 1.15          | 00:00.0           | 0           | 0         | 0              | 0         | 2                   | 6.4103%            |
|               | Jl. Veteran              | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 2                   | 6.4103%            |
|               | Terminal                 |               | 00:00.0           | 0           | 0         | 0              | 2         | 0                   | 0.0000%            |
| <b>JUMLAH</b> |                          | <b>28.6</b>   | <b>16:10.1</b>    | <b>43</b>   | <b>48</b> | <b>22</b>      | <b>17</b> |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                     |         |
|------------------------|---------------------|---------|
| Hari : Selasa          | Kapasiti: Bis :     | Duduk   |
| Tanggal : 04 Juni 2002 |                     | Berdiri |
| Putaran : I a          | Waktu Keberangkatan | 7:17    |
| Bis : Kopata 111       | Waktu Kedatangan    | 9:02    |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 2           | 0     | 1              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 5      | Jl.Ngeksidono        | 0.70       | 00:29.4        | 10          | 0     | 4              | 0     | 17               | 54.4872%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 02:28.9        | 6           | 0     | 6              | 1     | 28               | 89.7436%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 00:33.2        | 5           | 4     | 5              | 4     | 30               | 96.1538%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 9      | Jl.Senopati          | 0.15       | 01:05.1        | 2           | 7     | 0              | 0     | 25               | 80.1282%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 11     | Jl.Mataram           | 0.85       | 00:30.7        | 5           | 6     | 0              | 0     | 24               | 76.9231%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:43.2        | 2           | 15    | 3              | 1     | 13               | 41.6667%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 16     | Jl.Colombo           | 0.40       | 00:38.7        | 0           | 0     | 2              | 3     | 12               | 38.4615%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 08:42.0        | 21          | 8     | 0              | 0     | 25               | 80.1282%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 19     | Jl.C Simajuntak      | 1.40       | 02:14.6        | 0           | 0     | 11             | 1     | 35               | 112.1795%       |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 35               | 112.1795%       |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:44.5        | 5           | 6     | 0              | 3     | 31               | 99.3590%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 24     | Jl.Malioboro         | 0.25       | 01:25.3        | 7           | 10    | 5              | 7     | 26               | 83.3333%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 01:06.3        | 0           | 3     | 0              | 0     | 23               | 73.7179%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 27     | Jl.Sultan Agung      | 0.90       | 03:02.9        | 6           | 6     | 1              | 0     | 24               | 76.9231%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:38.4        | 0           | 0     | 2              | 2     | 24               | 76.9231%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 02:32.3        | 2           | 11    | 3              | 2     | 16               | 51.2821%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 5     | 0              | 3     | 8                | 25.6410%        |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 35     | Terminal             |            | 00:00.0        | 0           | 5     | 0              | 3     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 26:55.5        | 73          | 86    | 43             | 30    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

| Hari : Selasa          |                      | Kapasi: Bis :       |                | Duduk            |                   |                     |                      |                  |                 |
|------------------------|----------------------|---------------------|----------------|------------------|-------------------|---------------------|----------------------|------------------|-----------------|
| Tanggal : 04 Juni 2002 |                      |                     |                | Berdiri          |                   |                     |                      |                  |                 |
| Putaran : l b          |                      | Waktu Keberangkatan |                | 9:54             |                   |                     |                      |                  |                 |
| Bis : Aspada 123       |                      | Waktu Kedatangan    |                | 11:44            |                   |                     |                      |                  |                 |
| No                     | Ruas Jalan           | Jarak (Km)          | Waktu Berhenti | Pintu Depan Naik | Pintu Depan Turun | Pintu Belakang Naik | Pintu Belakang Turun | Jumlah Penumpang | Load Factor (%) |
| 1                      | Terminal             |                     | 00:00.0        | 0                | 0                 | 0                   | 0                    | 0                | 0.0000%         |
| 2                      | Jl.Veteran           | 0.60                | 00:31.2        | 2                | 0                 | 0                   | 0                    | 2                | 6.4103%         |
| 3                      | Jl. Warung Boto      | 0.35                | 00:33.9        | 0                | 0                 | 3                   | 0                    | 5                | 16.0256%        |
| 4                      | Jl.P.Kemerdekaan     | 0.50                | 00:45.3        | 4                | 0                 | 0                   | 0                    | 9                | 28.8462%        |
| 5                      | Jl.Ngeksidono        | 0.70                | 03:21.7        | 5                | 1                 | 2                   | 3                    | 12               | 38.4615%        |
| 6                      | Jl.Gedong Kuning     | 2.00                | 00:28.6        | 1                | 1                 | 1                   | 0                    | 13               | 41.6667%        |
| 7                      | Jl.Kusuma Negara     | 2.40                | 01:58.4        | 10               | 2                 | 5                   | 6                    | 20               | 64.1026%        |
| 8                      | Jl.Sultan Agung      | 1.20                | 00:37.8        | 4                | 0                 | 1                   | 0                    | 25               | 80.1282%        |
| 9                      | Jl.Senopati          | 0.15                | 00:42.5        | 0                | 1                 | 0                   | 2                    | 22               | 70.5128%        |
| 10                     | Jl.Mayor Suryotomo   | 0.50                | 00:00.0        | 0                | 0                 | 0                   | 0                    | 22               | 70.5128%        |
| 11                     | Jl.Mataram           | 0.85                | 00:45.3        | 2                | 0                 | 0                   | 3                    | 21               | 67.3077%        |
| 12                     | Jl.Abu Bakar Ali     | 0.75                | 00:48.8        | 0                | 1                 | 5                   | 0                    | 25               | 80.1282%        |
| 13                     | Jl.Kom Yos Sudarso   | 0.20                | 00:00.0        | 0                | 0                 | 0                   | 0                    | 25               | 80.1282%        |
| 14                     | Jl.Suroto            | 0.55                | 00:28.5        | 0                | 1                 | 0                   | 1                    | 23               | 73.7179%        |
| 15                     | Jl.Cik Di Tiro       | 0.80                | 00:40.9        | 5                | 0                 | 2                   | 0                    | 30               | 96.1538%        |
| 16                     | Jl.Colombo           | 0.40                | 00:00.0        | 0                | 0                 | 0                   | 0                    | 30               | 96.1538%        |
| 17                     | Jl.Lingkar UGM Penuh | 3.00                | 01:42.3        | 3                | 2                 | 1                   | 5                    | 27               | 86.5385%        |
| 18                     | Jl.Kaliurang         | 0.40                | 00:34.8        | 0                | 2                 | 0                   | 1                    | 24               | 76.9231%        |
| 19                     | Jl.C Simajuntak      | 1.40                | 00:43.2        | 4                | 0                 | 8                   | 0                    | 36               | 115.3846%       |
| 20                     | Jl.Jend.Sudirman     | 0.55                | 00:38.9        | 1                | 2                 | 2                   | 4                    | 33               | 105.7692%       |
| 21                     | Jl.P Mangkubumi      | 0.85                | 00:23.6        | 0                | 1                 | 0                   | 0                    | 32               | 102.5641%       |
| 22                     | Jl.Kleringan         | 0.50                | 00:12.9        | 0                | 0                 | 0                   | 2                    | 30               | 96.1538%        |
| 23                     | Jl.Taman Garuda      | 0.20                | 00:35.7        | 2                | 0                 | 1                   | 0                    | 33               | 105.7692%       |
| 24                     | Jl.Malioboro         | 0.25                | 01:45.8        | 2                | 5                 | 1                   | 6                    | 25               | 80.1282%        |
| 25                     | Jl.Jend.A.Yani       | 0.80                | 02:30.9        | 3                | 0                 | 5                   | 0                    | 33               | 105.7692%       |
| 26                     | Jl.P.Senopati        | 0.15                | 00:55.6        | 0                | 1                 | 0                   | 2                    | 30               | 96.1538%        |
| 27                     | Jl.Sultan Agung      | 0.90                | 00:45.3        | 1                | 2                 | 0                   | 5                    | 24               | 76.9231%        |
| 28                     | Jl.Suryopranoto      | 0.40                | 00:50.7        | 0                | 4                 | 2                   | 1                    | 21               | 67.3077%        |
| 29                     | Jl.Sukonandi         | 0.80                | 00:58.3        | 4                | 0                 | 0                   | 8                    | 17               | 54.4872%        |
| 30                     | Jl.Kusuma Negara     | 2.25                | 01:48.7        | 0                | 7                 | 3                   | 10                   | 3                | 9.6154%         |
| 31                     | Jl.Gedong Kuning     | 2.10                | 00:19.8        | 1                | 0                 | 0                   | 0                    | 4                | 12.8205%        |
| 32                     | Jl.Ngeksigondo       | 0.70                | 00:29.5        | 0                | 2                 | 0                   | 1                    | 1                | 3.2051%         |
| 33                     | Jl.P.Kemerdekan      | 1.15                | 00:25.8        | 0                | 0                 | 0                   | 1                    | 0                | 0.0000%         |
| 34                     | Jl.Veteran           | 0.25                | 00:00.0        | 0                | 0                 | 0                   | 0                    | 0                | 0.0000%         |
| 35                     | Terminal             |                     | 00:00.0        | 0                | 0                 | 0                   | 0                    | 0                | 0.0000%         |
| Jumlah                 |                      | 28.6                | 27:24.7        | 54               | 35                | 42                  | 61                   |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                     |         |
|------------------------|---------------------|---------|
| Hari : Selasa          | Kapasi: Bis :       | Duduk   |
| Tanggal : 04 Juni 2002 |                     | Berdiri |
| Putaran : 1 c          | Waktu Keberangkatan | 13:21   |
| Bis : Kopata 128       | Waktu Kedatangan    | 15:03   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 2           | 0     | 4              | 0     | 6                   | 19.2308%           |
| 2      | Jl.Veteran           | 0.60          | 00:28.6           | 1           | 0     | 1              | 0     | 8                   | 25.6410%           |
| 3      | Jl. Warung Boto      | 0.35          | 00:30.8           | 0           | 2     | 0              | 0     | 6                   | 19.2308%           |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:48.5           | 2           | 0     | 4              | 0     | 12                  | 38.4615%           |
| 5      | Jl.Ngeksidono        | 0.70          | 02:25.4           | 2           | 1     | 6              | 4     | 15                  | 48.0769%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 00:57.8           | 1           | 0     | 3              | 0     | 19                  | 60.8974%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 00:59.3           | 2           | 2     | 7              | 0     | 26                  | 83.3333%           |
| 8      | Jl.Sultan Agung      | 1.20          | 01:02.0           | 4           | 0     | 5              | 3     | 32                  | 102.5641%          |
| 9      | Jl.Senopati          | 0.15          | 00:54.3           | 0           | 6     | 0              | 4     | 22                  | 70.5128%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:28.7           | 0           | 0     | 1              | 0     | 23                  | 73.7179%           |
| 11     | Jl.Mataram           | 0.85          | 00:32.4           | 2           | 0     | 0              | 0     | 25                  | 80.1282%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:25.8           | 0           | 0     | 1              | 0     | 26                  | 83.3333%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 26                  | 83.3333%           |
| 14     | Jl.Suroto            | 0.55          | 00:35.7           | 0           | 0     | 0              | 2     | 24                  | 76.9231%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:58.9           | 2           | 0     | 4              | 0     | 30                  | 96.1538%           |
| 16     | Jl.Colombo           | 0.40          | 00:31.6           | 0           | 1     | 1              | 6     | 24                  | 76.9231%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 01:47.8           | 1           | 2     | 3              | 5     | 21                  | 67.3077%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:57.8           | 0           | 4     | 0              | 0     | 17                  | 54.4872%           |
| 19     | Jl.C Simajuntak      | 1.40          | 03:45.6           | 2           | 0     | 5              | 1     | 23                  | 73.7179%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:54.6           | 0           | 0     | 2              | 3     | 22                  | 70.5128%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:58.7           | 1           | 2     | 2              | 0     | 23                  | 73.7179%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 24     | Jl.Malioboro         | 0.25          | 01:35.8           | 2           | 2     | 4              | 4     | 23                  | 73.7179%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:43.8           | 3           | 1     | 8              | 3     | 30                  | 96.1538%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:58.9           | 4           | 0     | 0              | 0     | 34                  | 108.9744%          |
| 27     | Jl.Sultan Agung      | 0.90          | 00:49.6           | 0           | 2     | 0              | 3     | 29                  | 92.9487%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:57.5           | 0           | 4     | 0              | 6     | 19                  | 60.8974%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:43.6           | 3           | 0     | 1              | 0     | 23                  | 73.7179%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:26.3           | 4           | 0     | 1              | 5     | 23                  | 73.7179%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:58.8           | 0           | 5     | 0              | 8     | 10                  | 32.0513%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 02:31.5           | 0           | 3     | 0              | 6     | 1                   | 3.2051%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:32.2           | 1           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 34     | Jl.Veteran           | 0.25          | 00:29.8           | 0           | 0     | 1              | 0     | 3                   | 9.6154%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 3     | 0              | 0     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 33:52.1           | 39          | 40    | 64             | 63    |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                     |         |
|------------------------|---------------------|---------|
| Hari : Selasa          | Kapasi: Bis :       | Duduk   |
| Tanggal : 04 Juni 2002 |                     | Berdiri |
| Putaran : 1 d          | Waktu Keberangkatar | 15:20   |
| Bis : Kopata 62        | Waktu Kedatangan    | 17:13   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 2           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:45.3           | 0           | 0     | 1              | 0     | 3                   | 9.6154%            |
| 5      | Jl.Ngeksidono        | 0.70          | 00:52.6           | 0           | 2     | 1              | 0     | 2                   | 6.4103%            |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:38.5           | 5           | 0     | 4              | 0     | 11                  | 35.2564%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 01:49.5           | 3           | 0     | 6              | 1     | 19                  | 60.8974%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:27.6           | 0           | 1     | 0              | 0     | 18                  | 57.6923%           |
| 9      | Jl.Senopati          | 0.15          | 00:39.8           | 2           | 0     | 3              | 1     | 22                  | 70.5128%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:29.4           | 0           | 1     | 0              | 0     | 21                  | 67.3077%           |
| 11     | Jl.Mataram           | 0.85          | 00:32.5           | 1           | 0     | 0              | 1     | 21                  | 67.3077%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 14     | Jl.Suroto            | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:35.8           | 2           | 0     | 1              | 0     | 24                  | 76.9231%           |
| 16     | Jl.Colombo           | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 24                  | 76.9231%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 03:12.5           | 2           | 0     | 4              | 0     | 30                  | 96.1538%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:25.4           | 0           | 1     | 0              | 0     | 29                  | 92.9487%           |
| 19     | Jl.C Simajuntak      | 1.40          | 02:28.4           | 4           | 0     | 5              | 0     | 38                  | 121.7949%          |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:29.3           | 0           | 0     | 0              | 1     | 37                  | 118.5897%          |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:00.0           | 0           | 0     | 0              | 0     | 37                  | 118.5897%          |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 37                  | 118.5897%          |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 37                  | 118.5897%          |
| 24     | Jl.Malioboro         | 0.25          | 01:25.6           | 2           | 3     | 1              | 1     | 36                  | 115.3846%          |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:38.2           | 4           | 1     | 3              | 2     | 40                  | 128.2051%          |
| 26     | Jl.P.Senopati        | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 40                  | 128.2051%          |
| 27     | Jl.Sultan Agung      | 0.90          | 00:54.1           | 0           | 5     | 2              | 4     | 33                  | 105.7692%          |
| 28     | Jl.Suryopranoto      | 0.40          | 00:38.6           | 0           | 0     | 0              | 2     | 31                  | 99.3590%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 31                  | 99.3590%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:13.4           | 3           | 5     | 2              | 1     | 30                  | 96.1538%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 59:12.3           | 0           | 2     | 1              | 3     | 26                  | 83.3333%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 52:25.4           | 0           | 4     | 0              | 7     | 15                  | 48.0769%           |
| 33     | Jl.P.Kemerdekan      | 1.15          | 49:52.3           | 0           | 3     | 0              | 6     | 6                   | 19.2308%           |
| 34     | Jl.Veteran           | 0.25          | 48:21.4           | 0           | 3     | 0              | 1     | 2                   | 6.4103%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 2     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 51:07.9           | 30          | 31    | 34             | 33    |                     |                    |



**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasita Bis :        | Duduk   |
| Tanggal : 11 Juni 2002 |                       | Berdiri |
| Putaran : II a         | Waktu Keberangkatan : | 7:31    |
| Bis : Aspada 57        | Waktu Kedatangan :    | 9:09    |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 5      | Jl.Ngeksidono        | 0.70       | 03:58.9        | 8           | 0     | 4              | 0     | 12               | 38.4615%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 02:32.1        | 14          | 0     | 10             | 0     | 36               | 115.3846%       |
| 7      | Jl.Kusuma Negara     | 2.40       | 03:43.8        | 15          | 0     | 4              | 3     | 52               | 166.6667%       |
| 8      | Jl.Sultan Agung      | 1.20       | 00:56.9        | 0           | 18    | 0              | 5     | 29               | 92.9487%        |
| 9      | Jl.Senopati          | 0.15       | 00:59.7        | 1           | 6     | 4              | 0     | 28               | 89.7436%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 11     | Jl.Mataram           | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:49.8        | 0           | 0     | 0              | 6     | 22               | 70.5128%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 14     | Jl.Suroto            | 0.55       | 01:23.5        | 2           | 4     | 0              | 3     | 17               | 54.4872%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 01:05.3        | 6           | 0     | 2              | 0     | 25               | 80.1282%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 04:07.8        | 12          | 10    | 4              | 2     | 29               | 92.9487%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 19     | Jl.C Simajuntak      | 1.40       | 00:58.8        | 0           | 0     | 2              | 0     | 31               | 99.3590%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 01:02.4        | 0           | 6     | 0              | 0     | 25               | 80.1282%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 01:32.3        | 1           | 0     | 2              | 0     | 28               | 89.7436%        |
| 22     | Jl.Kleringan         | 0.50       | 00:46.7        | 0           | 0     | 0              | 2     | 26               | 83.3333%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 26               | 83.3333%        |
| 24     | Jl.Malioboro         | 0.25       | 02:25.8        | 7           | 8     | 2              | 5     | 22               | 70.5128%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:54.9        | 3           | 0     | 4              | 2     | 27               | 86.5385%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:59.6        | 0           | 2     | 0              | 3     | 22               | 70.5128%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:49.7        | 0           | 3     | 0              | 0     | 19               | 60.8974%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 01:46.8        | 6           | 8     | 0              | 12    | 5                | 16.0256%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:59.6        | 4           | 3     | 0              | 1     | 5                | 16.0256%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 01:02.3        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 34     | Jl.Veteran           | 0.25       | 00:38.5        | 0           | 0     | 0              | 1     | 4                | 12.8205%        |
| 35     | Terminal             |            | 00:00.0        | 0           | 1     | 0              | 3     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 35:35.2        | 79          | 69    | 38             | 48    |                  |                 |

Rekapitulasi Hasil Survei

**Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasita Bis :        | Duduk   |
| Tanggal : 11 Juni 2002 |                       | Berdiri |
| Putaran : II b         | Waktu Keberangkatan : | 9:36    |
| Bis : Kopata 123       | Waktu Kedatangan :    | 11:17   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 2              | 0     | 2                | 6.4103%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 5      | Jl.Ngeksidono        | 0.70       | 01:22.6        | 6           | 0     | 4              | 0     | 12               | 38.4615%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 00:49.7        | 8           | 0     | 2              | 2     | 20               | 64.1026%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 02:36.4        | 2           | 1     | 5              | 0     | 26               | 83.3333%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:36.5        | 2           | 1     | 4              | 2     | 29               | 92.9487%        |
| 9      | Jl.Senopati          | 0.15       | 00:25.4        | 0           | 0     | 0              | 1     | 28               | 89.7436%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 11     | Jl.Mataram           | 0.85       | 00:32.3        | 0           | 0     | 3              | 2     | 29               | 92.9487%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:26.8        | 0           | 1     | 0              | 0     | 28               | 89.7436%        |
| 16     | Jl.Colombo           | 0.40       | 00:29.3        | 0           | 0     | 1              | 0     | 29               | 92.9487%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 02:32.3        | 2           | 1     | 6              | 2     | 34               | 108.9744%       |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 19     | Jl.C Simajuntak      | 1.40       | 02:56.7        | 11          | 1     | 2              | 5     | 41               | 131.4103%       |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 41               | 131.4103%       |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:49.8        | 0           | 0     | 0              | 5     | 36               | 115.3846%       |
| 22     | Jl.Kleringan         | 0.50       | 00:23.9        | 0           | 0     | 0              | 1     | 35               | 112.1795%       |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 35               | 112.1795%       |
| 24     | Jl.Malioboro         | 0.25       | 01:09.5        | 0           | 10    | 1              | 6     | 20               | 64.1026%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:43.7        | 14          | 0     | 3              | 1     | 36               | 115.3846%       |
| 26     | Jl.P.Senopati        | 0.15       | 00:55.9        | 0           | 1     | 0              | 2     | 33               | 105.7692%       |
| 27     | Jl.Sultan Agung      | 0.90       | 01:28.7        | 5           | 6     | 1              | 5     | 28               | 89.7436%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:24.7        | 0           | 0     | 0              | 1     | 27               | 86.5385%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 01:13.2        | 0           | 11    | 0              | 3     | 13               | 41.6667%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:29.7        | 0           | 2     | 0              | 1     | 10               | 32.0513%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 10               | 32.0513%        |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 10               | 32.0513%        |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        |             | 0     | 0              | 0     | 10               | 32.0513%        |
| 35     | Terminal             |            | 00:00.0        | 0           | 2     | 0              | 8     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 22:27.1        | 50          | 37    | 34             | 47    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 11 Juni 2002 |                       | Berdiri |
| Putaran : II c         | Waktu Keberangkatan : | 13:17   |
| Bis : Kopata 35        | Waktu Kedatangan :    | 14:59   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 4              | 0     | 4                | 12.8205%        |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 5      | Jl.Ngeksidono        | 0.70       | 00:49.8        | 6           | 0     | 2              | 0     | 12               | 38.4615%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 03:17.5        | 12          | 0     | 5              | 3     | 26               | 83.3333%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 01:23.5        | 4           | 5     | 6              | 2     | 29               | 92.9487%        |
| 8      | Jl.Sultan Agung      | 1.20       | 01:02.7        | 0           | 6     | 0              | 1     | 22               | 70.5128%        |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 11     | Jl.Mataram           | 0.85       | 00:42.9        | 0           | 2     | 1              | 4     | 17               | 54.4872%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 17               | 54.4872%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 17               | 54.4872%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 17               | 54.4872%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:59.5        | 4           | 0     | 2              | 0     | 23               | 73.7179%        |
| 16     | Jl.Colombo           | 0.40       | 01:32.6        | 8           | 0     | 0              | 2     | 29               | 92.9487%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 03:25.7        | 10          | 2     | 1              | 1     | 37               | 118.5897%       |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 19     | Jl.C Simajuntak      | 1.40       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 37               | 118.5897%       |
| 24     | Jl.Malioboro         | 0.25       | 01:08.7        | 1           | 6     | 1              | 3     | 30               | 96.1538%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:56.8        | 8           | 8     | 2              | 2     | 30               | 96.1538%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:41.7        | 0           | 4     | 0              | 0     | 26               | 83.3333%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:35.8        | 0           | 5     | 0              | 6     | 15               | 48.0769%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 15               | 48.0769%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 15               | 48.0769%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 01:57.6        | 0           | 4     | 4              | 10    | 5                | 16.0256%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:00.0        | 0           | 0     | 0              | 1     | 4                | 12.8205%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 35     | Terminal             |            | 00:00.0        | 0           | 1     | 0              | 3     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 20:34.8        | 53          | 43    | 28             | 38    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 11 Juni 2002 |                       | Berdiri |
| Putaran : II d         | Waktu Keberangkatan : | 15:25   |
| Bis : Aspada 98        | Waktu Kedatangan :    | 17:02   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 1           | 0     | 2              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 5      | Jl.Ngeksidono        | 0.70       | 01:08.3        | 0           | 0     | 2              | 0     | 5                | 16.0256%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 00:59.7        | 2           | 0     | 3              | 0     | 10               | 32.0513%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 02;11.3        | 4           | 2     | 1              | 3     | 10               | 32.0513%        |
| 8      | Jl.Sultan Agung      | 1.20       | 01:04.9        | 2           | 0     | 0              | 4     | 8                | 25.6410%        |
| 9      | Jl.Senopati          | 0.15       | 01:02.6        | 0           | 2     | 3              | 0     | 9                | 28.8462%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 9                | 28.8462%        |
| 11     | Jl.Mataram           | 0.85       | 00:56.7        | 4           | 0     | 0              | 0     | 13               | 41.6667%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 16     | Jl.Colombo           | 0.40       | 01:18.7        | 8           | 1     | 0              | 0     | 20               | 64.1026%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 02;32.6        | 2           | 0     | 6              | 0     | 28               | 89.7436%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 19     | Jl.C Simajuntak      | 1.40       | 02:42.8        | 1           | 0     | 4              | 6     | 27               | 86.5385%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 24     | Jl.Malioboro         | 0.25       | 01:53.4        | 0           | 6     | 0              | 5     | 16               | 51.2821%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:56.8        | 5           | 3     | 1              | 0     | 19               | 60.8974%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:46.7        | 0           | 6     | 0              | 0     | 13               | 41.6667%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 13               | 41.6667%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 01:18.9        | 1           | 6     | 10             | 2     | 16               | 51.2821%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:42.6        | 0           | 5     | 0              | 7     | 4                | 12.8205%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:33.5        | 0           | 2     | 0              | 0     | 2                | 6.4103%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:29.3        | 0           | 0     | 0              | 1     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:25.7        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 18:20.6        | 30          | 34    | 32             | 28    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 18 Juni 2002 |                       | Berdiri |
| Putaran : III a        | Waktu Keberangkatan : | 8:03    |
| Bis : Kopata 44        | Waktu Kedatangan :    | 9:43    |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 4              | 0     | 4                   | 12.8205%           |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 3           | 0     | 0              | 0     | 7                   | 22.4359%           |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 7                   | 22.4359%           |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 7                   | 22.4359%           |
| 5      | Jl.Ngeksidono        | 0.70          | 01:04.5           | 8           | 0     | 7              | 0     | 22                  | 70.5128%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 00:57.3           | 0           | 3     | 5              | 0     | 24                  | 76.9231%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 02:14.9           | 10          | 5     | 2              | 0     | 31                  | 99.3590%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:43.5           | 0           | 0     | 2              | 4     | 29                  | 92.9487%           |
| 9      | Jl.Senopati          | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 29                  | 92.9487%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:27.4           | 0           | 1     | 0              | 0     | 28                  | 89.7436%           |
| 11     | Jl.Mataram           | 0.85          | 01:06.7           | 0           | 0     | 7              | 10    | 25                  | 80.1282%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 25                  | 80.1282%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 25                  | 80.1282%           |
| 14     | Jl.Suroto            | 0.55          | 01:14.8           | 0           | 6     | 5              | 2     | 22                  | 70.5128%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:58.9           | 0           | 3     | 0              | 2     | 17                  | 54.4872%           |
| 16     | Jl.Colombo           | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 17                  | 54.4872%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 04:23.8           | 5           | 1     | 7              | 0     | 28                  | 89.7436%           |
| 18     | Jl.Kaliurang         | 0.40          | 01:14.6           | 0           | 0     | 11             | 5     | 34                  | 108.9744%          |
| 19     | Jl.C Simajuntak      | 1.40          | 01:32.4           | 2           | 0     | 0              | 4     | 32                  | 102.5641%          |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 24     | Jl.Malioboro         | 0.25          | 02:31.5           | 0           | 8     | 2              | 2     | 24                  | 76.9231%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:14.8           | 7           | 5     | 4              | 3     | 27                  | 86.5385%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:30.5           | 0           | 3     | 0              | 0     | 24                  | 76.9231%           |
| 27     | Jl.Sultan Agung      | 0.90          | 01:13.7           | 5           | 2     | 6              | 3     | 30                  | 96.1538%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 30                  | 96.1538%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 30                  | 96.1538%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 02:30.6           | 0           | 6     | 1              | 8     | 17                  | 54.4872%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 01:18.7           | 0           | 3     | 0              | 5     | 9                   | 28.8462%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 01:45.6           | 6           | 4     | 0              | 0     | 11                  | 35.2564%           |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:49.8           | 0           | 2     | 0              | 3     | 6                   | 19.2308%           |
| 34     | Jl.Veteran           | 0.25          | 00:29.8           | 0           | 0     | 0              | 1     | 5                   | 16.0256%           |
| 35     | Terminal             |               | 00:00.0           | 0           | 1     | 0              | 4     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 29:23.8           | 46          | 53    | 63             | 56    |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 18 Juni 2002 |                       | Berdiri |
| Putaran : III b        | Waktu Keberangkatan : | 10:28   |
| Bis : Aspada 21        | Waktu Kedatangan :    | 12:20   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 5      | Jl.Ngeksidono        | 0.70          | 02:35.8           | 3           | 0     | 4              | 0     | 7                   | 22.4359%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 00:56.6           | 8           | 0     | 2              | 0     | 17                  | 54.4872%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 01:32.3           | 5           | 0     | 12             | 3     | 31                  | 99.3590%           |
| 8      | Jl.Sultan Agung      | 1.20          | 01:19.7           | 6           | 3     | 2              | 4     | 32                  | 102.5641%          |
| 9      | Jl.Senopati          | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 11     | Jl.Mataram           | 0.85          | 02:03.8           | 4           | 2     | 5              | 6     | 33                  | 105.7692%          |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 33                  | 105.7692%          |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 01:02.8           | 0           | 0     | 0              | 3     | 30                  | 96.1538%           |
| 14     | Jl.Suroto            | 0.55          | 00:59.8           | 0           | 2     | 0              | 2     | 26                  | 83.3333%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:49.6           | 0           | 3     | 0              | 0     | 23                  | 73.7179%           |
| 16     | Jl.Colombo           | 0.40          | 01:21.7           | 0           | 5     | 3              | 4     | 17                  | 54.4872%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 03:53.5           | 6           | 4     | 3              | 0     | 22                  | 70.5128%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:58.6           | 0           | 3     | 0              | 4     | 15                  | 48.0769%           |
| 19     | Jl.C Simajuntak      | 1.40          | 01:25.6           | 4           | 0     | 5              | 0     | 24                  | 76.9231%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 24                  | 76.9231%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:56.8           | 0           | 2     | 0              | 1     | 21                  | 67.3077%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 24     | Jl.Malioboro         | 0.25          | 01:10.6           | 0           | 5     | 1              | 4     | 13                  | 41.6667%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:19.7           | 8           | 0     | 6              | 0     | 27                  | 86.5385%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:39.5           | 0           | 2     | 0              | 0     | 25                  | 80.1282%           |
| 27     | Jl.Sultan Agung      | 0.90          | 00:56.4           | 0           | 0     | 5              | 3     | 27                  | 86.5385%           |
| 28     | Jl.Suryopranoto      | 0.40          | 01:13.5           | 3           | 1     | 0              | 2     | 27                  | 86.5385%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 27                  | 86.5385%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:16.5           | 4           | 8     | 1              | 6     | 18                  | 57.6923%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 02:13.8           | 0           | 4     | 0              | 6     | 8                   | 25.6410%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:59.2           | 0           | 3     | 1              | 4     | 2                   | 6.4103%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:55.6           | 0           | 0     | 0              | 2     | 0                   | 0.0000%            |
| 34     | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 31:41.4           | 51          | 47    | 50             | 54    |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 18 Juni 2002 |                       | Berdiri |
| Putaran : III c        | Waktu Keberangkatan : | 12:52   |
| Bis : Aspada 33        | Waktu Kedatangan :    | 14:44   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 2              | 0     | 2                   | 6.4103%            |
| 2      | Jl.Veteran           | 0.60          | 00:39.5           | 1           | 0     | 0              | 0     | 3                   | 9.6154%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 3                   | 9.6154%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:58.5           | 0           | 1     | 4              | 0     | 6                   | 19.2308%           |
| 5      | Jl.Ngeksidono        | 0.70          | 00:44.6           | 2           | 0     | 1              | 0     | 9                   | 28.8462%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:14.6           | 3           | 0     | 4              | 0     | 16                  | 51.2821%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 02:01.7           | 8           | 6     | 5              | 3     | 20                  | 64.1026%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:59.4           | 0           | 2     | 3              | 4     | 17                  | 54.4872%           |
| 9      | Jl.Senopati          | 0.15          | 00:40.3           | 0           | 2     | 0              | 0     | 15                  | 48.0769%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:29.3           | 0           | 0     | 0              | 1     | 14                  | 44.8718%           |
| 11     | Jl.Mataram           | 0.85          | 01:20.3           | 6           | 3     | 5              | 1     | 21                  | 67.3077%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 14     | Jl.Suroto            | 0.55          | 00:54.8           | 0           | 1     | 0              | 2     | 18                  | 57.6923%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 01:08.3           | 2           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 16     | Jl.Colombo           | 0.40          | 01:14.3           | 0           | 4     | 6              | 0     | 22                  | 70.5128%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 02:51.6           | 4           | 0     | 5              | 0     | 31                  | 99.3590%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:45.1           | 0           | 0     | 0              | 3     | 28                  | 89.7436%           |
| 19     | Jl.C Simajuntak      | 1.40          | 01:19.3           | 1           | 0     | 2              | 0     | 31                  | 99.3590%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 31                  | 99.3590%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:52.3           | 0           | 5     | 0              | 4     | 22                  | 70.5128%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 22                  | 70.5128%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 22                  | 70.5128%           |
| 24     | Jl.Malioboro         | 0.25          | 01:06.4           | 0           | 6     | 1              | 4     | 13                  | 41.6667%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:11.7           | 4           | 1     | 2              | 0     | 18                  | 57.6923%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 27     | Jl.Sultan Agung      | 0.90          | 01:03.4           | 0           | 5     | 2              | 3     | 12                  | 38.4615%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 12                  | 38.4615%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 12                  | 38.4615%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:44.6           | 0           | 4     | 0              | 5     | 3                   | 9.6154%            |
| 31     | Jl.Gedong Kuning     | 2.10          | 02:01.5           | 3           | 5     | 4              | 1     | 4                   | 12.8205%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 01:03.2           | 0           | 3     | 0              | 0     | 1                   | 3.2051%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 34     | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 1     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 27:24.7           | 34          | 48    | 46             | 32    |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 18 Juni 2002 |                       | Berdiri |
| Putaran : III d        | Waktu Keberangkatan : | 15:05   |
| Bis : Kopata 117       | Waktu Kedatangan :    | 16:51   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000             |
| 2      | Jl.Veteran           | 0.60          | 00:32.6           | 1           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:39.5           | 0           | 0     | 2              | 0     | 3                   | 9.6154%            |
| 5      | Jl.Ngeksidono        | 0.70          | 00:42.6           | 0           | 0     | 3              | 0     | 6                   | 19.2308%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:22.7           | 2           | 1     | 0              | 0     | 7                   | 22.4359%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 01:58.9           | 8           | 3     | 5              | 4     | 13                  | 41.6667%           |
| 8      | Jl.Sultan Agung      | 1.20          | 01:43.5           | 2           | 5     | 3              | 0     | 13                  | 41.6667%           |
| 9      | Jl.Senopati          | 0.15          | 02:01.4           | 0           | 0     | 0              | 3     | 10                  | 32.0513%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 10                  | 32.0513%           |
| 11     | Jl.Mataram           | 0.85          | 02:13.5           | 6           | 4     | 3              | 5     | 10                  | 32.0513%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:31.5           | 0           | 0     | 0              | 1     | 9                   | 28.8462%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 9                   | 28.8462%           |
| 14     | Jl.Suroto            | 0.55          | 00:40.2           | 0           | 2     | 0              | 0     | 7                   | 22.4359%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:38.9           | 1           | 0     | 0              | 0     | 8                   | 25.6410%           |
| 16     | Jl.Colombo           | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 8                   | 25.6410%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 03:15.2           | 0           | 1     | 2              | 1     | 8                   | 25.6410%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 8                   | 25.6410%           |
| 19     | Jl.C Simajuntak      | 1.40          | 02:56.3           | 5           | 0     | 3              | 0     | 16                  | 51.2821%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:55.7           | 0           | 0     | 2              | 0     | 18                  | 57.6923%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 1     | 0              | 0     | 17                  | 54.4872%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 17                  | 54.4872%           |
| 24     | Jl.Malioboro         | 0.25          | 01:52.6           | 0           | 4     | 1              | 2     | 12                  | 38.4615%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:43.8           | 4           | 0     | 3              | 2     | 17                  | 54.4872%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:32.6           | 1           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 27     | Jl.Sultan Agung      | 0.90          | 01:02.5           | 2           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:58.9           | 0           | 3     | 0              | 0     | 17                  | 54.4872%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:55.6           | 0           | 0     | 1              | 4     | 14                  | 44.8718%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 00:49.8           | 0           | 5     | 3              | 6     | 6                   | 19.2308%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:36.7           | 0           | 1     | 0              | 2     | 3                   | 9.6154%            |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:00.0           | 0           | 0     | 0              | 0     | 3                   | 9.6154%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:29.8           | 0           | 0     | 0              | 1     | 2                   | 6.4103%            |
| 34     | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 2     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 30:14.8           | 32          | 30    | 31             | 33    |                     |                    |



**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 25 Juni 2002 |                       | Berdiri |
| Putaran : IV a         | Waktu Keberangkatan : | 7:40    |
| Bis : Kopata 83        | Waktu Kedatangan :    | 9:15    |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran           | 0.60       | 00:39.6        | 1           | 0     | 3              | 0     | 4                | 12.8205%        |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:57.4        | 2           | 0     | 0              | 0     | 6                | 19.2308%        |
| 5      | Jl.Ngeksidono        | 0.70       | 00:59.1        | 5           | 0     | 8              | 0     | 19               | 60.8974%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 01:13.8        | 7           | 3     | 5              | 0     | 28               | 89.7436%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 02:11.7        | 10          | 4     | 6              | 2     | 38               | 121.7949%       |
| 8      | Jl.Sultan Agung      | 1.20       | 01:10.6        | 0           | 5     | 3              | 2     | 34               | 108.9744%       |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:43.4        | 0           | 2     | 0              | 1     | 31               | 99.3590%        |
| 11     | Jl.Mataram           | 0.85       | 00:54.8        | 4           | 2     | 0              | 5     | 28               | 89.7436%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 14     | Jl.Suroto            | 0.55       | 00:29.4        | 0           | 1     | 0              | 0     | 27               | 86.5385%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:27.5        | 0           | 1     | 3              | 2     | 27               | 86.5385%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 02:32.6        | 0           | 0     | 3              | 1     | 29               | 92.9487%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:33.4        | 0           | 2     | 0              | 0     | 27               | 86.5385%        |
| 19     | Jl.C Simajuntak      | 1.40       | 03:21.5        | 4           | 0     | 1              | 3     | 29               | 92.9487%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:46.8        | 0           | 4     | 0              | 1     | 24               | 76.9231%        |
| 22     | Jl.Kleringan         | 0.50       | 00:52.4        | 0           | 6     | 0              | 2     | 16               | 51.2821%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 16               | 51.2821%        |
| 24     | Jl.Malioboro         | 0.25       | 00:39.6        | 0           | 2     | 0              | 1     | 13               | 41.6667%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 00:48.6        | 2           | 4     | 3              | 0     | 14               | 44.8718%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 14               | 44.8718%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:39.8        | 0           | 0     | 0              | 4     | 10               | 32.0513%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:42.1        | 1           | 3     | 0              | 0     | 8                | 25.6410%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:30.7        | 0           | 0     | 0              | 2     | 6                | 19.2308%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 01:21.6        | 5           | 2     | 3              | 6     | 6                | 19.2308%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:32.1        | 0           | 3     | 0              | 0     | 3                | 9.6154%         |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:36.8        | 0           | 3     | 2              | 0     | 2                | 6.4103%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 2     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 23:45.3        | 41          | 47    | 40             | 34    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 25 Juni 2002 |                       | Berdiri |
| Putaran : IV b         | Waktu Keberangkatan : | 9:52    |
| Bis : Aspada 156       | Waktu Kedatangan :    | 11:41   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:49.6           | 5           | 0     | 2              | 0     | 7                   | 22.4359%           |
| 5      | Jl.Ngeksidono        | 0.70          | 3.61528           | 6           | 0     | 10             | 0     | 23                  | 73.7179%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:37.8           | 8           | 2     | 3              | 5     | 27                  | 86.5385%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 00:35.3           | 6           | 0     | 3              | 4     | 32                  | 102.5641%          |
| 8      | Jl.Sultan Agung      | 1.20          | 00:43.8           | 0           | 0     | 1              | 2     | 31                  | 99.3590%           |
| 9      | Jl.Senopati          | 0.15          | 01:13.5           | 0           | 5     | 2              | 1     | 27                  | 86.5385%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 02:51.8           | 0           | 0     | 0              | 0     | 27                  | 86.5385%           |
| 11     | Jl.Mataram           | 0.85          | 00:00.0           | 0           | 8     | 2              | 6     | 15                  | 48.0769%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 15                  | 48.0769%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:29.6           | 0           | 1     | 0              | 0     | 14                  | 44.8718%           |
| 14     | Jl.Suroto            | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 14                  | 44.8718%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:41.3           | 0           | 0     | 2              | 0     | 16                  | 51.2821%           |
| 16     | Jl.Colombo           | 0.40          | 00:48.6           | 8           | 0     | 0              | 0     | 24                  | 76.9231%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 05:21.4           | 0           | 3     | 5              | 2     | 24                  | 76.9231%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 24                  | 76.9231%           |
| 19     | Jl.C Simajuntak      | 1.40          | 02:36.2           | 1           | 0     | 2              | 4     | 23                  | 73.7179%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 22     | Jl.Kleringan         | 0.50          | 00:40.2           | 0           | 3     | 0              | 2     | 18                  | 57.6923%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 24     | Jl.Malioboro         | 0.25          | 01:16.9           | 0           | 0     | 1              | 6     | 13                  | 41.6667%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 03:15.8           | 8           | 4     | 2              | 0     | 19                  | 60.8974%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:32.5           | 1           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 27     | Jl.Sultan Agung      | 0.90          | 00:00.0           | 0           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 20                  | 64.1026%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 00:55.6           | 0           | 4     | 2              | 3     | 15                  | 48.0769%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:49.8           | 0           | 5     | 0              | 2     | 8                   | 25.6410%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:00.0           | 0           | 0     | 0              | 0     | 8                   | 25.6410%           |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:39.7           | 0           | 0     | 0              | 4     | 4                   | 12.8205%           |
| 34     | Jl.Veteran           | 0.25          | 00:35.6           | 0           | 2     | 0              | 0     | 2                   | 6.4103%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 2     | 0              | 0     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 12:35.0           | 43          | 39    | 37             | 41    |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |
| Tanggal : 25 Juni 2002 |                       | Berdiri |
| Putaran : IV c         | Waktu Keberangkatan : | 13:19   |
| Bis : Kopata 143       | Waktu Kedatangan :    | 15:08   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 2           | 0     | 1              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 3                | 9.6154%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:31.6        | 2           | 0     | 2              | 0     | 7                | 22.4359%        |
| 5      | Jl.Ngeksidono        | 0.70       | 01:42.4        | 2           | 1     | 6              | 0     | 14               | 44.8718%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 00:36.5        | 8           | 0     | 2              | 0     | 24               | 76.9231%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 02:15.3        | 12          | 5     | 1              | 3     | 29               | 92.9487%        |
| 8      | Jl.Sultan Agung      | 1.20       | 01:02.6        | 2           | 0     | 3              | 4     | 30               | 96.1538%        |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 11     | Jl.Mataram           | 0.85       | 02:49.3        | 1           | 4     | 2              | 7     | 22               | 70.5128%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 14     | Jl.Suroto            | 0.55       | 00:28.7        | 0           | 0     | 0              | 2     | 20               | 64.1026%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 20               | 64.1026%        |
| 16     | Jl.Colombo           | 0.40       | 00:31.6        | 8           | 0     | 2              | 0     | 30               | 96.1538%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:35.8        | 0           | 5     | 1              | 2     | 24               | 76.9231%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 19     | Jl.C Simajuntak      | 1.40       | 03:52.3        | 5           | 2     | 3              | 0     | 30               | 96.1538%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:31.6        | 0           | 3     | 0              | 0     | 27               | 86.5385%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 24     | Jl.Malioboro         | 0.25       | 00:59.7        | 0           | 6     | 2              | 4     | 19               | 60.8974%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:16.3        | 3           | 4     | 1              | 0     | 19               | 60.8974%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:48.9        | 0           | 6     | 1              | 2     | 12               | 38.4615%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 12               | 38.4615%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 12               | 38.4615%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:52.4        | 1           | 5     | 0              | 3     | 5                | 16.0256%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:35.7        | 0           | 3     | 0              | 2     | 0                | 0.0000%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:21.6        | 1           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:23.8        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 21:16.1        | 47          | 44    | 27             | 30    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |  |
|------------------------|-----------------------|---------|--|
| Hari : Selasa          | Kapasitas Bis :       | Duduk   |  |
| Tanggal : 25 Juni 2002 |                       | Berdiri |  |
| Putaran : IV d         | Waktu Keberangkatan : | 15:38   |  |
| Bis : Kopata 01        | Waktu Kedatangan :    | 17:14   |  |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:45.8           | 2           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 5      | Jl.Ngeksidono        | 0.70          | 00:59.7           | 6           | 0     | 2              | 0     | 10                  | 32.0513%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:05.8           | 3           | 3     | 4              | 0     | 14                  | 44.8718%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 01:19.3           | 4           | 2     | 0              | 8     | 8                   | 25.6410%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:43.8           | 2           | 0     | 2              | 1     | 11                  | 35.2564%           |
| 9      | Jl.Senopati          | 0.15          | 01:12.5           | 0           | 0     | 0              | 0     | 11                  | 35.2564%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:54.3           | 1           | 0     | 0              | 0     | 12                  | 38.4615%           |
| 11     | Jl.Mataram           | 0.85          | 02:21.5           | 3           | 1     | 2              | 0     | 16                  | 51.2821%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 16                  | 51.2821%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 16                  | 51.2821%           |
| 14     | Jl.Suroto            | 0.55          | 00:28.6           | 0           | 0     | 0              | 1     | 15                  | 48.0769%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 15                  | 48.0769%           |
| 16     | Jl.Colombo           | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 15                  | 48.0769%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 00:00.0           | 0           | 0     | 0              | 0     | 15                  | 48.0769%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 15                  | 48.0769%           |
| 19     | Jl.C Simajuntak      | 1.40          | 01:13.2           | 4           | 0     | 2              | 0     | 21                  | 67.3077%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 21                  | 67.3077%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:55.6           | 0           | 2     | 0              | 0     | 19                  | 60.8974%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 19                  | 60.8974%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 19                  | 60.8974%           |
| 24     | Jl.Malioboro         | 0.25          | 00:58.4           | 0           | 4     | 1              | 5     | 11                  | 35.2564%           |
| 25     | Jl.Jend.A. Yani      | 0.80          | 02:23.4           | 3           | 0     | 2              | 0     | 16                  | 51.2821%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 16                  | 51.2821%           |
| 27     | Jl.Sultan Agung      | 0.90          | 00:31.2           | 0           | 2     | 0              | 0     | 14                  | 44.8718%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 14                  | 44.8718%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 14                  | 44.8718%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:35.4           | 0           | 3     | 1              | 5     | 7                   | 22.4359%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:57.4           | 0           | 4     | 0              | 2     | 1                   | 3.2051%            |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:29.4           | 0           | 1     | 0              | 0     | 0                   | 0.0000%            |
| 34     | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 18:55.3           | 28          | 22    | 16             | 22    |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 09 Juni 2002 |                       | Berdiri |
| Putaran : I a          | Waktu Keberangkatan : | 7:14    |
| Bis : Kopata 115       | Waktu Kedatangan :    | 8:32    |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran           | 0.60       | 00:27.6        | 1           | 0     | 0              | 0     | 1                | 3.2051%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:38.9        | 2           | 1     | 4              | 0     | 6                | 19.2308%        |
| 5      | Jl.Ngeksidono        | 0.70       | 01:44.6        | 3           | 0     | 0              | 0     | 9                | 28.8462%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 02:15.6        | 8           | 4     | 1              | 2     | 12               | 38.4615%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 01:13.2        | 5           | 0     | 7              | 0     | 24               | 76.9231%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:50.6        | 2           | 0     | 0              | 6     | 20               | 64.1026%        |
| 9      | Jl.Senopati          | 0.15       | 00:48.7        | 2           | 1     | 0              | 0     | 21               | 67.3077%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:44.6        | 1           | 2     | 1              | 0     | 21               | 67.3077%        |
| 11     | Jl.Mataram           | 0.85       | 01:10.3        | 0           | 0     | 3              | 8     | 16               | 51.2821%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 16               | 51.2821%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 16               | 51.2821%        |
| 14     | Jl.Suroto            | 0.55       | 00:41.6        | 3           | 1     | 5              | 3     | 20               | 64.1026%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:37.6        | 0           | 0     | 1              | 2     | 19               | 60.8974%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 01:53.2        | 4           | 2     | 7              | 6     | 22               | 70.5128%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:42.8        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 19     | Jl.C Simajuntak      | 1.40       | 00:00.0        | 9           | 1     | 4              | 3     | 31               | 99.3590%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 1     | 30               | 96.1538%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 24     | Jl.Malioboro         | 0.25       | 01:51.6        | 2           | 1     | 1              | 6     | 26               | 83.3333%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:38.6        | 6           | 2     | 8              | 4     | 34               | 108.9744%       |
| 26     | Jl.P.Senopati        | 0.15       | 00:30.8        | 0           | 0     | 1              | 3     | 32               | 102.5641%       |
| 27     | Jl.Sultan Agung      | 0.90       | 00:41.8        | 4           | 3     | 0              | 7     | 26               | 83.3333%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 26               | 83.3333%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:40.3        | 3           | 1     | 1              | 4     | 25               | 80.1282%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:31.6        | 1           | 0     | 0              | 6     | 20               | 64.1026%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:38.7        | 0           | 2     | 1              | 9     | 10               | 32.0513%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 0     | 0              | 3     | 7                | 22.4359%        |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 7                | 22.4359%        |
| 34     | Jl.Veteran           | 0.25       | 00:29.5        | 0           | 2     | 0              | 1     | 4                | 12.8205%        |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 4     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 21:52.2        | 56          | 23    | 45             | 78    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 09 Juni 2002 |                       | Berdiri |
| Putaran : I b          | Waktu Keberangkatan : | 9:00    |
| Bis : Puskopkar 23     | Waktu Kedatangan :    | 10:27   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 2              | 0     | 2                   | 6.4103%            |
| 2      | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:31.5           | 1           | 0     | 0              | 0     | 3                   | 9.6154%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:29.8           | 0           | 0     | 1              | 0     | 4                   | 12.8205%           |
| 5      | Jl.Ngeksidono        | 0.70          | 01:13.7           | 1           | 1     | 3              | 0     | 7                   | 22.4359%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 02:06.5           | 10          | 0     | 4              | 0     | 21                  | 67.3077%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 00:58.7           | 6           | 0     | 2              | 3     | 26                  | 83.3333%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:48.5           | 3           | 0     | 0              | 0     | 29                  | 92.9487%           |
| 9      | Jl.Senopati          | 0.15          | 00:29.8           | 0           | 0     | 0              | 1     | 28                  | 89.7436%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 28                  | 89.7436%           |
| 11     | Jl.Mataram           | 0.85          | 01:15.2           | 0           |       | 0              | 0     | 28                  | 89.7436%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:56.5           | 0           | 0     | 4              | 0     | 32                  | 102.5641%          |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 14     | Jl.Suroto            | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 16     | Jl.Colombo           | 0.40          | 00:21.5           | 0           | 1     | 0              | 0     | 31                  | 99.3590%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 01:15.8           | 1           | 2     | 3              | 1     | 32                  | 102.5641%          |
| 18     | Jl.Kaliurang         | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 32                  | 102.5641%          |
| 19     | Jl.C Simajuntak      | 1.40          | 02:15.8           | 8           | 0     | 2              | 4     | 38                  | 121.7949%          |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 38                  | 121.7949%          |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:00.0           | 0           | 0     | 0              | 0     | 38                  | 121.7949%          |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 38                  | 121.7949%          |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 38                  | 121.7949%          |
| 24     | Jl.Malioboro         | 0.25          | 01:32.5           | 0           | 2     | 1              | 4     | 33                  | 105.7692%          |
| 25     | Jl.Jend.A.Yani       | 0.80          | 02:19.8           | 3           | 8     | 2              | 3     | 27                  | 86.5385%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 27                  | 86.5385%           |
| 27     | Jl.Sultan Agung      | 0.90          | 00:43.2           | 0           | 3     | 2              | 0     | 26                  | 83.3333%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 26                  | 83.3333%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:38.6           | 0           | 0     | 0              | 2     | 24                  | 76.9231%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 00:41.4           | 0           | 2     | 0              | 5     | 17                  | 54.4872%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:40.5           | 0           | 6     | 0              | 3     | 8                   | 25.6410%           |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:39.7           | 0           | 4     | 0              | 3     | 1                   | 3.2051%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 34     | Jl.Veteran           | 0.25          | 00:20.3           | 0           | 1     | 0              | 0     | 0                   | 0.0000%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 20:19.3           | 33          | 30    | 26             | 29    | 0                   | 0.0000%            |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 09 Juni 2002 |                       | Berdiri |
| Putaran : 1 c          | Waktu Keberangkatan : | 13:17   |
| Bis : Puskopkar 114    | Waktu Kedatangan :    | 14:51   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:32.4        | 3           | 0     | 4              | 0     | 7                | 22.4359%        |
| 5      | Jl.Ngeksidono        | 0.70       | 00:28.9        | 0           | 0     | 2              | 0     | 9                | 28.8462%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 01:15.2        | 11          | 0     | 4              | 0     | 24               | 76.9231%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 02:01.3        | 8           | 3     | 6              | 2     | 33               | 105.7692%       |
| 8      | Jl.Sultan Agung      | 1.20       | 00:38.3        | 4           | 0     | 0              | 0     | 37               | 118.5897%       |
| 9      | Jl.Senopati          | 0.15       | 00:30.9        | 0           | 0     | 1              | 0     | 38               | 121.7949%       |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:41.5        | 0           | 0     | 0              | 3     | 35               | 112.1795%       |
| 11     | Jl.Mataram           | 0.85       | 00:44.6        | 2           | 0     | 0              | 0     | 37               | 118.5897%       |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:40.8        | 0           | 7     | 0              | 5     | 25               | 80.1282%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:36.5        | 0           | 2     | 0              | 1     | 22               | 70.5128%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 22               | 70.5128%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:41.3        | 3           | 0     | 6              | 0     | 31               | 99.3590%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 19     | Jl.C Simajuntak      | 1.40       | 01:19.2        | 6           | 2     | 0              | 1     | 34               | 108.9744%       |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:36.5        | 0           | 0     | 0              | 2     | 32               | 102.5641%       |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:27.5        | 0           | 1     | 0              | 0     | 31               | 99.3590%        |
| 22     | Jl.Kleringan         | 0.50       | 00:31.4        | 0           | 3     | 0              | 0     | 28               | 89.7436%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 24     | Jl.Malioboro         | 0.25       | 00:56.8        | 0           | 6     | 0              | 5     | 17               | 54.4872%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 01:23.6        | 2           | 0     | 4              | 1     | 22               | 70.5128%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:34.5        | 6           | 0     | 0              | 4     | 24               | 76.9231%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:41.5        | 0           | 3     | 0              | 5     | 16               | 51.2821%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 16               | 51.2821%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:28.3        | 0           | 0     | 0              | 1     | 15               | 48.0769%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:33.2        | 0           | 4     | 0              | 6     | 5                | 16.0256%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:45.6        | 0           | 0     | 0              | 4     | 1                | 3.2051%         |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 17:09.8        | 45          | 31    | 27             | 41    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 09 Juni 2002 |                       | Berdiri |
| Putaran : I d          | Waktu Keberangkatan : | 14:59   |
| Bis : Puskopkar 82     | Waktu Kedatangan :    | 16:40   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 2           | 0     | 1              | 0     | 3                | 9.6154%         |
| 2      | Jl.Veteran           | 0.60       | 00:39.6        | 0           | 0     | 2              | 0     | 5                | 16.0256%        |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 5      | Jl.Ngeksidono        | 0.70       | 00:44.3        | 4           | 0     | 3              | 0     | 12               | 38.4615%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 00:47.5        | 1           | 1     | 4              | 0     | 16               | 51.2821%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 00:59.8        | 10          | 0     | 8              | 3     | 31               | 99.3590%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:52.6        | 5           | 4     | 2              | 0     | 34               | 108.9744%       |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 11     | Jl.Mataram           | 0.85       | 00:39.4        | 2           | 0     | 1              | 3     | 34               | 108.9744%       |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:56.4        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 34               | 108.9744%       |
| 19     | Jl.C Simajuntak      | 1.40       | 01:15.4        | 4           | 10    | 3              | 1     | 30               | 96.1538%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 30               | 96.1538%        |
| 24     | Jl.Malioboro         | 0.25       | 00:48.7        | 0           | 6     | 0              | 4     | 20               | 64.1026%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:24.6        | 3           | 2     | 5              | 8     | 18               | 57.6923%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 18               | 57.6923%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:36.4        | 5           | 1     | 3              | 5     | 20               | 64.1026%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:29.3        | 1           | 0     | 0              | 0     | 21               | 67.3077%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 21               | 67.3077%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:33.8        | 0           | 1     | 3              | 6     | 17               | 54.4872%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:40.3        | 0           | 4     | 0              | 7     | 6                | 19.2308%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:35.6        | 0           | 0     | 0              | 5     | 1                | 3.2051%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:21.7        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 12:25.6        | 37          | 29    | 35             | 43    |                  |                 |



**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 16 Juni 2002 |                       | Berdiri |
| Putaran : II a         | Waktu Keberangkatan : | 7:53    |
| Bis : Kopata 116       | Waktu Kedatangan :    | 9:25    |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 5           | 0     | 0              | 0     | 5                | 16.0256%        |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:32.8        | 0           | 0     | 2              | 0     | 7                | 22.4359%        |
| 5      | Jl.Ngeksidono        | 0.70       | 03:05.4        | 2           | 1     | 12             | 0     | 20               | 64.1026%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 00:43.1        | 0           | 0     | 3              | 0     | 23               | 73.7179%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 00:46.5        | 7           | 2     | 9              | 0     | 37               | 118.5897%       |
| 8      | Jl.Sultan Agung      | 1.20       | 00:41.2        | 1           | 0     | 2              | 1     | 39               | 125.0000%       |
| 9      | Jl.Senopati          | 0.15       | 00:33.2        | 0           | 1     | 0              | 3     | 35               | 112.1795%       |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 35               | 112.1795%       |
| 11     | Jl.Mataram           | 0.85       | 00:34.6        | 0           | 2     | 0              | 4     | 29               | 92.9487%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 29               | 92.9487%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:38.5        | 0           | 2     | 1              | 0     | 28               | 89.7436%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:45.3        | 0           | 1     | 4              | 7     | 24               | 76.9231%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 19     | Jl.C Simajuntak      | 1.40       | 01:18.7        | 0           | 0     | 1              | 0     | 25               | 80.1282%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:48.6        | 3           | 0     | 0              | 0     | 28               | 89.7436%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 24     | Jl.Malioboro         | 0.25       | 00:45.4        | 0           | 2     | 0              | 4     | 22               | 70.5128%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 05:13.2        | 2           | 0     | 4              | 8     | 20               | 64.1026%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 20               | 64.1026%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:32.6        | 0           | 0     | 0              | 3     | 17               | 54.4872%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 17               | 54.4872%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 17               | 54.4872%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:39.8        | 0           | 2     | 0              | 7     | 8                | 25.6410%        |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:37.4        | 0           | 4     | 0              | 3     | 1                | 3.2051%         |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:22.8        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 18:39.1        | 20          | 18    | 38             | 40    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 16 Juni 2002 |                       | Berdiri |
| Putaran : II b         | Waktu Keberangkatan : | 9:48    |
| Bis : Puskopkar 53     | Waktu Kedatangan :    | 11:16   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:38.2        | 2           | 0     | 1              | 0     | 3                | 9.6154%         |
| 5      | Jl.Ngeksidono        | 0.70       | 00:33.9        | 4           | 0     | 6              | 0     | 13               | 41.6667%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 01:32.8        | 2           | 0     | 8              | 0     | 23               | 73.7179%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 01:11.2        | 5           | 3     | 2              | 4     | 23               | 73.7179%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:56.8        | 1           | 0     | 5              | 2     | 27               | 86.5385%        |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 27               | 86.5385%        |
| 11     | Jl.Mataram           | 0.85       | 0.27986        | 0           | 5     | 0              | 4     | 18               | 57.6923%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:32.4        | 2           | 0     | 0              | 0     | 20               | 64.1026%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:21.5        | 0           | 1     | 0              | 0     | 19               | 60.8974%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:31.5        | 0           | 3     | 0              | 1     | 15               | 48.0769%        |
| 19     | Jl.C Simajuntak      | 1.40       | 01:08.7        | 2           | 0     | 11             | 0     | 28               | 89.7436%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 28               | 89.7436%        |
| 24     | Jl.Malioboro         | 0.25       | 00:52.4        | 0           | 2     | 0              | 10    | 16               | 51.2821%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 02:15.4        | 1           | 4     | 7              | 0     | 20               | 64.1026%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 20               | 64.1026%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:36.8        | 0           | 5     | 0              | 7     | 8                | 25.6410%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:30.7        | 0           | 0     | 0              | 2     | 6                | 19.2308%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 6                | 19.2308%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:00.0        | 0           | 1     | 0              | 4     | 1                | 3.2051%         |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:38.4        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:20.5        | 1           | 0     | 0              | 1     | 0                | 0.0000%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:22.4        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 56:03.6        | 20          | 25    | 40             | 35    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 16 Juni 2002 |                       | Berdiri |
| Putaran : II c         | Waktu Keberangkatan : | 12:15   |
| Bis : Kopata 85        | Waktu Kedatangan :    | 13:54   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 2              | 0     | 2                | 6.4103%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 2                | 6.4103%         |
| 5      | Jl.Ngeksidono        | 0.70       | 00:32.2        | 3           | 0     | 0              | 0     | 5                | 16.0256%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 01:30.8        | 8           | 0     | 4              | 0     | 17               | 54.4872%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 00:43.8        | 4           | 0     | 3              | 1     | 23               | 73.7179%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:38.4        | 5           | 4     | 2              | 0     | 26               | 83.3333%        |
| 9      | Jl.Senopati          | 0.15       | 00:31.3        | 0           | 0     | 0              | 3     | 23               | 73.7179%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 23               | 73.7179%        |
| 11     | Jl.Mataram           | 0.85       | 00:35.6        | 0           | 8     | 0              | 7     | 8                | 25.6410%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 8                | 25.6410%        |
| 19     | Jl.C Simajuntak      | 1.40       | 00:54.3        | 4           | 0     | 7              | 0     | 19               | 60.8974%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 19               | 60.8974%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 01:16.5        | 3           | 0     | 2              | 0     | 24               | 76.9231%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 24     | Jl.Malioboro         | 0.25       | 00:58.4        | 0           | 7     | 0              | 6     | 11               | 35.2564%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 03:01.7        | 0           | 3     | 1              | 4     | 5                | 16.0256%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:30.5        | 2           | 0     | 0              | 3     | 4                | 12.8205%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:21.7        | 0           | 1     | 0              | 3     | 0                | 0.0000%         |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:20.9        | 1           | 0     | 0              | 0     | 1                | 3.2051%         |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 11:56.1        | 30          | 24    | 21             | 27    |                  |                 |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 16 Juni 2002 |                       | Berdiri |
| Putaran : II d         | Waktu Keberangkatan : | 14:34   |
| Bis : Kopata 89        | Waktu Kedatangan :    | 16:25   |

| No            | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|----------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                      |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
| 1             | Terminal             |               | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 2             | Jl.Veteran           | 0.60          | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 3             | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 4             | Jl.P.Kemerdekaan     | 0.50          | 00:41.6           | 2           | 0         | 3              | 0         | 5                   | 16.0256%           |
| 5             | Jl.Ngeksidono        | 0.70          | 00:59.3           | 4           | 0         | 5              | 0         | 14                  | 44.8718%           |
| 6             | Jl.Gedong Kuning     | 2.00          | 02:43.8           | 0           | 2         | 3              | 0         | 15                  | 48.0769%           |
| 7             | Jl.Kusuma Negara     | 2.40          | 00:38.7           | 8           | 0         | 6              | 2         | 27                  | 86.5385%           |
| 8             | Jl.Sultan Agung      | 1.20          | 00:34.2           | 2           | 3         | 0              | 0         | 26                  | 83.3333%           |
| 9             | Jl.Senopati          | 0.15          | 00:23.5           | 0           | 1         | 0              | 0         | 25                  | 80.1282%           |
| 10            | Jl.Mayor Suryotomo   | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 25                  | 80.1282%           |
| 11            | Jl.Mataram           | 0.85          | 00:31.7           | 0           | 5         | 0              | 3         | 17                  | 54.4872%           |
| 12            | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 13            | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 14            | Jl.Suroto            | 0.55          | 00:00.0           | 0           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 15            | Jl.Cik Di Tiro       | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 16            | Jl.Colombo           | 0.40          | 00:38.4           | 0           | 3         | 0              | 4         | 10                  | 32.0513%           |
| 17            | Jl.Lingkar UGM Penuh | 3.00          | 00:00.0           | 0           | 0         | 0              | 0         | 10                  | 32.0513%           |
| 18            | Jl.Kaliurang         | 0.40          | 00:42.6           | 0           | 0         | 0              | 3         | 7                   | 22.4359%           |
| 19            | Jl.C Simajuntak      | 1.40          | 01:36.7           | 5           | 2         | 6              | 0         | 16                  | 51.2821%           |
| 20            | Jl.Jend.Sudirman     | 0.55          | 00:20.1           | 0           | 0         | 0              | 1         | 15                  | 48.0769%           |
| 21            | Jl.P Mangkubumi      | 0.85          | 00:23.8           | 0           | 3         | 0              | 0         | 12                  | 38.4615%           |
| 22            | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 23            | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 24            | Jl.Malioboro         | 0.25          | 00:45.7           | 0           | 6         | 0              | 4         | 2                   | 6.4103%            |
| 25            | Jl.Jend.A.Yani       | 0.80          | 01:36.8           | 3           | 0         | 5              | 0         | 10                  | 32.0513%           |
| 26            | Jl.P.Senopati        | 0.15          | 00:32.7           | 0           | 0         | 2              | 0         | 12                  | 38.4615%           |
| 27            | Jl.Sultan Agung      | 0.90          | 00:34.9           | 0           | 3         | 0              | 6         | 3                   | 9.6154%            |
| 28            | Jl.Suryopranoto      | 0.40          | 00:24.6           | 0           | 0         | 0              | 2         | 1                   | 3.2051%            |
| 29            | Jl.Sukonandi         | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 1                   | 3.2051%            |
| 30            | Jl.Kusuma Negara     | 2.25          | 00:00.0           | 0           | 0         | 2              | 0         | 3                   | 9.6154%            |
| 31            | Jl.Gedong Kuning     | 2.10          | 00:30.2           | 0           | 1         | 0              | 2         | 0                   | 0.0000%            |
| 32            | Jl.Ngeksigondo       | 0.70          | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 33            | Jl.P.Kemerdekan      | 1.15          | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 34            | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| 35            | Terminal             |               | 00:00.0           | 0           | 0         | 0              | 0         | 0                   | 0.0000%            |
| <b>Jumlah</b> |                      | <b>28.6</b>   | <b>14:39.3</b>    | <b>24</b>   | <b>29</b> | <b>32</b>      | <b>27</b> |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 23 Juni 2002 |                       | Berdiri |
| Putaran : III a        | Waktu Keberangkatan : | 8:16    |
| Bis : Kopata 59        | Waktu Kedatangan :    | 9:45    |

| No            | Ruas Jalan           | Jarak (Km)  | Waktu Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah Penumpang | Load Factor (%) |
|---------------|----------------------|-------------|----------------|-------------|-----------|----------------|-----------|------------------|-----------------|
|               |                      |             |                | Naik        | Turun     | Naik           | Turun     |                  |                 |
| 1             | Terminal             |             | 00:00.0        | 0           | 0         | 0              | 0         |                  | 0.0000%         |
| 2             | Jl.Veteran           | 0.60        | 00:32.6        | 1           | 0         | 1              | 0         | 2                | 6.4103%         |
| 3             | Jl. Warung Boto      | 0.35        | 00:28.4        | 0           | 0         | 1              | 0         | 3                | 9.6154%         |
| 4             | Jl.P.Kemerdekaan     | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 3                | 9.6154%         |
| 5             | Jl.Ngeksidono        | 0.70        | 00:45.7        | 4           | 0         | 2              | 0         | 9                | 28.8462%        |
| 6             | Jl.Gedong Kuning     | 2.00        | 02:26.8        | 2           | 0         | 9              | 0         | 20               | 64.1026%        |
| 7             | Jl.Kusuma Negara     | 2.40        | 01:25.6        | 2           | 3         | 13             | 4         | 28               | 89.7436%        |
| 8             | Jl.Sultan Agung      | 1.20        | 00:56.7        | 2           | 4         | 0              | 0         | 26               | 83.3333%        |
| 9             | Jl.Senopati          | 0.15        | 00:43.8        | 0           | 0         | 0              | 3         | 23               | 73.7179%        |
| 10            | Jl.Mayor Suryotomo   | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 23               | 73.7179%        |
| 11            | Jl.Mataram           | 0.85        | 03:12.6        | 1           | 5         | 0              | 4         | 15               | 48.0769%        |
| 12            | Jl.Abu Bakar Ali     | 0.75        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 13            | Jl.Kom Yos Sudarso   | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 14            | Jl.Suroto            | 0.55        | 00:51.4        | 0           | 1         | 0              | 2         | 12               | 38.4615%        |
| 15            | Jl.Cik Di Tiro       | 0.80        | 00:38.4        | 0           | 3         | 0              | 0         | 9                | 28.8462%        |
| 16            | Jl.Colombo           | 0.40        | 00:57.9        | 0           | 0         | 6              | 0         | 15               | 48.0769%        |
| 17            | Jl.Lingkar UGM Penuh | 3.00        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 18            | Jl.Kaliurang         | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 19            | Jl.C Simajuntak      | 1.40        | 04:21.4        | 0           | 0         | 3              | 2         | 16               | 51.2821%        |
| 20            | Jl.Jend.Sudirman     | 0.55        | 00:00.0        | 0           | 0         | 0              | 0         | 16               | 51.2821%        |
| 21            | Jl.P Mangkubumi      | 0.85        | 00:25.8        | 0           | 1         | 0              | 0         | 15               | 48.0769%        |
| 22            | Jl.Kleringan         | 0.50        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 23            | Jl.Taman Garuda      | 0.20        | 00:00.0        | 0           | 0         | 0              | 0         | 15               | 48.0769%        |
| 24            | Jl.Malioboro         | 0.25        | 01:21.4        | 0           | 2         | 0              | 3         | 10               | 32.0513%        |
| 25            | Jl.Jend.A.Yani       | 0.80        | 02:21.5        | 5           | 4         | 0              | 3         | 8                | 25.6410%        |
| 26            | Jl.P.Senopati        | 0.15        | 00:00.0        | 0           | 0         | 0              | 0         | 8                | 25.6410%        |
| 27            | Jl.Sultan Agung      | 0.90        | 00:54.7        | 0           | 2         | 0              | 1         | 5                | 16.0256%        |
| 28            | Jl.Suryopranoto      | 0.40        | 00:00.0        | 0           | 0         | 0              | 0         | 5                | 16.0256%        |
| 29            | Jl.Sukonandi         | 0.80        | 00:00.0        | 0           | 0         | 0              | 0         | 5                | 16.0256%        |
| 30            | Jl.Kusuma Negara     | 2.25        | 00:58.4        | 0           | 3         | 1              | 1         | 2                | 6.4103%         |
| 31            | Jl.Gedong Kuning     | 2.10        | 00:32.4        | 0           | 2         | 0              | 0         | 0                | 0.0000%         |
| 32            | Jl.Ngeksigondo       | 0.70        | 00:20.6        | 1           | 0         | 0              | 0         | 1                | 3.2051%         |
| 33            | Jl.P.Kemerdekan      | 1.15        | 00:00.0        | 0           | 0         | 0              | 0         | 1                | 3.2051%         |
| 34            | Jl.Veteran           | 0.25        | 00:22.4        | 0           | 0         | 0              | 1         | 0                | 0.0000%         |
| 35            | Terminal             |             | 00:00.0        | 0           | 0         | 0              | 0         | 0                | 0.0000%         |
| <b>Jumlah</b> |                      | <b>28.6</b> | <b>24:38.5</b> | <b>18</b>   | <b>30</b> | <b>36</b>      | <b>24</b> |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 23 Juni 2002 |                       | Berdiri |
| Putaran : III b        | Waktu Keberangkatan : | 10:03   |
| Bis : Puskopkar 111    | Waktu Kedatangan :    | 11:21   |

| No     | Ruas Jalan           | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|----------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                      |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal             |            | 00:00.0        | 0           | 0     | 1              | 0     | 1                | 3.2051%         |
| 2      | Jl.Veteran           | 0.60       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 3      | Jl. Warung Boto      | 0.35       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 4      | Jl.P.Kemerdekaan     | 0.50       | 00:31.5        | 1           | 0     | 0              | 0     | 2                | 6.4103%         |
| 5      | Jl.Ngeksidono        | 0.70       | 00:46.4        | 3           | 0     | 2              | 0     | 7                | 22.4359%        |
| 6      | Jl.Gedong Kuning     | 2.00       | 02:18.7        | 0           | 0     | 1              | 0     | 8                | 25.6410%        |
| 7      | Jl.Kusuma Negara     | 2.40       | 00:59.2        | 5           | 2     | 6              | 0     | 17               | 54.4872%        |
| 8      | Jl.Sultan Agung      | 1.20       | 00:52.7        | 8           | 0     | 0              | 4     | 21               | 67.3077%        |
| 9      | Jl.Senopati          | 0.15       | 00:00.0        | 0           | 0     | 0              | 0     | 21               | 67.3077%        |
| 10     | Jl.Mayor Suryotomo   | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 21               | 67.3077%        |
| 11     | Jl.Mataram           | 0.85       | 03:12.7        | 6           | 3     | 5              | 2     | 27               | 86.5385%        |
| 12     | Jl.Abu Bakar Ali     | 0.75       | 00:21.6        | 0           | 1     | 0              | 0     | 26               | 83.3333%        |
| 13     | Jl.Kom Yos Sudarso   | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 26               | 83.3333%        |
| 14     | Jl.Suroto            | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 26               | 83.3333%        |
| 15     | Jl.Cik Di Tiro       | 0.80       | 00:34.6        | 3           | 0     | 2              | 0     | 31               | 99.3590%        |
| 16     | Jl.Colombo           | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 17     | Jl.Lingkar UGM Penuh | 3.00       | 00:00.0        | 0           | 0     | 0              | 0     | 31               | 99.3590%        |
| 18     | Jl.Kaliurang         | 0.40       | 00:42.7        | 0           | 4     | 0              | 5     | 22               | 70.5128%        |
| 19     | Jl.C Simajuntak      | 1.40       | 01:38.1        | 3           | 0     | 1              | 0     | 26               | 83.3333%        |
| 20     | Jl.Jend.Sudirman     | 0.55       | 00:00.0        | 0           | 0     | 0              | 0     | 26               | 83.3333%        |
| 21     | Jl.P Mangkubumi      | 0.85       | 00:29.4        | 0           | 0     | 0              | 2     | 24               | 76.9231%        |
| 22     | Jl.Kleringan         | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 23     | Jl.Taman Garuda      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 24               | 76.9231%        |
| 24     | Jl.Malioboro         | 0.25       | 01:25.8        | 0           | 5     | 1              | 4     | 16               | 51.2821%        |
| 25     | Jl.Jend.A.Yani       | 0.80       | 04:12.3        | 5           | 3     | 2              | 4     | 16               | 51.2821%        |
| 26     | Jl.P.Senopati        | 0.15       | 00:35.4        | 0           | 2     | 0              | 0     | 14               | 44.8718%        |
| 27     | Jl.Sultan Agung      | 0.90       | 00:41.0        | 0           | 0     | 0              | 3     | 11               | 35.2564%        |
| 28     | Jl.Suryopranoto      | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 11               | 35.2564%        |
| 29     | Jl.Sukonandi         | 0.80       | 00:23.8        | 0           | 1     | 0              | 0     | 10               | 32.0513%        |
| 30     | Jl.Kusuma Negara     | 2.25       | 00:59.4        | 5           | 6     | 2              | 8     | 3                | 9.6154%         |
| 31     | Jl.Gedong Kuning     | 2.10       | 00:48.5        | 5           | 0     | 0              | 4     | 4                | 12.8205%        |
| 32     | Jl.Ngeksigondo       | 0.70       | 00:43.6        | 0           | 2     | 0              | 1     | 1                | 3.2051%         |
| 33     | Jl.P.Kemerdekan      | 1.15       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl.Veteran           | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal             |            | 00:00.0        | 0           | 0     | 0              | 1     | 0                | 0.0000%         |
| Jumlah |                      | 28.6       | 19:04.7        | 44          | 29    | 23             | 38    |                  |                 |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 23 Juni 2002 |                       | Berdiri |
| Putaran : III c        | Waktu Keberangkatan : | 13:11   |
| Bis : Kopata 17        | Waktu Kedatangan :    | 14:46   |

| No     | Ruas Jalan           | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah<br>Penumpang | Load Factor<br>(%) |
|--------|----------------------|---------------|-------------------|-------------|-------|----------------|-------|---------------------|--------------------|
|        |                      |               |                   | Naik        | Turun | Naik           | Turun |                     |                    |
| 1      | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 0     | 0                   | 0.0000%            |
| 2      | Jl.Veteran           | 0.60          | 00:34.7           | 1           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 3      | Jl. Warung Boto      | 0.35          | 00:00.0           | 0           | 0     | 0              | 0     | 1                   | 3.2051%            |
| 4      | Jl.P.Kemerdekaan     | 0.50          | 00:29.6           | 0           | 0     | 3              | 0     | 4                   | 12.8205%           |
| 5      | Jl.Ngeksidono        | 0.70          | 01:22.3           | 2           | 1     | 1              | 0     | 6                   | 19.2308%           |
| 6      | Jl.Gedong Kuning     | 2.00          | 01:35.4           | 8           | 1     | 3              | 4     | 12                  | 38.4615%           |
| 7      | Jl.Kusuma Negara     | 2.40          | 00:47.9           | 10          | 0     | 8              | 2     | 28                  | 89.7436%           |
| 8      | Jl.Sultan Agung      | 1.20          | 00:38.7           | 0           | 3     | 1              | 0     | 26                  | 83.3333%           |
| 9      | Jl.Senopati          | 0.15          | 00:00.0           | 0           | 0     | 0              | 0     | 26                  | 83.3333%           |
| 10     | Jl.Mayor Suryotomo   | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 26                  | 83.3333%           |
| 11     | Jl.Mataram           | 0.85          | 00:55.7           | 2           | 7     | 3              | 6     | 18                  | 57.6923%           |
| 12     | Jl.Abu Bakar Ali     | 0.75          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 13     | Jl.Kom Yos Sudarso   | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 14     | Jl.Suroto            | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 15     | Jl.Cik Di Tiro       | 0.80          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 16     | Jl.Colombo           | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 18                  | 57.6923%           |
| 17     | Jl.Lingkar UGM Penuh | 3.00          | 01:28.6           | 0           | 2     | 1              | 0     | 17                  | 54.4872%           |
| 18     | Jl.Kaliurang         | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 17                  | 54.4872%           |
| 19     | Jl.C Simajuntak      | 1.40          | 02:19.7           | 5           | 0     | 4              | 0     | 26                  | 83.3333%           |
| 20     | Jl.Jend.Sudirman     | 0.55          | 00:00.0           | 0           | 0     | 0              | 0     | 26                  | 83.3333%           |
| 21     | Jl.P Mangkubumi      | 0.85          | 00:45.2           | 0           | 1     | 0              | 2     | 23                  | 73.7179%           |
| 22     | Jl.Kleringan         | 0.50          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 23     | Jl.Taman Garuda      | 0.20          | 00:00.0           | 0           | 0     | 0              | 0     | 23                  | 73.7179%           |
| 24     | Jl.Malioboro         | 0.25          | 00:57.9           | 1           | 4     | 2              | 3     | 19                  | 60.8974%           |
| 25     | Jl.Jend.A.Yani       | 0.80          | 03:25.7           | 1           | 3     | 5              | 2     | 20                  | 64.1026%           |
| 26     | Jl.P.Senopati        | 0.15          | 00:33.8           | 0           | 3     | 0              | 0     | 17                  | 54.4872%           |
| 27     | Jl.Sultan Agung      | 0.90          | 00:41.5           | 0           | 0     | 0              | 4     | 13                  | 41.6667%           |
| 28     | Jl.Suryopranoto      | 0.40          | 00:00.0           | 0           | 0     | 0              | 0     | 13                  | 41.6667%           |
| 29     | Jl.Sukonandi         | 0.80          | 00:31.5           | 0           | 2     | 0              | 0     | 11                  | 35.2564%           |
| 30     | Jl.Kusuma Negara     | 2.25          | 01:21.8           | 6           | 4     | 2              | 3     | 12                  | 38.4615%           |
| 31     | Jl.Gedong Kuning     | 2.10          | 00:48.6           | 0           | 5     | 0              | 6     | 1                   | 3.2051%            |
| 32     | Jl.Ngeksigondo       | 0.70          | 00:50.6           | 2           | 0     | 0              | 1     | 2                   | 6.4103%            |
| 33     | Jl.P.Kemerdekan      | 1.15          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 34     | Jl.Veteran           | 0.25          | 00:00.0           | 0           | 0     | 0              | 0     | 2                   | 6.4103%            |
| 35     | Terminal             |               | 00:00.0           | 0           | 0     | 0              | 2     | 0                   | 0.0000%            |
| Jumlah |                      | 28.6          | 20:09.2           | 38          | 36    | 33             | 35    |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 30 Juni 2002 |                       | Berdiri |
| Putaran : IV a         | Waktu Keberangkatan : | 7:52    |
| Bis : Puskopkar 52     | Waktu Kedatangan :    | 9:26    |

| No            | Ruas Jalan               | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|--------------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                          |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
| 1             | Terminal                 |               | 00:00.0           | 2           | 0         | 0              | 0         | 2                   | 6.4103%            |
| 2             | Jl. Veteran              | 0.60          | 00:00.0           | 0           | 0         | 0              | 0         | 2                   | 6.4103%            |
| 3             | Jl. Warung boto          | 0.35          | 00:00.0           | 0           | 0         | 0              | 0         | 2                   | 6.4103%            |
| 4             | Jl. Perintis kemerdekaan | 0.50          | 00:00.0           | 0           | 0         | 2              | 0         | 4                   | 12.8205%           |
| 5             | Jl. Ngeksidono           | 0.70          | 00:03.5           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
| 6             | Jl. Gedong Kuning        | 2.00          | 02:59.3           | 6           | 0         | 3              | 1         | 12                  | 38.4615%           |
| 7             | Jl. Kusuma Negara        | 2.40          | 00:32.4           | 1           | 3         | 3              | 0         | 13                  | 41.6667%           |
| 8             | Jl. Sultan Agung         | 1.20          | 00:15.3           | 0           | 0         | 0              | 1         | 12                  | 38.4615%           |
| 9             | Jl. Senopati             | 0.15          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 10            | Jl. Mayor Suryotomo      | 0.50          | 00:06.8           | 1           | 2         | 0              | 2         | 9                   | 28.8462%           |
| 11            | Jl. Mataram              | 0.85          | 00:19.3           | 0           | 2         | 2              | 1         | 8                   | 25.6410%           |
| 12            | Jl. Abubakar Ali         | 0.75          | 00:12.0           | 2           | 1         | 4              | 1         | 12                  | 38.4615%           |
| 13            | Jl. Kom Yos Sudarso      | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 14            | Jl. Suroto               | 0.55          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 15            | Jl. Cik Di Tiro          | 0.80          | 00:08.1           | 0           | 3         | 0              | 0         | 9                   | 28.8462%           |
| 16            | Jl. Colombo              | 0.40          | 00:11.4           | 0           | 1         | 0              | 0         | 8                   | 25.6410%           |
| 17            | Jl. Lingkar UGM Penuh    | 3.00          | 00:42.8           | 7           | 0         | 1              | 4         | 12                  | 38.4615%           |
| 18            | Jl. Kaliurang            | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 12                  | 38.4615%           |
| 19            | Jl. C Simanjuntak        | 1.40          | 03:09.2           | 5           | 0         | 3              | 0         | 20                  | 64.1026%           |
| 20            | Jl. Jend. Sudirman       | 0.55          | 00:03.3           | 0           | 0         | 1              | 0         | 21                  | 67.3077%           |
| 21            | Jl. P Mangkubumi         | 0.85          | 00:00.0           | 0           | 0         | 0              | 3         | 18                  | 57.6923%           |
| 22            | Jl. Kleringan            | 0.50          | 00:04.7           | 0           | 0         | 0              | 0         | 18                  | 57.6923%           |
| 23            | Jl. Taman Garuda         | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 18                  | 57.6923%           |
| 24            | Jl. Malioboro            | 0.25          | 02:46.1           | 3           | 3         | 1              | 2         | 17                  | 54.4872%           |
| 25            | Jl. Jend. A. Yani        | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 26            | Jl. P. Senopati          | 0.15          | 01:39.1           | 0           | 1         | 2              | 0         | 18                  | 57.6923%           |
| 27            | Jl. Sultan Agung         | 0.90          | 00:28.3           | 3           | 2         | 3              | 1         | 21                  | 67.3077%           |
| 28            | Jl. Suryopranoto         | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 21                  | 67.3077%           |
| 29            | Jl. Sukonandi            | 0.80          | 00:01.1           | 0           | 0         | 0              | 1         | 20                  | 64.1026%           |
| 30            | Jl. Kusuma Negara        | 2.25          | 02:10.7           | 1           | 6         | 0              | 1         | 14                  | 44.8718%           |
| 31            | Jl. Gedong Kuning        | 2.10          | 00:22.8           | 4           | 4         | 0              | 6         | 8                   | 25.6410%           |
| 32            | Jl. Ngeksidono           | 0.70          | 00:00.0           | 0           | 0         | 0              | 0         | 8                   | 25.6410%           |
| 33            | Jl. P. Kemerdekaan       | 1.15          | 02:24.9           | 0           | 3         | 0              | 0         | 5                   | 16.0256%           |
| 34            | Jl. Veteran              | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 5                   | 16.0256%           |
| 35            | Terminal                 |               | 00:00.0           | 0           | 5         | 0              | 0         | 0                   | 0.0000%            |
| <b>JUMLAH</b> |                          | <b>28.6</b>   | <b>18:40.9</b>    | <b>35</b>   | <b>36</b> | <b>25</b>      | <b>24</b> |                     |                    |



**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 30 Juni 2002 |                       | Berdiri |
| Putaran : IV b         | Waktu Keberangkatan : | 9:45    |
| Bis : Kopata 46        | Waktu Kedatangan :    | 11:32   |

| No            | Ruas Jalan               | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|--------------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                          |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
| 1             | Terminal                 |               | 00:00.0           | 5           | 0         | 0              | 5         | 5                   | 16.0256%           |
| 2             | Jl. Veteran              | 0.60          | 00:03.1           | 3           | 0         | 0              | 0         | 8                   | 25.6410%           |
| 3             | Jl. Warung boto          | 0.35          | 00:00.0           | 0           | 0         | 0              | 0         | 8                   | 25.6410%           |
| 4             | Jl. Perintis kemerdekaan | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 8                   | 25.6410%           |
| 5             | Jl. Ngeksidono           | 0.70          | 00:11.6           | 1           | 0         | 3              | 0         | 12                  | 38.4615%           |
| 6             | Jl. Gedong Kuning        | 2.00          | 01:41.8           | 4           | 0         | 10             | 2         | 24                  | 76.9231%           |
| 7             | Jl. Kusuma Negara        | 2.40          | 02:11.8           | 2           | 1         | 1              | 3         | 23                  | 73.7179%           |
| 8             | Jl. Sultan Agung         | 1.20          | 00:11.9           | 3           | 1         | 0              | 0         | 25                  | 80.1282%           |
| 9             | Jl. Senopati             | 0.15          | 00:27.3           | 0           | 2         | 0              | 0         | 23                  | 73.7179%           |
| 10            | Jl. Mayor Suryotomo      | 0.50          | 00:21.9           | 0           | 8         | 0              | 1         | 14                  | 44.8718%           |
| 11            | Jl. Mataram              | 0.85          | 00:36.4           | 2           | 2         | 3              | 6         | 11                  | 35.2564%           |
| 12            | Jl. Abubakar Ali         | 0.75          | 00:00.0           | 0           | 0         | 0              | 0         | 11                  | 35.2564%           |
| 13            | Jl. Kom Yos Sudarso      | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 11                  | 35.2564%           |
| 14            | Jl. Suroto               | 0.55          | 00:44.5           | 0           | 4         | 0              | 0         | 7                   | 22.4359%           |
| 15            | Jl. Cik Di Tiro          | 0.80          | 00:21.7           | 2           | 1         | 0              | 0         | 8                   | 25.6410%           |
| 16            | Jl. Colombo              | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 8                   | 25.6410%           |
| 17            | Jl. Lingkar UGM Penuh    | 3.00          | 01:05.8           | 0           | 1         | 0              | 0         | 7                   | 22.4359%           |
| 18            | Jl. Kaliurang            | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 7                   | 22.4359%           |
| 19            | Jl. C Simanjuntak        | 1.40          | 07:07.1           | 8           | 0         | 15             | 9         | 21                  | 67.3077%           |
| 20            | Jl. Jend. Sudirman       | 0.55          | 00:27.0           | 4           | 0         | 0              | 6         | 19                  | 60.8974%           |
| 21            | Jl. P Mangkubumi         | 0.85          | 00:15.7           | 3           | 1         | 1              | 0         | 22                  | 70.5128%           |
| 22            | Jl. Kleringan            | 0.50          | 00:00.0           | 0           | 0         | 0              | 0         | 22                  | 70.5128%           |
| 23            | Jl. Taman Garuda         | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 22                  | 70.5128%           |
| 24            | Jl. Malioboro            | 0.25          | 03:45.1           | 9           | 12        | 1              | 1         | 19                  | 60.8974%           |
| 25            | Jl. Jend. A. Yani        | 0.80          | 00:00.0           | 0           | 0         | 1              | 4         | 16                  | 51.2821%           |
| 26            | Jl. P. Senopati          | 0.15          | 01:45.8           | 8           | 0         | 4              | 0         | 28                  | 89.7436%           |
| 27            | Jl. Sultan Agung         | 0.90          | 02:03.6           | 1           | 2         | 1              | 1         | 27                  | 86.5385%           |
| 28            | Jl. Suryopranoto         | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 27                  | 86.5385%           |
| 29            | Jl. Sukonandi            | 0.80          | 00:04.2           | 2           | 0         | 0              | 0         | 29                  | 92.9487%           |
| 30            | Jl. Kusuma Negara        | 2.25          | 03:01.2           | 6           | 13        | 1              | 9         | 14                  | 44.8718%           |
| 31            | Jl. Gedong Kuning        | 2.10          | 00:47.3           | 0           | 8         | 0              | 1         | 5                   | 16.0256%           |
| 32            | Jl. Ngeksidono           | 0.70          | 00:29.0           | 1           | 2         | 0              | 0         | 4                   | 12.8205%           |
| 33            | Jl. P. Kemerdekaan       | 1.15          | 00:18.5           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
| 34            | Jl. Veteran              | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
| 35            | Terminal                 |               | 00:00.0           | 0           | 4         | 0              | 0         | 0                   | 0.0000%            |
| <b>JUMLAH</b> |                          | <b>28.6</b>   | <b>28:02.2</b>    | <b>64</b>   | <b>62</b> | <b>41</b>      | <b>48</b> |                     |                    |

**Rekapitulasi Hasil Survei  
Jumlah Penumpang dan Waktu Perjalanan  
Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 30 Juni 2002 |                       | Berdiri |
| Putaran : IV c         | Waktu Keberangkatan : | 12:02   |
| Bis : Puskopkar 23     | Waktu Kedatangan :    | 13:46   |

| No            | Ruas Jalan               | Jarak<br>(Km) | Waktu<br>Berhenti | Pintu Depan |           | Pintu Belakang |           | Jumlah<br>Penumpang | Load Factor<br>(%) |
|---------------|--------------------------|---------------|-------------------|-------------|-----------|----------------|-----------|---------------------|--------------------|
|               |                          |               |                   | Naik        | Turun     | Naik           | Turun     |                     |                    |
| 1             | Terminal                 |               | 00:00.0           | 1           | 0         | 0              | 0         | 1                   | 3.2051%            |
| 2             | Jl. Veteran              | 0.60          | 00:00.0           | 0           | 0         | 0              | 0         | 1                   | 3.2051%            |
| 3             | Jl. Warung boto          | 0.35          | 00:02.8           | 0           | 0         | 2              | 0         | 3                   | 9.6154%            |
| 4             | Jl. Perintis kemerdekaan | 0.50          | 00:02.8           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
| 5             | Jl. Ngeksidono           | 0.70          | 00:00.0           | 0           | 0         | 0              | 0         | 3                   | 9.6154%            |
| 6             | Jl. Gedong Kuning        | 2.00          | 04:17.2           | 2           | 0         | 3              | 0         | 8                   | 25.6410%           |
| 7             | Jl. Kusuma Negara        | 2.40          | 00:34.0           | 10          | 1         | 0              | 0         | 17                  | 54.4872%           |
| 8             | Jl. Sultan Agung         | 1.20          | 00:05.3           | 0           | 0         | 1              | 2         | 16                  | 51.2821%           |
| 9             | Jl. Senopati             | 0.15          | 00:41.6           | 1           | 0         | 0              | 0         | 17                  | 54.4872%           |
| 10            | Jl. Mayor Suryotomo      | 0.50          | 00:22.2           | 3           | 0         | 2              | 2         | 20                  | 64.1026%           |
| 11            | Jl. Mataram              | 0.85          | 03:44.2           | 4           | 6         | 3              | 3         | 18                  | 57.6923%           |
| 12            | Jl. Abubakar Ali         | 0.75          | 00:00.0           | 0           | 0         | 0              | 0         | 18                  | 57.6923%           |
| 13            | Jl. Kom Yos Sudarso      | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 18                  | 57.6923%           |
| 14            | Jl. Suroto               | 0.55          | 00:19.1           | 0           | 2         | 0              | 1         | 15                  | 48.0769%           |
| 15            | Jl. Cik Di Tiro          | 0.80          | 00:09.6           | 0           | 6         | 0              | 1         | 8                   | 25.6410%           |
| 16            | Jl. Colombo              | 0.40          | 00:04.2           | 0           | 0         | 0              | 1         | 7                   | 22.4359%           |
| 17            | Jl. Lingkar UGM Penuh    | 3.00          | 02:23.3           | 3           | 3         | 2              | 3         | 6                   | 19.2308%           |
| 18            | Jl. Kaliurang            | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 6                   | 19.2308%           |
| 19            | Jl. C Simanjuntak        | 1.40          | 02:35.1           | 1           | 0         | 4              | 0         | 11                  | 35.2564%           |
| 20            | Jl. Jend. Sudirman       | 0.55          | 00:02.7           | 0           | 0         | 0              | 1         | 10                  | 32.0513%           |
| 21            | Jl. P Mangkubumi         | 0.85          | 00:13.5           | 2           | 0         | 0              | 2         | 10                  | 32.0513%           |
| 22            | Jl. Kleringan            | 0.50          | 00:02.8           | 1           | 0         | 0              | 0         | 11                  | 35.2564%           |
| 23            | Jl. Taman Garuda         | 0.20          | 00:00.0           | 0           | 0         | 0              | 0         | 11                  | 35.2564%           |
| 24            | Jl. Malioboro            | 0.25          | 00:07.3           | 3           | 1         | 0              | 1         | 12                  | 38.4615%           |
| 25            | Jl. Jend. A. Yani        | 0.80          | 02:18.8           | 9           | 3         | 5              | 0         | 23                  | 73.7179%           |
| 26            | Jl. P. Senopati          | 0.15          | 00:00.0           | 0           | 0         | 0              | 0         | 23                  | 73.7179%           |
| 27            | Jl. Sultan Agung         | 0.90          | 00:28.0           | 0           | 0         | 0              | 0         | 23                  | 73.7179%           |
| 28            | Jl. Suryopranoto         | 0.40          | 00:00.0           | 0           | 0         | 0              | 0         | 23                  | 73.7179%           |
| 29            | Jl. Sukonandi            | 0.80          | 00:00.0           | 0           | 0         | 0              | 0         | 23                  | 73.7179%           |
| 30            | Jl. Kusuma Negara        | 2.25          | 01:05.5           | 3           | 11        | 3              | 6         | 12                  | 38.4615%           |
| 31            | Jl. Gedong Kuning        | 2.10          | 01:12.9           | 1           | 5         | 4              | 4         | 8                   | 25.6410%           |
| 32            | Jl. Ngeksidono           | 0.70          | 00:01.7           | 0           | 1         | 0              | 0         | 7                   | 22.4359%           |
| 33            | Jl. P. Kemerdekaan       | 1.15          | 00:39.7           | 0           | 1         | 0              | 2         | 4                   | 12.8205%           |
| 34            | Jl. Veteran              | 0.25          | 00:00.0           | 0           | 0         | 0              | 0         | 4                   | 12.8205%           |
| 35            | Terminal                 |               | 00:00.0           | 0           | 4         | 0              | 0         | 0                   | 0.0000%            |
| <b>JUMLAH</b> |                          | <b>28.6</b>   | <b>21:34.4</b>    | <b>44</b>   | <b>44</b> | <b>29</b>      | <b>29</b> |                     |                    |

**Rekapitulasi Hasil Survei**  
**Jumlah Penumpang dan Waktu Perjalanan**  
**Angkutan Umum Bis Kota Jalur 04 Kota Jogjakarta**

|                        |                       |         |
|------------------------|-----------------------|---------|
| Hari : Minggu          | Kapasitas Bis :       | Duduk   |
| Tanggal : 30 Juni 2002 |                       | Berdiri |
| Putaran : IV d         | Waktu Keberangkatan : | 14:24   |
| Bis : Kopata 51        | Waktu Kedatangan :    | 16:11   |

| No     | Ruas Jalan               | Jarak (Km) | Waktu Berhenti | Pintu Depan |       | Pintu Belakang |       | Jumlah Penumpang | Load Factor (%) |
|--------|--------------------------|------------|----------------|-------------|-------|----------------|-------|------------------|-----------------|
|        |                          |            |                | Naik        | Turun | Naik           | Turun |                  |                 |
| 1      | Terminal                 |            | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 2      | Jl. Veteran              | 0.60       | 01:03.9        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 3      | Jl. Warung boto          | 0.35       | 00:04.4        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 4      | Jl. Perintis kemerdekaan | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 5      | Jl. Ngeksidono           | 0.70       | 00:00.0        | 0           | 0     | 0              | 0     | 0                | 0.0000%         |
| 6      | Jl. Gedong Kuning        | 2.00       | 04:06.4        | 0           | 0     | 3              | 0     | 3                | 9.6154%         |
| 7      | Jl. Kusuma Negara        | 2.40       | 01:32.1        | 3           | 1     | 2              | 0     | 7                | 22.4359%        |
| 8      | Jl. Sultan Agung         | 1.20       | 01:27.5        | 0           | 2     | 0              | 1     | 4                | 12.8205%        |
| 9      | Jl. Senopati             | 0.15       | 00:00.0        | 0           | 0     | 4              | 1     | 7                | 22.4359%        |
| 10     | Jl. Mayor Suryotomo      | 0.50       | 00:14.0        | 0           | 2     | 0              | 0     | 5                | 16.0256%        |
| 11     | Jl. Mataram              | 0.85       | 01:12.3        | 0           | 3     | 1              | 1     | 2                | 6.4103%         |
| 12     | Jl. Abubakar Ali         | 0.75       | 00:09.4        | 3           | 1     | 0              | 0     | 4                | 12.8205%        |
| 13     | Jl. Kom Yos Sudarso      | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 4                | 12.8205%        |
| 14     | Jl. Suroto               | 0.55       | 00:41.2        | 0           | 1     | 1              | 0     | 4                | 12.8205%        |
| 15     | Jl. Cik Di Tiro          | 0.80       | 00:13.8        | 0           | 2     | 2              | 2     | 2                | 6.4103%         |
| 16     | Jl. Colombo              | 0.40       | 00:10.2        | 0           | 1     | 0              | 1     | 0                | 0.0000%         |
| 17     | Jl. Lingkar UGM Penuh    | 3.00       | 01:39.7        | 5           | 1     | 1              | 0     | 5                | 16.0256%        |
| 18     | Jl. Kaliurang            | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 5                | 16.0256%        |
| 19     | Jl. C Simanjuntak        | 1.40       | 03:45.6        | 1           | 0     | 8              | 0     | 14               | 44.8718%        |
| 20     | Jl. Jend. Sudirman       | 0.55       | 00:01.9        | 0           | 0     | 0              | 2     | 12               | 38.4615%        |
| 21     | Jl. P Mangkubumi         | 0.85       | 00:05.1        | 0           | 2     | 0              | 0     | 10               | 32.0513%        |
| 22     | Jl. Kleringan            | 0.50       | 00:00.0        | 0           | 0     | 0              | 0     | 10               | 32.0513%        |
| 23     | Jl. Taman Garuda         | 0.20       | 00:00.0        | 0           | 0     | 0              | 0     | 10               | 32.0513%        |
| 24     | Jl. Malioboro            | 0.25       | 00:11.9        | 3           | 3     | 2              | 0     | 12               | 38.4615%        |
| 25     | Jl. Jend. A. Yani        | 0.80       | 02:46.0        | 6           | 2     | 11             | 1     | 26               | 83.3333%        |
| 26     | Jl. P. Senopati          | 0.15       | 04:13.2        | 2           | 2     | 1              | 0     | 27               | 86.5385%        |
| 27     | Jl. Sultan Agung         | 0.90       | 00:07.6        | 1           | 3     | 0              | 0     | 25               | 80.1282%        |
| 28     | Jl. Suryopranoto         | 0.40       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 29     | Jl. Sukonandi            | 0.80       | 00:00.0        | 0           | 0     | 0              | 0     | 25               | 80.1282%        |
| 30     | Jl. Kusuma Negara        | 2.25       | 01:01.2        | 2           | 3     | 0              | 1     | 23               | 73.7179%        |
| 31     | Jl. Gedong Kuning        | 2.10       | 01:42.8        | 0           | 12    | 3              | 11    | 3                | 9.6154%         |
| 32     | Jl. Ngeksidono           | 0.70       | 00:04.5        | 0           | 1     | 0              | 1     | 1                | 3.2051%         |
| 33     | Jl. P. Kemerdekaan       | 1.15       | 03:49.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 34     | Jl. Veteran              | 0.25       | 00:00.0        | 0           | 0     | 0              | 0     | 1                | 3.2051%         |
| 35     | Terminal                 |            | 00:00.0        | 0           | 1     | 0              | 0     | 0                | 0.0000%         |
| JUMLAH |                          | 28.6       | 30:23.5        | 26          | 43    | 39             | 22    |                  |                 |

**Data Biaya Operasi Angkutan Umum  
Bis Kota ASPADA  
Jogjakarta**

| No | Uraian                      | Jumlah                    |
|----|-----------------------------|---------------------------|
| 1  | Rata-Rata Tempuh/rit/hari   | 28.60 km                  |
| 2  | Km Tempuh/hari              | 171.60 km                 |
| 3  | Frekuensi/hari              | 6.00 rit                  |
| 4  | Penumpang/rit               | 60 orang                  |
| 5  | Hari Operasi/bulan          | 26 hari                   |
| 6  | Harga Kendaraan             | 125,000,000.00 Rupiah     |
| 7  | Gaji dan Tunjangan awak bis | 60,000.00 Rupiah          |
| 8  | Harga BBM/lit               | 1,360.00 Rupiah           |
| 9  | Pemakaian BBM/hari          | 50.00 liter               |
| 10 | Perbandingan BBM            | 1:4                       |
| 11 | Jumlah Pemakaian Ban/th     |                           |
| a  | Ban Baru                    | 2 buah                    |
| b  | Ban Vulkanisir              | 2 buah                    |
| 12 | Daya Tahan Ban              |                           |
| a  | Ban Baru                    | 6 bulan                   |
| b  | Ban Vulkanisir              | 3 bulan                   |
| 13 | Service Kecil/Km            | 1000 - 2000 km            |
| 14 | Biaya Bahan Service Kecil   |                           |
| a  | Olie Mesin/lit              | 9,200.00 Rupiah           |
| b  | Gemuk                       | 25,000.00 Rupiah          |
| c  | Minyak Rem                  | 9,500.00 Rupiah           |
| d  | Olie Gardan                 | 12,500.00 Rupiah          |
| e  | Olie Transmisi              | 11,500.00 Rupiah          |
| f  | Filter Solar                | 30,000.00 Rupiah          |
| g  | Ongkos Service              | 50,000.00 Rupiah          |
| 15 | Service Besar/Km            | 10 km                     |
| 16 | Biaya Bahan service Besar   |                           |
| a  | Olie Mesin/lit              | 9,200.00 Rupiah           |
| b  | Gemuk                       | 25,000.00 Rupiah          |
| c  | Minyak Rem                  | 9,500.00 Rupiah           |
| d  | Olie Gardan                 | 12,500.00 Rupiah          |
| e  | Olie Transmisi              | 11,500.00 Rupiah          |
| f  | Filter Solar                | 30,000.00 Rupiah          |
| g  | Ongkos Service              | 500,000.00 Rupiah         |
| 17 | General Overhaul            |                           |
| a  | Overhaul/Km                 | 10 km                     |
| b  | Biaya Overhaul              | 400,000.00 Rupiah         |
| 18 | Penambahan Olie mesin/hari  | 1 liter                   |
| 19 | Kir Bis                     |                           |
| a  | Frekuensi Kir Bis/tahun     | 2 kali                    |
| b  | Biaya Kir                   | 50,000.00 Rupiah          |
| 20 | STNK / Pajak Kendaraan      |                           |
| 21 | Biaya STNK /Bis             | 218,600.00 Rupiah         |
| 22 | Biaya Iuran Koperasi/tahun  | 21,500.00 Rupiah/hari/bis |
| 23 | Biaya Asuransi              | 13,500.00 Rupiah/thn/kru  |
| 24 | Masa Penyusutan             | 5 tahun                   |

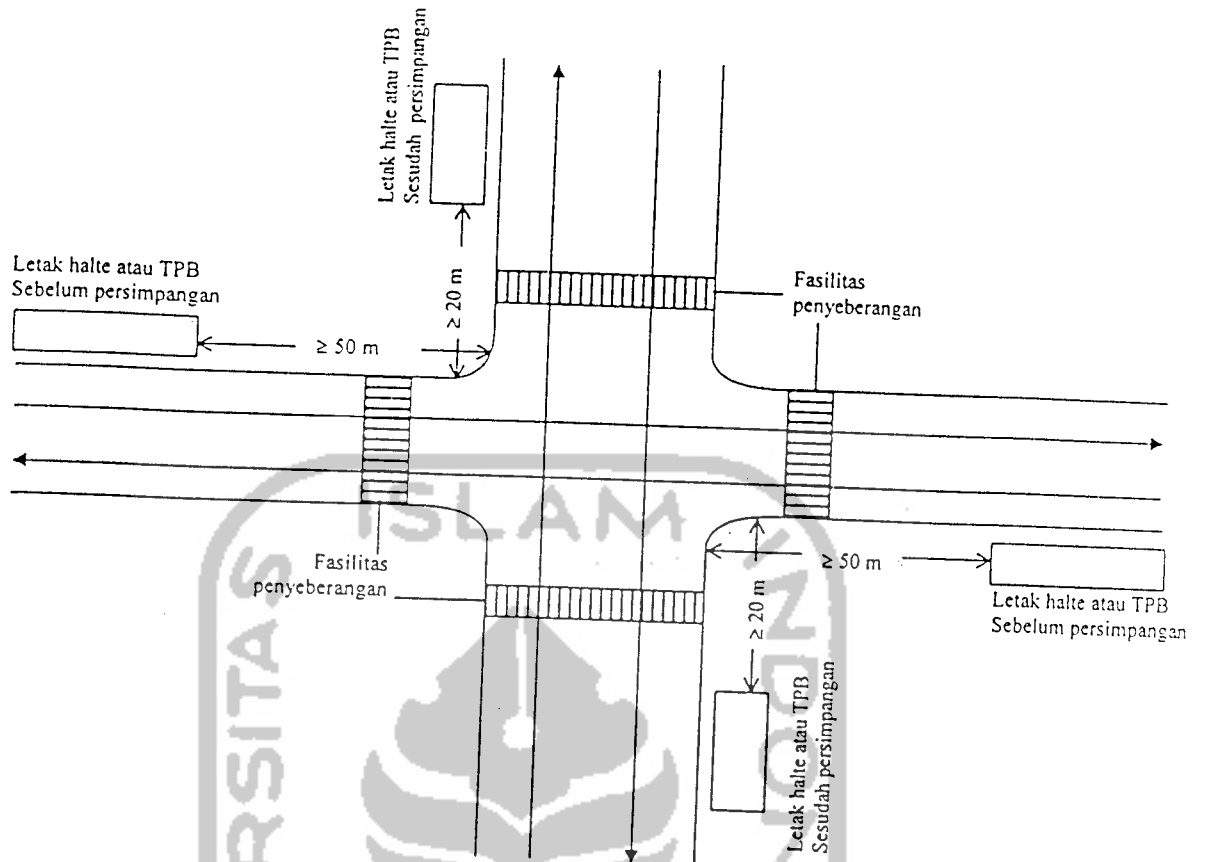
## Biaya Pemeliharaan Suku Cadang

| No                      | Keterangan           | Qty   | Harga          |                | Umur Ekonomis<br>Dalam Bulan | Biaya per bulan<br>(Rp) |
|-------------------------|----------------------|-------|----------------|----------------|------------------------------|-------------------------|
|                         |                      |       | Satuan<br>(Rp) | Jumlah<br>(Rp) |                              |                         |
| <b>A Minyak Pelumas</b> |                      |       |                |                |                              |                         |
| 1                       | Olie Mesin / lt      | 7 Ltr | 9,200.00       | 64,400.00      |                              |                         |
| 2                       | Olie Gardan / lt     | 1 Ltr | 12,500.00      | 12,500.00      | 0.50                         | 128,800.00              |
| 3                       | Olie Versneling / lt | 1 Ltr | 11,500.00      | 11,500.00      | 1.00                         | 12,500.00               |
| 4                       | Olie Rem / lt        | 1 Ltr | 9,500.00       | 9,500.00       | 1.00                         | 11,500.00               |
| 5                       | Air Accu / lt        | 2 Ltr | 2,500.00       | 5,000.00       | 0.25                         | 38,000.00               |
| 6                       | Paslin               | 1 Kg  | 25,000.00      | 25,000.00      | 0.50                         | 10,000.00               |
| <b>B Suku Cadang</b>    |                      |       |                |                |                              |                         |
| 1                       | Filter Olie          | 1 Bh  | 20,000.00      | 20,000.00      |                              |                         |
| 2                       | Filter Solar         | 1 Bh  | 30,000.00      | 30,000.00      | 1.00                         | 20,000.00               |
| 3                       | Filter Udara         | 1 Bh  | 27,500.00      | 27,500.00      | 1.00                         | 30,000.00               |
| 4                       | Tali kipas           | 1 Bh  | 7,500.00       | 7,500.00       | 1.00                         | 27,500.00               |
| 5                       | Kampas kopling       | 1 Bh  | 80,000.00      | 80,000.00      | 2.00                         | 3,750.00                |
| 6                       | Kampas rem           | 2 Bh  | 12,500.00      | 25,000.00      | 4.00                         | 20,000.00               |
| 7                       | Ban luar             | 1 Bh  | 400,000.00     | 400,000.00     | 0.83                         | 30,120.48               |
| 8                       | Ban dalam            | 2 Bh  | 85,000.00      | 170,000.00     | 6.00                         | 66,666.67               |
| 9                       | Accu                 | 1 Bh  | 70,000.00      | 70,000.00      | 4.00                         | 42,500.00               |
| 10                      | Siel roda            | 3 Bh  | 4,500.00       | 13,500.00      | 12.00                        | 5,833.33                |
| 11                      | Siel rem             | 1 Bh  | 6,500.00       | 6,500.00       | 18.00                        | 750.00                  |
| 12                      | Plendes              | 1 Bh  | 150,000.00     | 150,000.00     | 6.00                         | 1,083.33                |
| 13                      | Drag lacher          | 2 Bh  | 20,000.00      | 40,000.00      | 6.00                         | 25,000.00               |
| 14                      | Lacher roda depan    | 2 Bh  | 10,000.00      | 20,000.00      | 18.00                        | 2,222.22                |
| 15                      | Lacher roda belakang | 2 Bh  | 15,000.00      | 30,000.00      | 1.00                         | 20,000.00               |
| 16                      | Kris kopel           | 1 Bh  | 40,000.00      | 40,000.00      | 2.00                         | 15,000.00               |
| 17                      | Siel kopling         | 2 Bh  | 25,000.00      | 50,000.00      | 3.00                         | 13,333.33               |
| 18                      | Tromol               | 1 Bh  | 75,000.00      | 75,000.00      | 6.00                         | 8,333.33                |
| 19                      | Perawatan            |       | 50,000.00      |                | 8.00                         | 9,375.00                |
| 20                      | General Overhaul     |       | 400,000.00     |                | 1.00                         | 50,000.00               |
|                         |                      |       |                |                | 6.00                         | 66,666.67               |

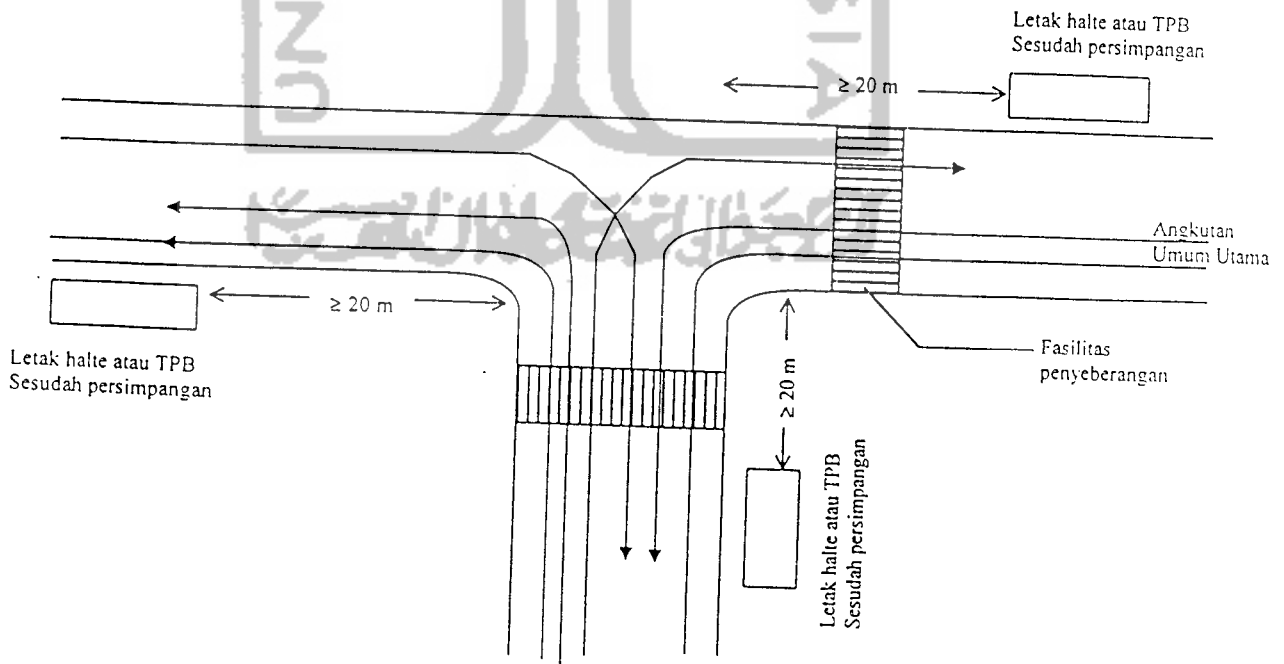
Mengetahui,

Koperasi ASPADA

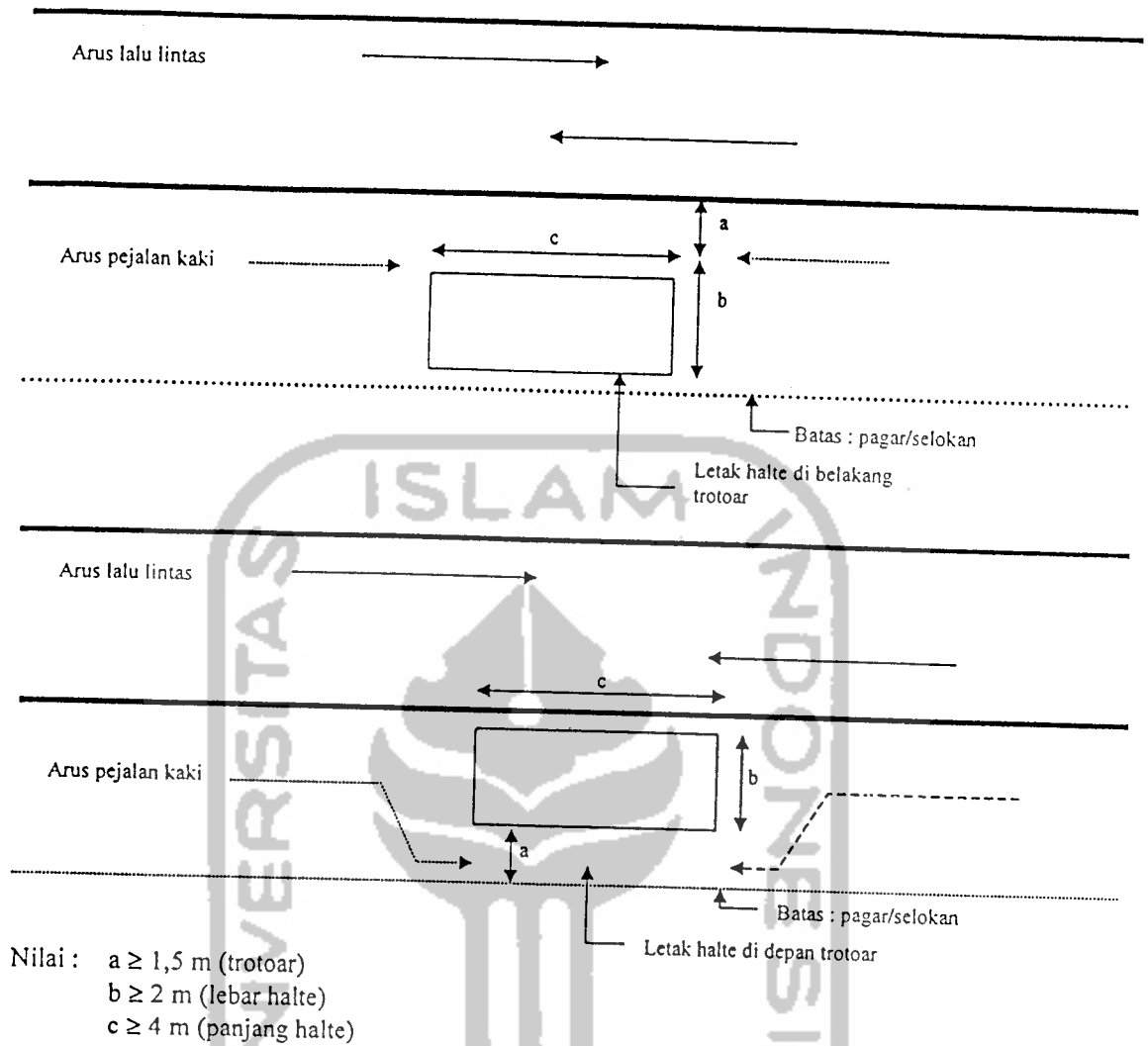
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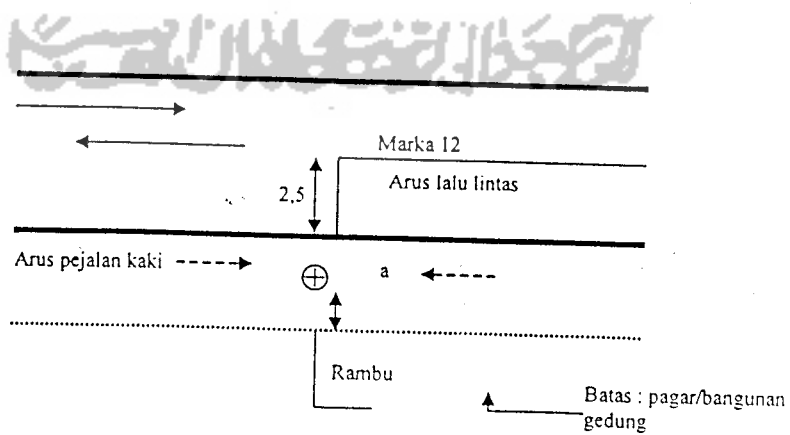
Gambar 1. Peletakan tempat perhentian di pertemuan jalan simpang empat



Gambar 2. Peletakan tempat perhentian di pertemuan jalan simpang tiga



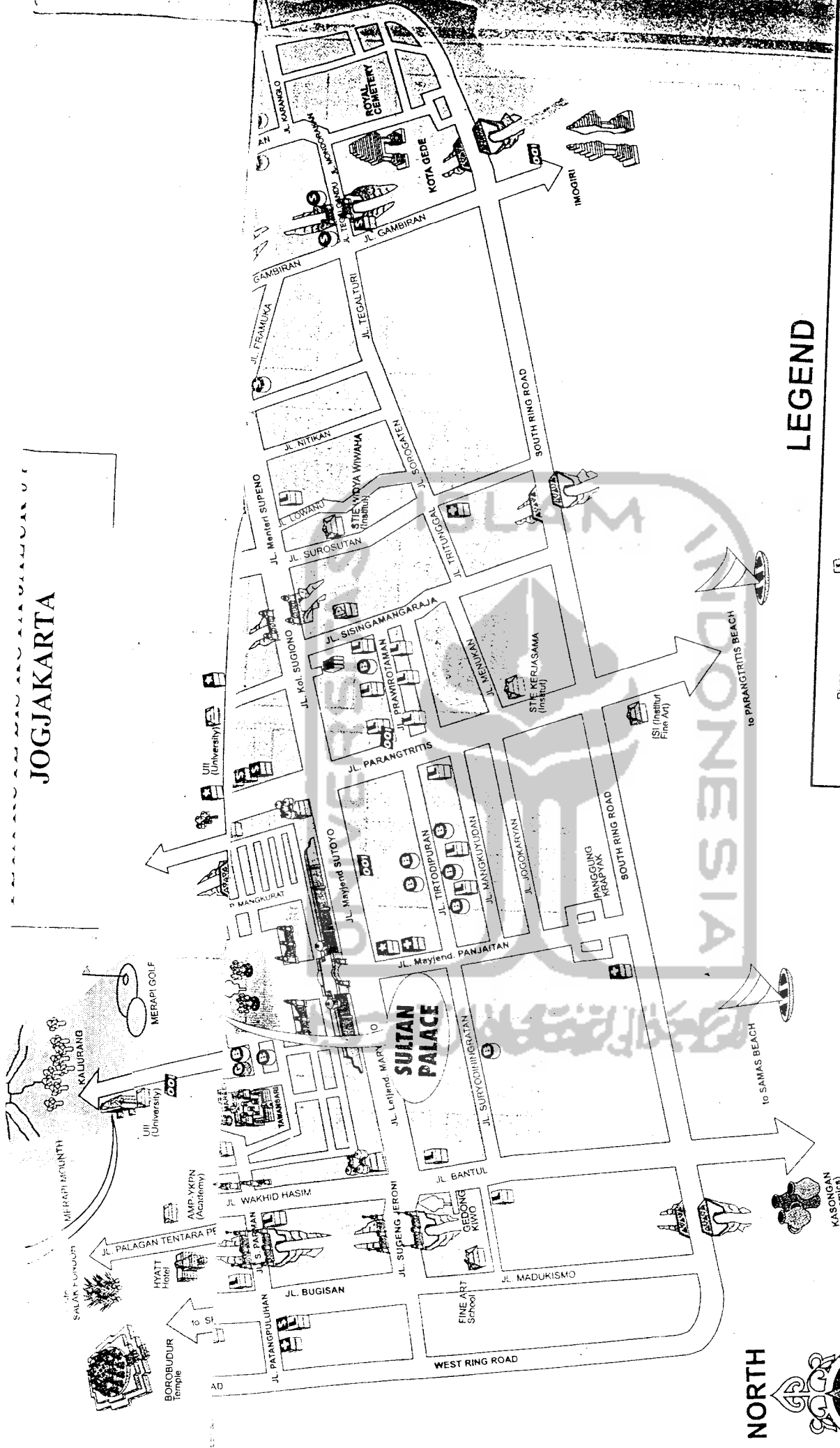
Gambar 3 Tata letak Halte pada Ruas Jalan



Nilai  $a$  = min 0.60 m dari bagian tepi paling luar bahu jalan

Gambar 4. Tata letak TPB Bus pada Ruas Jalan

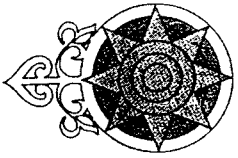
# JOGJAKARTA



## LEGEND

|  |                   |  |                           |  |                           |
|--|-------------------|--|---------------------------|--|---------------------------|
|  | River             |  | Tiket, Airlines Agency    |  | Pub, Disco, Karaoke       |
|  | Road              |  | Hotel, Losmen             |  | Police                    |
|  | Railway           |  | Bank                      |  | Hospital, clinic          |
|  | Bus Terminal      |  | Post Office, Giro Office  |  | Immigration Office        |
|  | Mini Bus Terminal |  | Batik Factory, Batik Shop |  | Telecommunication Service |
|  |                   |  | Silver Smith              |  |                           |
|  |                   |  | Museum, Monument          |  |                           |
|  |                   |  | Puppet Show               |  |                           |
|  |                   |  | Gallery                   |  |                           |
|  |                   |  | Fruit Shop                |  |                           |

NORTH



## PETA TANPA SKALA

Sumber: peta ORTINDO



**KARTU PESERTA TUGAS AKHIR**

| NO. | N A M A      | NO. MHS. | BID.STUDI    |
|-----|--------------|----------|--------------|
| 1   | Humam Nulman | 96310035 | Transportasi |
| 2   | Abdul Aziz   | 96310151 | Transportasi |

**JUDUL TUGAS AKHIR :**

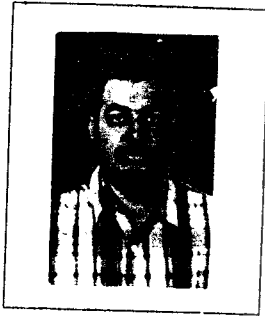
.....  
 .....  
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**PERIODE III : MARET - AGUSTUS**  
**TAHUN : 2001/ 2002**

| No. | Kegiatan                   | Bulan Ke : |      |      |      |      |      |
|-----|----------------------------|------------|------|------|------|------|------|
|     |                            | Mar.       | Apr. | Mei. | Jun. | Jul. | Aug. |
| 1.  | Pendaftaran                |            |      |      |      |      |      |
| 2.  | Penentuan Dosen Pembimbing |            |      |      |      |      |      |
| 3.  | Pembuatan Proposal         |            |      |      |      |      |      |
| 4.  | Seminar Proposal           |            |      |      |      |      |      |
| 5.  | Konsultasi Penyusunan TA.  |            |      |      |      |      |      |
| 6.  | Sidang-Sidang              |            |      |      |      |      |      |
| 7.  | Pendadaran.                |            |      |      |      |      |      |

DOSEN PEMBIMBING I :  
 DOSEN PEMBIMBING II :

Ir. H. Corry Jacob, MS.  
 Ir. Miftahul Fauziah, MT.


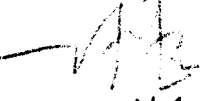



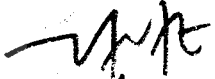


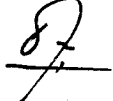




Yogyakarta, 21 Maret 2002  
 a.n. Dekan,  
  
 (Ir. H. Munadhir, MS.)

**Catatan.**

Seminar : .....  
 Sidang : .....  
 Pendadaran : .....

## CATATAN KONSULTASI TUGAS AKHIR

| NO  | TANGGAL      | CATATAN KONSULTASI  | TANDA TANGAN   |
|-----|--------------|---|--|
| I   | 18. Apr. '02 | Perbaiki proposal =<br>• T. pustre } (+) Beda m dg<br>• P. keni } yg sudah ada.<br>• lanjutkan ke Met. Penelitian |   |
| II  | 27.04.02     | Perbaiki sesuai koreksi:<br>yg ditandani  |   |
| III | 24.05.02     | Ke DPI  |   |
| IV  | 15.05.02     | Lanjutkan ke seminar  |   |
| V   | 3.09.02      | Perbaiki sesuai koreksi<br>lanjutkan  |   |
|     | 06.09.02     | lanjutkan : BOK - judul   |    |
|     | 09.10.02     | lanjutkan & perbaiki & lengkap.<br>Ke DPI   | <br> |
|     | 21-10-02     | Dapat di lanjutkan di<br>siang.   |   |
|     |              | Pendaftaran   |   |
|     |              | Tentukan tanggal<br>pembayaran  |   |