The Implementation of "15-Minute Neighbourhood" in Anusawari, Bang Khen, Bangkok

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ABSTRAK*: The resurgence of the 15-minute neighbourhood concept reminds of our living quarters. It reflects our daily activities where commuting seems to be the only option to get anywhere. The concept gives us an idea to rethink how cities are laid out and how the residents move about. This study discusses how a sub-district of Anusawari in Bangkok is laid out and how it implements the 15-minute neighbourhood concept. The distribution of public facilities is the main focus of this study. It has been observed the majority of residents live within walking distance to most of their essential daily needs, although there are still many objectives to be done to make a neighbourhood walkable.*

Keywords: 15-minute neighbourhood, walkable, city.

INTRODUCTION

Bangkok is a metropolis with numerous sprawling neighbourhoods surrounding the city. The development of the city centre and its surroundings can vary greatly in how they are designed and how they are being used. Anusawari, being one the districts in the suburbs of Bangkok, is a residential neighbourhood containing some of the major highways as well as some public transport connections. Despite having most of the land area used as single-family homes residential neighbourhoods, there are still many other facilities located alongside the major streets, such as shopping centres, medical centres, universities, and so on. Despite having a major highway running through the district, pedestrian infrastructure seems to be adequate while still lacking in many aspects such as, inclusive access, bicycle lane/path, and active frontage.

Figure 1 Major highway in Anusawari, Bang Khen
Source: Google Street View

Figure 2 An inner street in Anusawari, Bang Khen
Source: Google Street View

Walkable city is a concept where a city provides the most attention for the safety and benefits for pedestrians. One of the most successful ways to create a walkable city is the concept of a 15-minute neighbourhood. This idea allows people to get to any place within a 15 minute walking distance within one's residence. By providing places of interest within walking distance and providing an adequate pedestrian infrastructure, the use of private vehicles can be reduced significantly. In addition, health benefits by increased walking can be gained.

Figure 3 Concept of 15-minute city
Source: Paris En Commun

In establishing a 15-minute city, density remains as one of the main key components. Bangkok, being one of the most densely populated cities in the world, has one of its main factors already achieved. Although a quick glance of the cityscape tells a different story with motor vehicles still dominating the streets and sparsely populated sidewalks.

LITERATURE REVIEW

A 15-minute city is a concept where a resident of a city can fulfil their daily needs within a 15-minute walking distance from their residence. The two most important aspects of the 15-minute city, destination, and accessibility. Destination defines that there are places of interest that are available within the reach of walking distance. The accessibility factor states that the access to aforementioned places must be adequate for people to use (City of Kirkland, 2015). The concept focuses on combining many urban facilities such as retail, entertainment, manufacturing, as well as offices in the same area as the residential neighbourhoods where people live (O'Sullivan, F., 2020). The "hyper-proximity" of such places are meant to create a complete and sustainable neighbourhood within walking distance from people's homes.

In addition to accessibility, some other supporting infrastructures are crucial to provide pedestrian-first streets. Some key elements of a pedestrian-first streets are safe walkways, active frontage, continuous ground floor activities, permeability, shade and shelter, as well as prioritised connectivity (Transport Matters, 2018). Having close proximity to local goods and services as well as other facilities also pushes people to walk within their local neighbourhoods, reducing the needs for motor vehicles and people can waste less time being stuck in traffic or in transit (Speck, J., 2018).

Despite the term "15-minute city" which suggests 15 minute of walking distance, the range of walking distance can instead be defined into three. Primary, secondary and tertiary levels with the radius of 600 meters, 1200 meters, and 2400 meters respectively (Correa-Parra, J., 2020). 600 meter radius represents a 15 minute walking distance for a person with a trolley; 1200 meter radius accommodates a 15-minute of bicycle ride or 30-minute of walking slowly; and 2400 meter radius accommodates fundamental facilities but are not needed daily. In addition to that, the study also compiled 28 urban facilities that are essential for most residents in one neighbourhood.

Table 1 List of variables of essential urban facilities

Variable	Source
Kindergarten	Ministry of Education
Elementary School	Ministry of Education
General Doctor Practice	Ministry of Health
Pharmacy	Ministry of Health
Green Areas	Ministry of Housing and Urbanism
Bus Stop	Ministry of Transports and Communications
Shops	Servicio de Impuestos Internos
Places of Worship	Open Street Maps
Book Stores	Open Street Maps
Banks	Open Street Maps
Secondary School	Ministry of Education
Medical Centre	Ministry of Health
Squares and Plazas	Ministry of Housing and Urbanism
Metro Station	Ministry of Transports and Communications
Administrative Services	Observatorio de Ciudades UC
Cultural Services	Ministry of Culture
Library	Ministry of Culture
Sport Facilities	Open Street Maps
Court	Open Street Maps
Veterinarian	Open Street Maps
Supermarket	Open Street Maps
Street Market	Observatorio de Ciudades UC
Hardware Store	Open Street Maps
Hospital	Ministry of Health
Police	Ministry of Internal Security
Fire Fighters	Ministry of Internal Security
Museum	Ministry of Culture
Cinema and Theatre	Ministry of Culture

Source: Correa-Parra, J., (2020)

RESEARCH METHOD

The research method starts with gathering building outline data from online mapping services such as Google Maps and OpenStreetMap. Unfortunately for this case study, the building outline data from OpenStreetMap is not available for the area covered. Instead, the author managed to extract figure ground-style maps from Google Maps and vectorised it. After the building outline data has been collected, markers are added according to the type of facility.

Radius of 600m and 1200m overlays are then added for each facility according to the types. Using data interpolation, the percentage of population served can be calculated by the polygons of each residential building affected by the facilities with the numbers of total residents in the district. High rise residential buildings are assumed to have 100 times the population of single family-homes for each polygon.

Table 2 Classification of essential urban facilities

Public Transport	Bus Stops
	Metro Station
Health and Care	General Doctor Practice
	Medical Centre
	Hospital
Education	Kindergarten
	Elementary School
	Secondary School
	Library
Public Spaces	Open Green Areas
	Squares and Plaza
	Places of Worship
	Sport Facilities
	Court
	Museum
Local Goods and Services	Pharmacy
	Cultural Services
	Bookstores
	Banks
	Street Market
	Veterinarian

	Supermarket
	General Shops
	Cinema and Theatre
	Hardware Store
City Services	Police Department
	Fire Department
	District Office

Source: author

RESULTS AND DISCUSSION

Anusawari Sub-District has a population of 93,602 inhabitants and an area of 18.19km² (Bangkok Metropolitan Administrator, 2019). The sub-district has the density of 5049/km2.
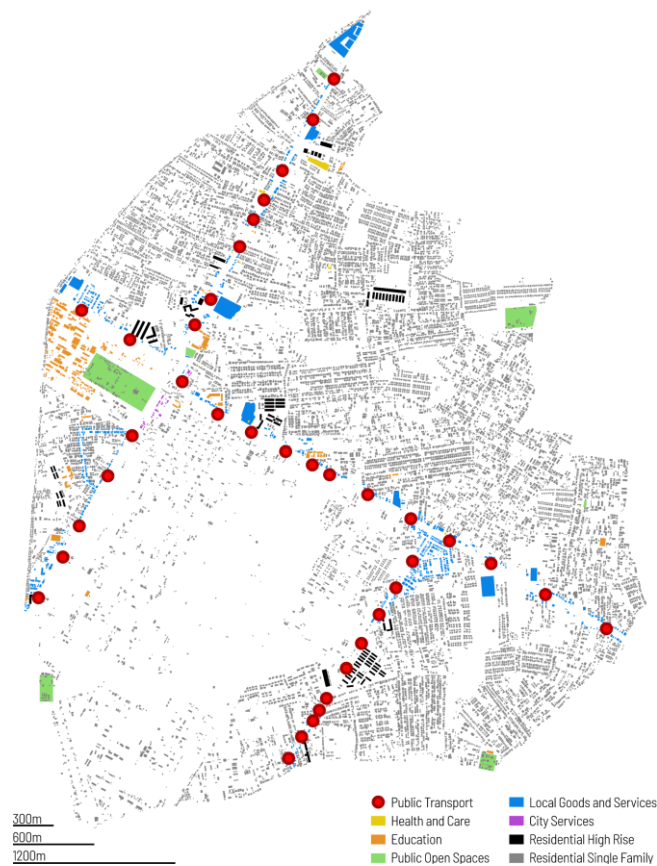

Figure 4 Figure Ground Plan of Anusawari
Source: author

The author has found 19,782 polygons of single-family homes and 96 polygons of high-rise apartment blocks. For simplicity sake, each high-rise polygon represents 100 times the weight of single family homes as mentioned previously. The number of population

is then divided and distributed for both residential buildings.

Table 3 Estimated population calculations

	Single-family homes	**High-rise apartments**
# Polygons	19782	97
# Polygons (weighted)	19782	9700
Population	93602	
Population	62806	30796
Population for each polygons	3.175	317.485

Source: author

1. **Public Transport**

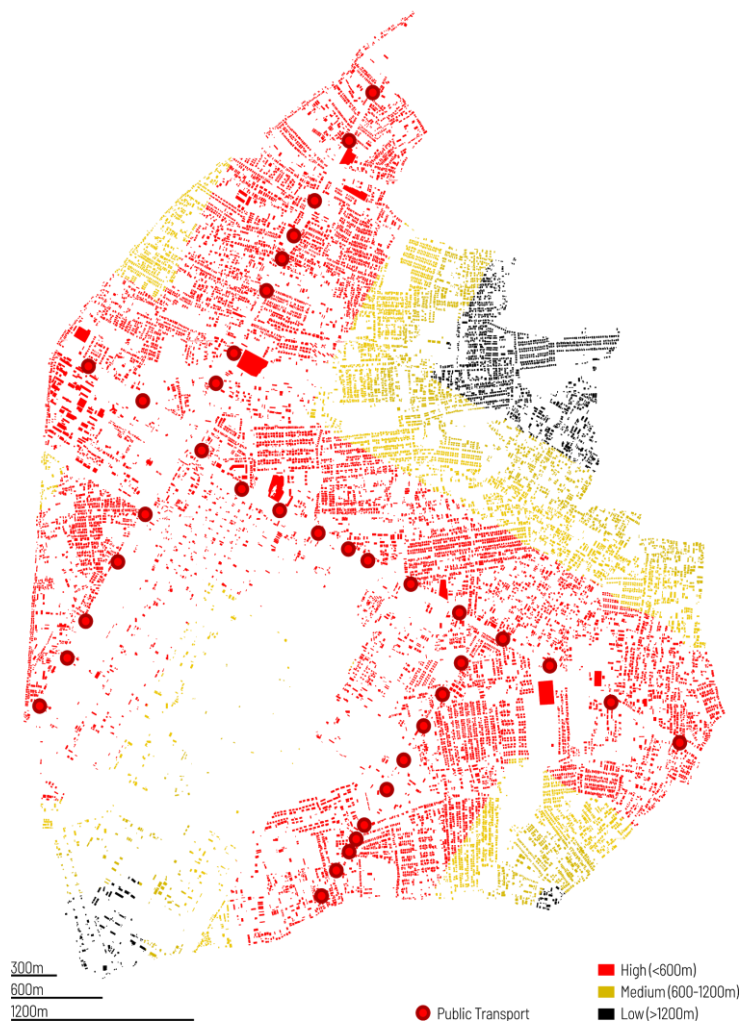Access to Public Transport in Anusawari, Bang Khen, Bangkok

Figure 5 Access to public transport in Anusawari
Source: author

Table 4 Population served by public transport

	Single-family homes	**High-rise apartments**
Population with high access (%)	39049 (41.7%)	25398 (27.1%)
Population with medium access (%)	19230 (20.5%)	4147 (4.4%)
Population with low access (%)	4527 (4.8%)	953 (1%)

Source: author

The majority of the population in Anusawari is served well by public transport with 69.8% of residents living less than 600 meters away from the nearest bus stop or metro station. This makes sense as most of the stops are located along the main streets.

2. **Education**

Figure 6 Access to education facilities in Anusawari
Source: Author

Table 5 Population served by education facilities

	Single-family homes	**High-rise apartments**
Population with high access (%)	65396 (69.8%)	15240 (16.2%)
Population with medium access (%)	25219 (26.9%)	14921 (15.9%)
Population with low access (%)	2987 (3.2%)	635 (0.7%)

Source: author

While the majority of the residents have close access to education facilities, this does not guarantee that they go to their respective schools. Although having higher coverage means that the schools are located in the right place and not secluded within some exclusive zoning districts.
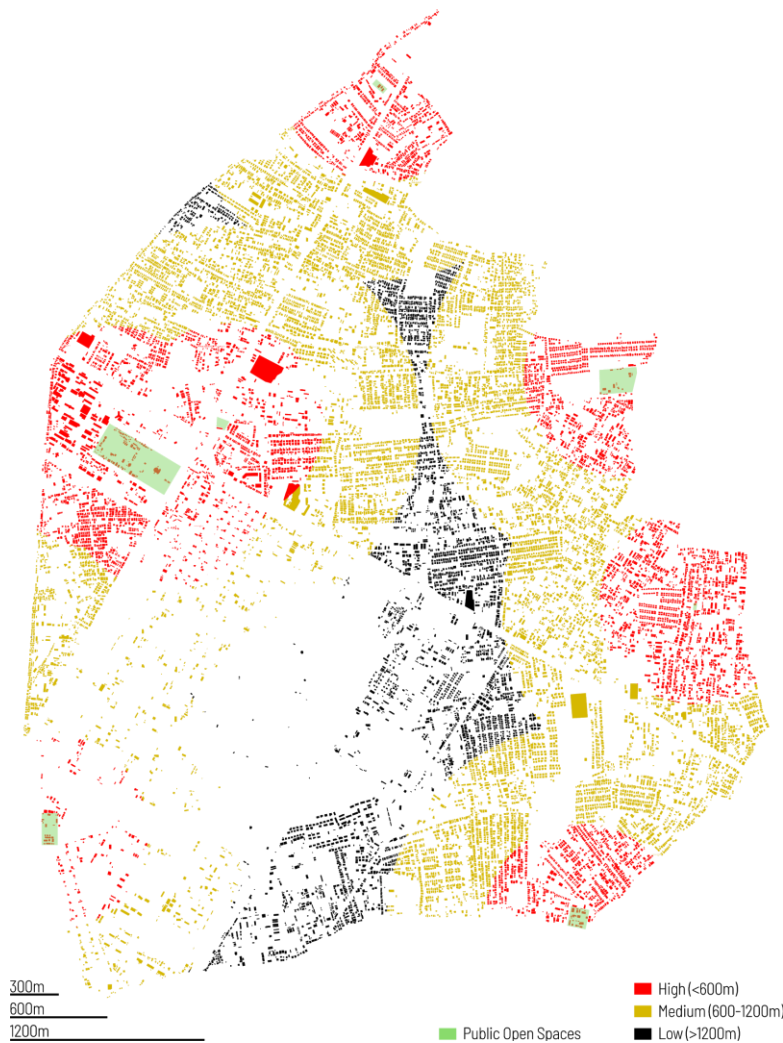
3. **Public Open Spaces**

Figure 7 Access to public open spaces in Anusawari
Source: author

Table 6 Population served by public open spaces

	Single-family homes	**High-rise apartments**
Population with high access (%)	22447 (23.9%)	4445 (4.7%)
Population with medium access (%)	13442 (14.3%)	19367 (20.7%)
Population with low access (%)	26917 (28.7%)	6985 (7.5%)

Source: author

Public open spaces seem to be quite uncommon to see in Anusawari. Most green spaces are walled off private properties. Many greenery lands are used for roadside garbage collection instead.
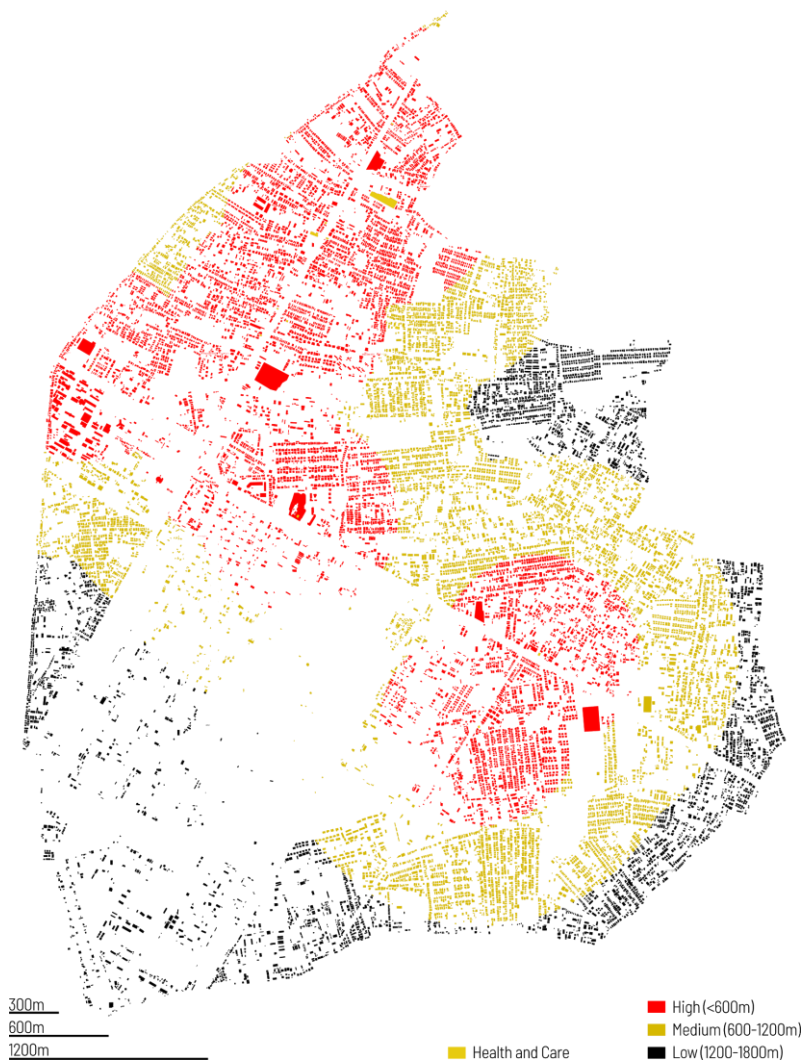
4. **Healthcare**

Figure 8 Access to healthcare in Anusawari
Source: author

Table 7 Population served by healthcare

	Single-family homes	**High-rise apartments**
Population with high access (%)	26574 (28.4%)	16827 (18%)
Population with medium access (%)	22732 (24.3%)	8890 (9.5%)
Population with low access (%)	13500 (14.4%)	5080 (5.4%)

Source: author

Access to healthcare is a bit of a mix. It can be seen that the majority of the population live less than 1200m away from a hospital/clinics. The distribution of such facilities is spread out although it often clusters near a busy intersection.
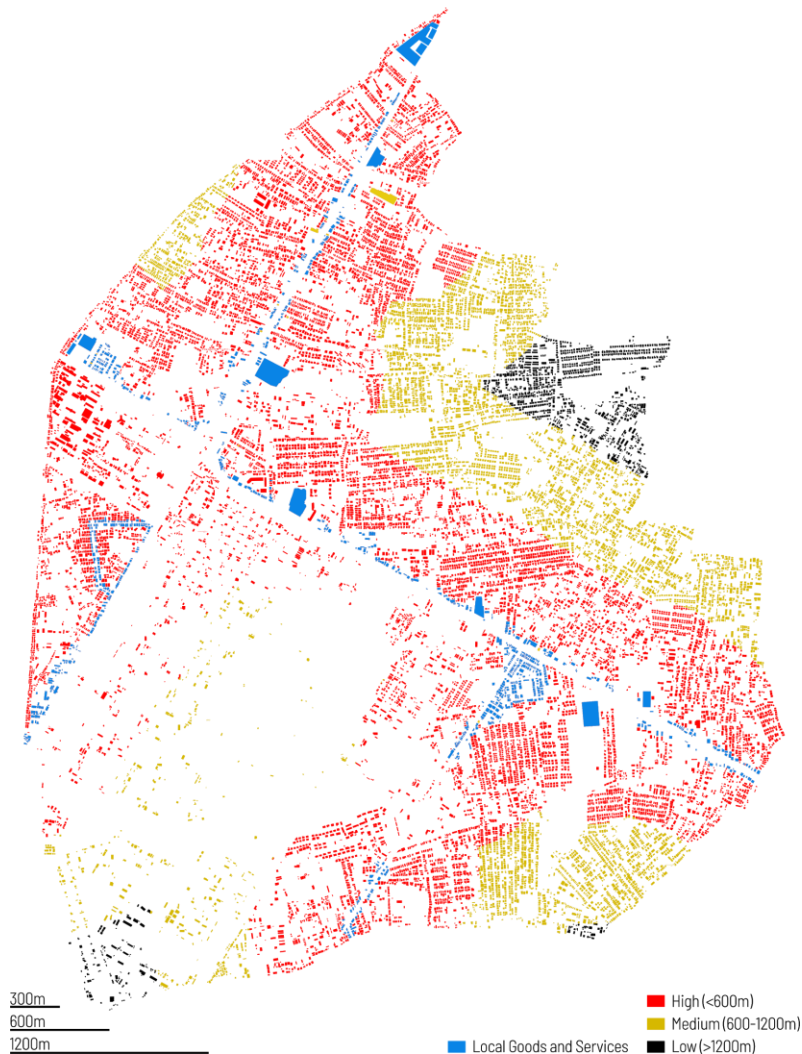
5. Local Goods and Services

Figure 9 Access to local goods and services in Anusawari
Source: Author

Table 8 Population served by local goods and services

	Single-family homes	**High-rise apartments**
Population with high access (%)	40925 (43.7%)	26352 (28.1%)
Population with medium access (%)	18167 (19.4%)	4762 (5%)
Population with low access (%)	3714 (4%)	0 (0%)

Source: author

Over 70% of the population has access to local goods and services in less than 600 metres. The distribution of the facilities are centered around shopping centres and along the main streets, although there are some smaller shops located within the residential neighbourhoods.

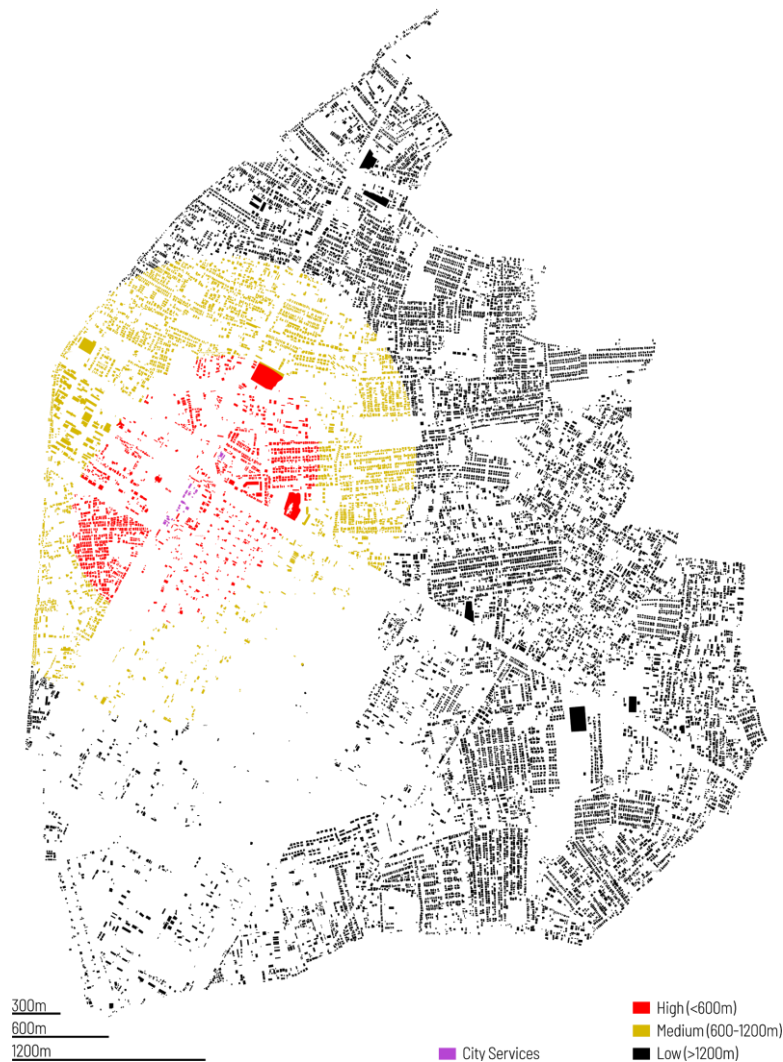6. **City Services**

Figure 10 Access to city services in Anusawari
Source: author

Table 9 Population served by city services

	Single-family homes	**High-rise apartments**
Population with high access (%)	5118 (5.46%)	4445 (4.7%)
Population with medium access (%)	10982 (11.7%)	7620 (8.14%)
Population with low access (%)	46707 (49.8%)	18732 (20%)

Source: author

As it can already be seen on the map, the majority don't have walkable access to nearby city services such as, police station, fire department, and district office. Although it is not as important as the other variables as most people don't go to such facilities daily.

CONCLUSION

While the study shows that the majority of the population live within walking distance to public facilities, it is important to note that there are other aspects that make a neighbourhood walkable. This study only covers the distribution of facilities and mixed use districts.

The sub-district of Anusawari has a lot of potential to be a 15-minute neighbourhood although it still falls short in many aspects, namely the pedestrian access. The wide highways and the inactive frontage of many areas make it unpleasant for walking around. Many public facilities are also walled off from pedestrians. It is not surprising to see that people much prefer to use motor vehicles to get around.

There is still a lot that can be studied from the 15-minute neighbourhood concept. The research methods can still be improved as well as in this discussion. In the case with this paper, the author is limited with the spatial data that can be easily accessed. Hopefully, more research will be conducted regarding the 15-minute neighbourhood concept in understanding how to make cities more livable.

ACKNOWLEDGEMENT

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