Indonesian vehicle surplus, the story behind access

The relation between accessibility and socio-economic segregation under the influence of a high urbanisation rate in the city of Yogyakarta, Java, Indonesia

- LENNERT WERNER
Bachelorthesis Geografie, planologie en milieu (GPM)
Faculteit der Managementwetenschappen, Radboud Universiteit Nijmegen, 8th of August 2016
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Supervisor: Dr. Lothar Smith – Student: 4267508 – Number of words (main text): 38,732 words
Foreword

I am very pleased to present my bachelor thesis on the relation between accessibility and segregation under the given circumstance of rapid urbanisation – perceived by the local population of Yogyakarta, Indonesia. Because of the decision to finish this thesis in August, it is more elaborated in terms of analysing the mutual influences of the main concepts.

The empirical information was gathered through interviews with Yogyakarta residents from different income classes and sub-districts, through observations and through photographs. It taught me that there are very diverse opinions and perspectives on this process of urbanisation and its consequences, and I am glad that I could experience this part of the world by myself.

The research has been conducted in order to complete the bachelor program of Geografie, Planologie and Milieu (GPM) at Radboud Universiteit Nijmegen, in preparation for the master program of Human Geography.

There are some people who I like to thank in this foreword; first of all my supervisor Dr. Lothar Smith, for guiding me through the process of my thesis by giving helpful information, and for giving me the opportunity to conduct fieldwork in Yogyakarta. Secondly, I would like to thank Dr. Agus Joko Pitoyo of Universitas Gajah Mada (UGM) for supporting my thesis project, and for assigning local students to act as translators and interpreters in the interview process. Those students, Widha Ayu and Setiyo Nugroho, were also of great help and therefore I want to thank them as well. Not only did they help me translate, interpret and analyse the interviews with the aim to gain valid and useful data, they also picked me up every interviewing day with their motorcycle and drove me around.

And last but not least, I would like to thank the respondents of the interviews for their open-minded attitude towards this foreigner, and for providing me with useful information and new insights – although they will never see this thesis.

I am very grateful that I had this opportunity to do research in Indonesia. Not only because this whole experience taught me a great deal both as a person and researcher, but also for the fact that I got to know the country much better than I did before this trip – as my father was born in Surabaya, East Java.

Lennert Werner
Nijmegen, August 2016

Note:
Pictures in this bachelor thesis are taken by Lennert Werner, unless stated otherwise.
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# Glossary

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andong</td>
<td>Public transport in the form of a horse and carriage</td>
</tr>
<tr>
<td>Bahasa Indonesia</td>
<td>Indonesian language</td>
</tr>
<tr>
<td>Becak</td>
<td>Similar to a rickshaw, except for the fact that the driver is located behind the passengers</td>
</tr>
<tr>
<td>Bemo</td>
<td><em>Becak Motor</em>, the modernized version of the regular <em>becak</em></td>
</tr>
<tr>
<td>DIY</td>
<td>Daerah Istimewa Yogyakarta</td>
</tr>
<tr>
<td>Dokar</td>
<td>Synonym for <em>Andong</em></td>
</tr>
<tr>
<td>GoJek</td>
<td>Cheap transport service that uses motorcycles</td>
</tr>
<tr>
<td>Grab</td>
<td>Cheap alternative taxi service</td>
</tr>
<tr>
<td>Kabupaten</td>
<td>Regency</td>
</tr>
<tr>
<td>Kampung</td>
<td>Village</td>
</tr>
<tr>
<td>Kecamatan</td>
<td>Sub-district</td>
</tr>
<tr>
<td>Kelurahan</td>
<td>Collection of small villages, administrative entity below <em>kecamatan</em></td>
</tr>
<tr>
<td>Kota</td>
<td>City</td>
</tr>
<tr>
<td>Pasar Legi</td>
<td>Special market day in Kotagede</td>
</tr>
<tr>
<td>Pasar</td>
<td>Market</td>
</tr>
<tr>
<td>Pedicab</td>
<td>English term for <em>becak</em>, a bicycle taxi</td>
</tr>
<tr>
<td>SayTaxi</td>
<td>Cheap alternative taxi service</td>
</tr>
<tr>
<td>Uber</td>
<td>Cheap alternative taxi service</td>
</tr>
<tr>
<td>Warung</td>
<td>Small shop or restaurant</td>
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</table>

Unless the definition is directly given in the main text or if it speaks for itself, all Indonesian concepts in *italics* refer to this glossary
Summary

As the city is a place where economic activities are concentrated, it remains – especially among inhabitants of rural areas – an attractive destination for economic security. At least, that is how the city is perceived, it is an image that actually does not apply to all cities anymore because of the massive influx of migrants in developing countries. This is often referred to as overurbanisation, and comes with several negative consequences for a city’s inhabitants.

Examples of negative consequences are pollution of air and water, increasing congestion and unequal distribution of land among the city’s residents. This phenomenon especially occurs in the Global South, where compared to developed countries, still relatively many people reside in rural areas. The city has the image of economic opportunity and therefore attracts many people from these rural areas to settle down. According to UN Escap (November, 2013), the Asia-Pacific region remains host to over half of the world’s slum population, and some cities in the region have reached worrying levels of inequality.

The massive increase of urban population and therefore also private transport leads to environmental problems such as increased CO₂ emissions due to a higher amount of traffic jams, but also results in longer travel times to inner-city destinations and thus a decrease of accessibility for both individuals and the city as a whole. Erman Suparno, economic advisor of the greater special region of Yogyakarta, says there is an increase of 8000 motor vehicles in Yogyakarta every year (Indonesian Infrastructure Initiative, 2011).

Furthermore the inclusive growth of the city as well often has a lack of capacity to accommodate all of the new migrants properly. This automatically leads to the dispersal of income classes within the city; with the high-income residents living in a location of preference and the low-income residents and migrants concentrated in squatter settlements around the city. Vaughan (2005) writes that the segregated inner-city quarters are a magnet for refugees and immigrants who are seeking for economic opportunity, because there is a sufficient supply of cheap housing and labour – leaving aside the high level of pollution and other problems in such areas. However, it is in fact not guaranteed that everyone who comes to the city qualifies for a job, since there are so many uneducated migrants who hope to find one – albeit in the informal economy. Without availability of employment for rural-urban migrants and other residents in the low-income classes, the income disparities between rich and poor in urban areas will worsen. This potentially leads to social friction, political tension or discrimination in areas such as education and healthcare.

This research especially focuses on the perceived and observed state of accessibility and segregation among the sub-districts of Yogyakarta. In other words, the aim of the research is to find out whether there is a certain relation between the income level of an individual and the access to central places in the city or not. Measured by the number of roads from the respective location of living of an inhabitant to a central place in the city – in this case Jalan Malioboro –, the number and intensity of traffic jams that occur on the road to get there, the travel time and the quality of the public transport network in a specific sub-district, the interviewed inhabitants’ level of accessibility is determined.

The level of accessibility of the interviewed Yogyakarta residents will be put in a diagram across the respective income level of these residents, with the aim to visualize the differences in every individual’s situation and to determine if there is a connection between these variables. Furthermore, the state of segregation in the sub-districts is examined by both conducting observations and by asking the interviewed inhabitants about the way they perceive the socio-economic segregation in
their sub-district; for example if the lower-income inhabitants are able to reach public amenities with as much ease as the higher-income inhabitants.

With the given time frame for this research project and the number of questions in the interview, it was decided to conduct the research in three different sub-districts in Yogyakarta with different backgrounds and histories of developing. In every sub-district, three residents were picked by differing gender, profession, income class and age, to gain an insight in the similarities and differences among the inhabitants of Yogyakarta city in terms of access to central places and the distribution of land among rich and poor. Besides the interviews with the respondents from Depok, Umbulharjo and Kotagede, observations were conducted to gain an understanding of the sub-districts during three moments of the day; between 6 and 7 am, 12 and 1 pm, and 4 and 5 pm. Differences in the state of traffic and the travel patterns of residents could be described, as well as the public transport.

The interviews and observations eventually led to the understanding of the need to be accessible with central places that applies to the majority of the interviewed inhabitants of Yogyakarta. The residents want to be in control of the duration of the trip and to keep the costs as low as possible if they travel to any desired destination. This contains not only the ability to travel to a market for groceries or to the post office for a parcel as in basic needs, but it as well entails the recreational needs of an individual, for example when that person wants to meet a friend on the other side of the city for socializing.

It is however the level of income that determines the frequency and distance that someone can travel for recreational needs, or to what extent an individual can afford it to go to other places for recreation in terms of time and money. This is motivated by the fact that the lower-income inhabitants of Yogyakarta need to work long days to be able to take care of themselves and their family and are therefore supposed to limit their expenses on travelling when it comes to recreational activities. The higher someone’s income level, the higher the number of destinations that an individual can reach for basic needs and especially leisure purposes; that person’s mobility dynamics increase because his income level allows it to spend more time for recreation, meaning that a change in lifestyle is caused as someone’s income level increases. Someone with a higher income cannot only afford it to travel more frequently to various places, but as well has the advantage of a higher level of accessibility due to the choice to live in a location of preference that is well-connected with other areas. In this way, someone’s income, location of living, and the resulting lifestyle are the aspects that influence that person’s level of accessibility and travel frequency to other destinations.

The downside of the fact that more people are able to purchase a private vehicle on the long-term, is that the increased individual accessibility and travel frequency can be seen as the root cause of congestion, which lowers the general accessibility of that specific place – since it takes more time to reach that place with the increase in vehicles and traffic jams. For the wealthier people, this means that their accessibility is somewhat restrained but they are still able to reach another place without many obstacles, since they often live in a well-connected location. But for the people in the lower-income class, it means that their location of living is relatively even further away from central places than it was before; these inhabitants had no option to live in a location of preference in the first place, and now the increased traffic makes their accessibility level even lower – especially if they do not own a motorcycle or other private vehicle yet. And because travelling per public transport also is no option for the lower-income inhabitants, because of its high prices, inefficient routes to other places and increased travel time due to the intense traffic situations, it can be stated that they are more disadvantaged than the inhabitants of the higher-income classes. This in turn leads to an increased level of segregation among the inhabitants of the city, since the poor are more severely impacted by the increased amount of private vehicles on the roads, which limits their accessibility and travel
frequency to other destinations. The lower-income inhabitants are in this way restrained in their reach to for example Jalan Malioboro because it takes more time and money to get there.

If the current increase in inhabitants and vehicles does not stagnate, both the traffic and the environment have to endure severe challenges in the future, which will lower the image of the city and consequently its chances to attract new inhabitants, tourists or companies. These actors are basically the motor of the further growth of the city and its metropolitan region. Also the public transport has to deal with the negative consequences of the increasing urban population, because this mode of transport becomes less efficient if it has to deal with more intense traffic jams as well – given the fact that there is no private lane for public transport on the roads.

One of the solutions to the increasing traffic jams is the realisation of a monorail system that drives on a time schedule, something that the buses cannot do because of the frequent congestion. This monorail system can relieve the pressure on the roads and reduce the number of vehicles that use them, since more people will discover that the monorail is in fact an efficient way to travel to various destinations. As long as the fees are not very high, this mode of transport can attract many travellers and transport them quickly, resulting in a traffic situation that flows more fluently.

However, the completion of the monorail has been pushed back for a while now, so the government needs to find a way to promote the current public transport in Yogyakarta until it is finished. In this way, more intense traffic problems can be avoided in the near future. This solution was mentioned by the majority of the interviewed inhabitants in the three sub-districts of Yogyakarta, who are willing to travel by public transport if it is efficient and cheap as private transport.

Guaranteeing a high-quality public transport network that is available for all inhabitants is a priority in the near future, because it eventually results in less private vehicles on the roads and therefore leads to a better accessibility. The fact that a higher level of accessibility is ensured for all residents of the city with the promotion of public transport, makes it that the level of segregation will reduce – since both urban rich and poor will be well-connected to other destinations via this public transport network, leading to smaller differences in the distribution of amenities or ease to reach other places among different income classes. In this way can be said that the reduction of congestion is a necessity, because the negative consequences of traffic jams will not only lead to a restrained level of accessibility for the whole population, but as well lead to economic stagnation of the city and its metropolitan region – with increasing differences among rich and poor inhabitants in relation to the access of other places.

The creation of a private lane on the roads for buses is one possible solution, which will probably lead to an increased popularity of public transport and a reduction of the number of private vehicles, because then public transport has a priority status and ensures less problems with traffic jams, time schedules and transport efficiency. However, the completion of the monorail will certainly bring changes to the mobility patterns in Yogyakarta. In the future can be seen how this new mode of transport affects the state of traffic and the access to other destinations for the city’s inhabitants.
1. Consequences of the city as a magnet

The city can be seen as an icon for economic opportunities and jobs in the service sector, leading to the promise of more economic security and a brighter future, at least this is the perception for migrants from rural areas who come to the city. The massive influx of migrants in urban areas comes with several problems, such as shortages in housing or employment, increased travel times due to an increase in vehicles on the roads, and because of the latter also more CO₂ emissions and higher transportation costs. As a result of these problems, differences between rich and poor inhabitants of a city become larger, since the wealthier residents can afford it to live in a location of preference, while the poor residents are allocated to inferior areas that are often polluted (Vaughan, 2005). Furthermore, these areas are in relative distance further away from central places, as it takes more time or effort to reach these destinations.

And without the availability of employment that meets the needs of lower-income inhabitants – including the rural-urban migrants –, the income gap between rich and poor residents of urban areas will enlarge. This potentially leads to social friction, political tension as well as discrimination in sectors such as education and healthcare. A loss in healthcare services for the lower-income classes is already happening in urban areas, also because of an existing shortage in healthcare professionals such as doctors and nurses.

This first chapter will serve as an introduction; firstly, a contextual background will be provided in which the concepts of urbanisation, accessibility and segregation are illustrated, including some of their consequences. Furthermore, the social and scientific relevance will be determined, after which the research aim is described. Last but not least, the central research question and its sub-questions will be presented, followed by a reading guide.

1.1 Contextual Background

Urbanisation – or: the gradual increase in the proportion of people living in urban areas (MeSH, 2014) – leads to the concentration of knowledge and economic activities in the city, with a high share of jobs in the service sector. These characteristics attract people from areas that are less developed or less promising in terms of economic security or opportunities, such as rural areas. However, economic growth has not benefited all urban dwellers in the region equally. According to UN Escap (November, 2013), the Asia-Pacific region remains host to over half of the world’s slum population, and some cities in the region have reached worrying levels of inequality. Historically, only the wealthy people could afford it to live in the city, since it was a privilege if someone did not have to work in agricultural professions and could participate in the more expensive urban life. Since the absolute population of cities increased drastically in respect to rural areas, especially in the continents of Africa and Asia, overcrowded cities are nowadays as well symbol for increasing differences between urban rich and poor, a level of congestion that has never occurred before, and pollution of the environment. Poverty is now growing faster in urban than in rural areas – the root cause can be also referred to as overurbanisation, leading to several negative consequences for a city and its inhabitants.

With more employees working inside but living outside the city centre, commuting distances and the amount of vehicles have increased. Erman Suparno, economic advisor of the greater special region of Yogyakarta, says there is an increase of 8000 motor vehicles in Yogyakarta every year (Indonesian Infrastructure Initiative, 2011). These vehicles still have to reach their destination, most of the time being work or school but also for recreational purposes, resulting in the fact that it gets more difficult as the traffic situation reaches critical levels.
And that is where the concept of accessibility comes into play; Thull and Mersch (2005) mention that accessibility can be described as the ‘ease to reach activities or locations’, and it consists of three main elements: proximity, transport mode availability and socio-economic background. The level of accessibility is dependent on the land-use structure and increases as a specific area increases in density or mixed uses, resulting in the fact that more activities can be reached in less time using more different transport options. Another variable that is important in someone’s accessibility is the willingness to travel to other places for several reasons, for example the need to travel to another place for work, or just because someone wants to visit a place for recreational purposes.

In the case of Indonesia, the country experienced a period of rapid economic development and urban growth from the 1970s until the mid-1990s. However, the 1997 Asian financial crisis had a major impact on the economy, and a period of civil and regional unrest followed shortly thereafter. These events led to pressure for greater democratisation and decentralisation, not in favour of the accessibility of the city centre. So the national government of Indonesia introduced a series of laws in 1999 to begin a rapid multifaceted process that is dramatically changing the way the country is governed (Sarosa, 2006). And due to the highly increasing degree of urbanisation in the form of rural-urban migration in the country, the – decentralised – local governments of the provinces are supposed to meet the escalating demand of services and infrastructure in terms of housing, transportation, and employment. When these demands are growing at a faster rate than the availability of infrastructure, there is a socio-economic dualism observable within urban society in Indonesia – meaning that both a modern city and a kampung [or: village] city are present in urban areas, reflecting the co-existence of the segregated rich and poor in the city (Rukmana, 2007).

Especially in the areas where the urban poor live, the level of air and water pollution increases significantly with the increasing traffic and thereby decreases the living quality in the inner-city. This could lead to the physical segregation of income classes through different areas of a city, of course being dependent on the fact if a person can afford it to move out of polluted areas.

According to Spencer (2010), the evolutionary pathway towards future urban inequality is based on settlement patterns, and on risks that create a permanent and residentially segregated urban ‘underclass’. Such work, understandably, brings inequality dynamics with it that become cemented into rapidly developing societies through the creation of new physical environments.

Such socio-spatial inequality can for example, become cemented in the physical distribution of roads, buildings, water supplies, the access to private finance underlying these physical infrastructures, and other socio-physical assets. The distribution of these assets becomes particularly important when broad economic growth stagnates and begins to decline – especially noticeable in the unavailability of employment for rural-urban migrants that leads to greater economic segregation (Spencer, 2010).

Without proper management and actions taken, the continuous influx or rural-urban migration may pose as a serious threat to the infrastructure in the urban cities. In terms of transportation for instance, traffic crisis costs Jakarta $1.4 billion a year due to serious traffic congestion and public transportation (Spencer, 2010). One of the implications of urbanization and development in Indonesia is the changing demographics in the rural areas; the elderly people will stay where they are, while there are more youths moving to cities in search of better employment opportunities. This is due to the fact that adequate investments in rural projects are absent, which further accentuates the rate of migration of youths from villages to cities. Youths do not have a platform for progress in such areas where there are no efforts made to improve their lifestyles – so they just move into cities in search for better. In this way, the city works as a magnet to people who are in search of a job and an abundance of opportunities.

1.2 Research Relevance

The scientific relevance of this research is based on the current pattern of people moving to the city, also known as urbanisation. The fact that the urbanisation in Indonesia entails a massive inflow of
migrants from rural areas, causes multiple problems as a result. This research reflects on the effects of the increasing urbanisation on the levels of accessibility and segregation, and the resulting lifestyle of inhabitants in the city - especially when the problems due to overurbanisation are worsening. Not only housing shortages are among the existing problems, also the infrastructure lacks in quality or quantity. And the fact that public transport is either not guaranteed in every sub-district of the city or unaffordable for a large share of the residents, makes it that the poorest residents are certainly restrained in their mobility patterns. The ease to reach another destination is therefore almost a privilege to the wealthier people in the city, leading to increasing differences between rich and poor as the city of Yogyakarta gets more crowded. Distribution of land happens in a way that is increasingly unjust for the economic underclass as the current trend continues.

There is already numerous literature on the effects of urbanisation, but not in relation with the effects of the population influx in Yogyakarta on the specific levels of accessibility and segregation and the resulting enlarging gap between rich and poor. Therefore the conclusions and recommendations that are drawn at the end of the research, are only relatable to the sub-districts and interviewed inhabitants of Yogyakarta.

On the other hand, the societal relevance of this research can be derived from the conclusions at the end, as it gives perspectives on problems that are currently happening in Yogyakarta. The insights that are acquired could be used in the fight against the problems caused by urbanisation, for example how the traffic problems can be solved, or how the amount of emissions can be reduced with alternative modes of transport. The governance of Yogyakarta could be altered with the outcomes of this research, as it shines more light on the connection between someone’s income level and to what extent that person is able to access central places in the city. In this way, differences in the distribution of land among rich and poor can be described in terms of the ease to reach other destinations. And furthermore, the research emphasizes how the current increase in crowdedness on the roads can be reduced, enabling a change in policy when it comes to the priority of public transport. Other cities in Indonesia with a similar situation could also utilise these insights for their own problems. It is less likely that cities from other countries can apply this information to their own situation because of the probability of other root causes or different regulations.

1.3 Research Aim

This research aims to give an accurate insight in the relation between the degree of segregation and accessibility in the city of Yogyakarta while being impacted by a high rate of urbanisation. For example, the actual infrastructure in the city is overloaded in such a way that the city centre is harder to reach than ever before, causing that the positive consequences of urbanisation – like economic growth – are almost outweighed by the negative consequences like congestion, housing shortage, lack of sanitation and a high rate of unemployment. Therefore, the socio-economic differences in the city increase and lead to spatial segregation and inequality in Yogyakarta.

With the information that is gathered through qualitative research, perspectives from people of different socio-economic levels are being analysed and compared on how they perceive the crowdedness in the city – and from which part of town – and how they think this situation can be improved in the near future. The respondents will be distinguished by their gender, age, wealth, profession and their place of living within Yogyakarta, in sub-districts that are from different reach to city centre Malioboro and have a different history of development.

In the end, the research tries to describe the current situation of accessing central places such as Jalan Malioboro in Yogyakarta, focussing on the residents’ level of accessibility in three sub-districts that are segregated to a different extent, while the city is under the impact of an intensifying crowdedness.
1.4 Research Questions
To gain an insight in the relation between the accessibility and segregation in Yogyakarta and the consequences for the lifestyle of its inhabitants, the following research question will be central in this research project:

*How does accessibility relate to socio-economic segregation in the city of Yogyakarta while being impacted by a high urbanisation rate?*

An answer to this central research question will be provided by conducting interviews with local residents and doing observations in three sub-districts of the city, linking the main concepts with each other to illustrate the determinants for the travel frequency of the individuals. This will be done through a breakdown into the following sub-questions:

- *Which aspects can provide a better understanding of the relation between accessibility and segregation?*

- *How do these aspects influence the lifestyle of the residents of Yogyakarta?*

These sub-questions are not made up to be answered independently from each other, but can be seen as the pieces of which a picture can be painted to provide an answer to the central research question. The answer explains what this relation between the main concepts exactly entails, how the situation in Yogyakarta in the future is to be expected if it stays like this, and how these concepts are interrelated with an eye on the lifestyle of Yogyakarta’s residents.

1.5 Reading Guide
To gain an understanding of the information that is needed to give an answer to the research question, several steps have to be taken first; in the second chapter will be illustrated how the main concepts of this research – accessibility, segregation and urbanisation – are operationalised and used to gather useful knowledge in Yogyakarta, besides the visualisation of the conceptual model. Chapter three contains a description of the research strategy that is followed to obtain the data in Indonesia, and furthermore an explanation of how the data analysis will proceed. The fourth chapter gives insight in the sub-districts in Yogyakarta where the interviews and observations were conducted, to paint a picture of the exact location of these areas within the city and its historical relation to the city. The fifth chapter on diverging lifestyles contains the essential diagram in the research with the visualization of every respondent’s levels of accessibility and income, separated into quadrants. Every quadrant contains a certain number of respondents, based on their level of accessibility and height of income, and can be illustrated in terms of lifestyle as Yogyakarta gets more crowded. Ultimately in chapter six, conclusions will be drawn by answering the central research question. After that, recommendations for future studies will be given in the next sub-section, followed by a reflection on the execution of this research.
2. How an increased urban population alters the socio-spatial composition

Theoretical framework on the main concepts in this research

This chapter contains the theoretical framework that is important for determining the relation between the accessibility to central places and socio-economic segregation, while these concepts are influenced by an ever-increasing number of inhabitants in the city of Yogyakarta.

After the introduction of the conceptual model with the main concepts that are used in this research, these concepts are further operationalised into the definition that is relevant for unambiguous insights in the processes that are currently going on in the city and to which consequences they lead. In other words, the main concepts are connected to each other by certain overlapping aspects in this theoretical framework, which signify the importance of being conscious about the current development pattern of the city.

2.1 Conceptual Model

![Conceptual model diagram]

Simplified in the conceptual model above, this research project will clarify the relation between accessibility and socio-economic segregation of different parts of the city – this relation can be seen as the core – under the given circumstance that there is a high urbanisation rate in Yogyakarta. This relation concerns the daily lives of the inhabitants of the city, since they are impacted by the increasing crowdedness and therefore see a change in their lifestyle with certain limitations – the intensity of the impact depends on the income level, since wealthier people can easier afford it to move to better places if the increasing crowdedness is not pleasing them in their current location of living.

Eventually the analysis that can be made, points out how the respondents of the interviews think of the current degree of accessibility to reach central places as Jalan Malioboro and socio-economic segregation in the city – possibly as a result from the increasing urbanisation rate –, how they experience this in their everyday life and how they think about possible improvements.

With the visualisation of the main concepts in this conceptual model, a connection between these concepts can be made to simplify the research base. Urbanisation can be seen as the overarching process that influences the other main concepts of accessibility and segregation in the city. The central question however explicitly concerns about the interrelation between accessibility and segregation and aims to find answers if these two concepts influence each other in some way while being pressured by a continuing urban sprawl.
2.2 Operationalisation of main concepts
Continuing on this conceptual model, the different parts of the model can be further elaborated upon, so that the given definitions can be interpreted in an unambiguous way during the whole project.

2.2.1 Urbanisation
The concept of Urbanisation refers to the degree of the gradual increase in the proportion of people that are living in urban areas. A high urbanisation rate means that a great share of the overall population lives in urban areas, while a low urbanisation rate refers to a great share of the population living in rural areas. Pradoto (2012) mentions that urbanisation in the first place used to be only focusing on cities, but current urbanisation patterns are more agglomeration or region-based.

In the case of Yogyakarta, the urbanisation is also based on moving to the city’s metropolitan region, which is known as Daerah Istimewa Yogyakarta (DIY) – Special Region of Yogyakarta. This is because of the fact that Yogyakarta is a relatively small city in itself, but it has major surroundings that attract newcomers to the flourishing region. According to Badan Pusat Statistik (2010), the urbanization in the Special Region of Yogyakarta will further increase in the next decades. In their prospected urbanisation rate chart, they state that Yogyakarta had an urbanization rate of 66.4% back in 2010, which will increase to an astonishing 84.1% that is estimated for 2035 – meaning that 84.1% of the metropolitan region’s population will live in urban space.

The high rate of population growth and urbanization on the island Java was generated by a concentration of economic development and sociocultural activity as well as political practices. It resulted not only in Java’s primacy, but also in sharpening the disparity between Java and elsewhere in Indonesia, particularly with respect to the availability of economic infrastructure and sociocultural facilities. People from various regions in Indonesia came to Java in search of a better livelihood since they believed that there was greater opportunity for new employment. Population density of such major cities in Java as Jakarta, Surabaya, Bandung, Semarang and Yogyakarta drastically increased. As one of the densely populated and rapid growing cities in Java, Daerah Istimewa Yogyakarta - henceforth referred to as DIY - presents a particular situation with regard to spatial and socio-economic phenomena. Some of its peripheral areas show a high rate of land conversion, although the evidence reveals that the high demand for developable land did not represent real need for housing at all, but to speculators manipulating the market. Despite a significant rate of migration, either intra-migration across the sub-districts in DIY or in-migration from elsewhere in Java or beyond, there is a surplus of housing units in several peripheral zones, but a housing shortage in the vibrant areas of the city and some parts of the urban edge.

According to Pradoto (2012), the rapid urbanization of cities in Indonesia has been taking place at an increasing pace since the early 1980s, especially because of the positive image of the city. Pradoto is saying that increasing development in the urbanized area has transformed space and fostered socio-economic change, causing that metropoles like Yogyakarta nowadays face great challenges in urban development and land management – the main reason being peripheral urbanization. This concept contains an ongoing agglomeration as one of its characteristics, meaning that the urbanization reaches peripheral areas on the edge of the city and gradually turns cultivated farmland and rural neighbourhoods into small towns. This process then goes on from this point, and “the dispersed pattern of newly built-up areas continues to spread into its surrounding, previously rural regions”, as Pradoto is claiming.

This process will remain as long as the city is seen as a magnet or generator for income, attracting more people to come to that place with the aim to accomplish economic growth. But when a city grows and expands its boundaries, there is need for a bigger focus on the peripheral areas – because these areas on the edge of the city will be subject to the urban expansion. Because of this relocation
of focus, the government has to be decentralized so that a tailor-made strategy can be created to guide and control the informal land development (Pradoto, 2012). According to Pradoto, the priority should be put on the coordination among the development authorities on both local and regional level, with a smaller influence from the national government.

Anyhow, the accommodation of urban development planning should be prioritized, while taking into account that a specific area is following its own unique growth pattern. This means that the planning authorities have to adopt to the needs of that specific area by being flexible in their strategies – not just prepare one strategy and apply it to all cases. And this is exactly what the urban development in Indonesia lacks, because the peripheral areas are still given less attention than the economic centres of a city. Pradoto (2012) mentions that peri-urban areas, especially in less-developed countries, currently have a more determinant role than before because they only get the attention that is needed to flourish economically when the urban sprawl reaches these areas. Back in the day only the city centre was considered as the economic machine, but now also the peripheral areas on the urban edges contribute to any kind of local or regional economy and therefore should be given proper attention.

In addition to meet the increasing disparities between rich-poor and urban-rural, Logan and Molotch (2007) invented a perspective in which the city can be seen as a growth machine. In their book, it is brought up that there is a common development strategy in which the performances of the urban economy are getting optimized by exploiting the resources of the hinterland – although this is causing economic disparities between urban and rural areas.

Nevertheless, this aim to boost the local economy becomes the most important factor of urban success, so an area would rather generate economic growth than pursue social equity. Furthermore, it would be better for a place to prioritize the development of small- and medium-sized companies over multinational companies, in order to gain a multiplier effect that is profitable for the lower income classes (Logan & Molotch, 2007). This multiplier effect will eventually retain an increase in income disparities between rich and poor somewhat, although at first it seems that this perspective will enlarge these disparities.

The lack of attention that the peri-urban areas are given currently, results in some kind of dichotomy; on the one hand these areas contain many economic activities on a local or regional scale, while on the other hand these areas lack regulation. This absence of strict regulation results in contingencies of urban growth, allowing rapid social change in the area, degradation in land use patterns and natural resources, with the consequence of over-consumption of that specific area (DiGaetano & Klemanski, 1999). The main reason why these areas along the urban edges are difficult to regulate is because they are located at the interface or urban and rural areas; this is of course a strategic location with the eye on urban expansion and the belief in obtaining any kind of economic significance for the surroundings, but this location also has its limitations in the form of regulation – because the Indonesian planning authorities focus on either urban or rural planning by following administrative boundaries, until now there has been very few information about the interface area where urban and rural overlap. This limitation makes the peri-urban area more complicated and therefore its growth tends to be uncontrolled with the focus on the city (Pradoto, 2012).

But as this problem is recurring in several less-developed countries, the local and regional planners of urban expansion are slowly coming up with tailor-made development strategies more often – because they also know that these areas will be of high importance in the near future. With the increasing interdependence between urban and rural areas, the authorities can create a better understanding of the dynamics of this process and are in that way able to modify their development strategy to the needs of that specific location.
But when this research is conducted, the solutions to guide the problems in urban fringe areas are still to be made; the rural-urban transitions seen in almost all the new settlements have reached unprecedented levels, with the intensity of problems and challenges increasing in the future. Population growth and continued land development are the current challenges, whereas socio-spatial segregation, socio-economic and cultural gaps as well as uncontrolled land markets and the spread of informal development are the emerging problems, not to mention the massive increase of transport in the city – causing more traffic jams (DiGaetano & Klemanski, 1999).

As can be read in the article of Azami (2015), the local people in specifically Yogyakarta are not satisfied with the growth that their city is currently experiencing. Azami mentions that Yogyakarta is dealing with an increase of 1330 migrants every single month, resulting in the fact that the migrants to locals ratio in the city is roughly estimated on 35:65. This is mainly due to the image of the city, being Java’s capital of culture, tourism and education. Other newcomers come to Yogyakarta for business or to settle down.

Based on the image of a city, it can be stated that the concentration of economic activities attracts migrants from outside, and this process therefore entails urban growth because the city has to expand beyond its then current boundaries. Besides enabling urban growth, the concentration of economic activity results in a more intense traffic, since city’s inhabitants still have to find some way to reach their destinations. And because of the latter, the concept of accessibility is important in this research. It is in fact not guaranteed that every area in a city accommodates a good infrastructure or a reasonable public transport network – possibly due to rapid social change or degradation of land use patterns.

### 2.2.2 Accessibility

Pacione (2005) writes that the key characteristic of the city centre – or Central Business District – is its accessibility, because it is a major factor in the locational decisions of central-city land users. This can be explained by the example that activities which require an accessible location to ensure their economic viability or functional efficiency tend to gravitate towards the CBD. The decision whether an actor chooses to locate in central city sites depends on a number of factors, most importantly the land price. As a central location in the city gets the most attention by passers-by, the high demand for central sites meets a high value for this area of land. Eventually this will result in a higher intensity of land-use to get the most out of the land price, mostly visible in the form of high-rise buildings. These buildings are most often occupied by multinational companies, since regular inhabitants of a city cannot afford prices that high.

Furthermore, Pacione (2005) writes that this eventually results in the CBD being typically characterized as the main area of commercial activity, as a centre of retailing, service industries and business offices, and as a zone with a limited number of residential land uses. Inhabitants of the city will be consequently pushed out of the city centre and will move to other areas, most of the time to a less central urban area where they pay significantly less for a bigger plot of land. In the case of Yogyakarta, the urban growth currently extends to the fringe areas Sleman regency in the north and Bantul regency in the east.

Thull and Mersch (2005) add to this that accessibility can be described as the ‘ease to reach activities or locations’, and it consists of three main elements: proximity, transport mode availability and socio-economic background – meaning that a high income helps with gaining a higher level of accessibility; since a wealthier person can afford if to live in a location that is better connected with the city centre. The grade of accessibility is dependent on the land-use structure and increases as a specific area...
increases in density or mixed uses, resulting in the fact that more activities can be reached in less time using more different transport options. Furthermore, the transport network and the quality of connections to the central business district is being influenced by the built environment in the central place. As the land use increases and the transport network gets better, it means that more people will move to areas that are located out of the central city, thereby causing an increase in travel times and traffic jams. Examples of places with a high accessibility are cities with a viable economy, a safe social environment that provide both a pleasant urban location and a good transportation system (Thull & Mersch, 2005). When it comes to the transportation system, this can be an intertwined network of public transport modes or a high quality road network that guarantees easy and fast access to the central city.

The socio-economic status element refers not only to the affordance of a centrally located place of living, but as well refers to the modal options that individuals can choose from; own vehicles are in need of gasoline, while public transport can be subject to waiting times and as well costs more money on the long-term. The mode of transport that a person decides to take, seems to be dependent on his or her socio-economic background and place of living within the city. When looking from this perspective, the concept of segregation comes into play, because the disparities between rich and poor can make significant difference in the grade of accessibility for a person to the city centre. In the next sub-section will be elaborated on this concept, signifying the importance for this research.

Ilhanfeldt (1995) underlines the importance of accessibility again by mentioning that the most important variable for the choice to follow decentralization or suburbanization is a good accessibility to the city centre, the entity which is also known as a growth machine. Ilhanfeldt used the research that Voith conducted in 1993, which showed that the central-city economy is an important factor in the overall wealth of suburban communities.

In the case of Yogyakarta, this can be explained with the fact that the former rural areas at the urban fringe have now experienced an upgrade in property value and a higher amount of economic activities, due to the economic growth of Yogyakarta’s city centre. Furthermore, the infrastructure from the specific suburban areas to the city centre will be improved to accommodate a better mobility between these places with the aim to accumulate the economic growth for the majority of the city’s residents.

It must be also noted that a distinction has to be made between internal and external accessibility, two different concepts. Especially external accessibility is a relevant aspect for this research, as it focuses on the possibility of reaching a specific place by measuring the quality of the roads and the different modes of transport that lead to the city centre (Baier & Schaefer, 1998). High external accessibility ensures a good connection between the city centre and its hinterland, enabling the suburban areas to benefit from the economic growth in the inner city. Internal accessibility can be left out, because it entails the walking conditions within the city centre which are not relevant in this research. Therefore, a note has to be made that the concept of accessibility in this research is specifically linking to external accessibility.

Another distinction in the research is between the concepts individual accessibility and general accessibility. The difference is in the fact that the latter refers to the accessibility of a certain area or sub-district to reach for example the city centre, while the individual accessibility gives an insight in the lifestyle of a single inhabitant. The individual accessibility explains the need or willingness to be accessible for the individual inhabitants of Yogyakarta, as they are respondents in this research.
**Problems with accessibility**

With more employees working inside but living outside the city centre, not only commuting distances and the amount of vehicles on the roads have increased, but as well the costs to reach a destination increased due to more traffic jams and longer travel times. Erman Suparno, economic advisor of the greater special region of Yogyakarta, says there is an increase of 8000 motor vehicles in Yogyakarta every year (Indonesian Infrastructure Initiative, 2011). The private motorcycle is the most commonly used mode of transport as newly-built suburbs are in the very beginning rarely linked with city centres by a convenient, direct and frequent public transport service. This can be seen as the major flaw of the improving accessibility as a result of suburbanization; the occurrence of more and longer traffic jams in cities (Thull & Mersch, 2005). People need to go to work or school in the city centre and therefore contribute to a more intense traffic situation. And furthermore, residents want to reach other destinations as fast as possible, and therefore believe that travelling with a private motorcycle is the cheapest and most efficient way – albeit that they contribute in this way to an increasing congestion.

In an article written by Sugiyanto, Malkhamah, Munawar and Sutomo (2010), the authors speak about their conducted research on the estimated congestion cost of private passenger car use in the Malioboro central business district of Yogyakarta. At first, they mention that the congestion becomes worse with the increasing activities in the roadside and bad behaviour of driving. Traffic jams will generate many problems due to inefficiency; with congested roads, vehicle speed will vary during the trip, causing the average speed to be lower and hence the transport cost to increase. Therefore, road users will suffer from increasing transportation costs and losing more time. In other words, not only CO₂ emissions but as well transportation costs will increase due to increasing congestion (Sugiyanto et al., 2010). Motorcycles furthermore have a bigger chance to avoid traffic jams, since the drivers are trying to find a way to get past the cars via the pavement or the roadside.

Without proper management and actions taken, the continuous migration may pose as a serious threat to the infrastructure in the urban cities. In terms of transportation, traffic crisis costs Jakarta for example $1.4 billion a year due to traffic congestion and public transportation (Spencer, 2010). Sugiyanto et al. (2010) concluded in their research that the general cost of a trip through the Malioboro area is 5802 Indonesian Rupiah (IDR), separable in a perceived cost of 3101 IDR and a congestion cost of 2701 IDR. This means that this trip almost costs twice as much as the price that it should cost, and the congestion cost is probably even subject to an increase with the higher amount of traffic jams currently.

A possible solution to these ever-increasing traffic jams is the Yogyakarta government’s plan of realizing a monorail system in the city, as the traffic situations are getting worse than they have experienced before. In cooperation with an investment group, the government is proposing a 40-kilometre monorail project from the city centre to the urban edges, the Borobudur temple area included. This is a way to decrease the pressure on the existing traffic, enabling people and vehicles to reach their destinations easier and faster in the future. But the monorail construction in the city still involves great social problems, mentioned the city’s governor Sultan Hamengkubuwono X (Indonesian Infrastructure Initiative, 2011) – possibly referring to the loss of jobs for traditional transport in Indonesia like the becak or the andong. And furthermore, the current public transport system in Yogyakarta is not well-received by its residents because it does not have a private lane on the roads and is therefore also disadvantaged by the increased number of traffic jams. Since public transport is
more expensive than private transport on the long-term, people are still used to travelling with their own vehicle, mostly per motorcycle.

Furthermore, the level of air pollution increases significantly with the increasing traffic and thereby decreases the living quality in the inner-city. As Putra Rizkiya (2011) wrote, the air and water pollution as a result of transportation and polluted rivers has now made Jakarta the third city in the world in terms of having a polluted environment. This could lead to the physical segregation of income classes through different areas of a city, of course being dependent on the fact if a person can afford it to move out of polluted areas. This is not the case yet for the city of Yogyakarta, but if the current increase of transportation continues with congesting the roads, the same scenario is likely to take place in here – resulting in the less-wealthy inhabitants to live near or in polluted areas.

2.2.3 Segregation

As was stated by Romero, Vásquez, Fuentes, Salgado, Schmidt and Banzhaf (2012), segregation can be defined as the action to separate or remove one item or group from the other items or groups. In the context of development, segregation can be usually seen in two different perspectives – the sociological and the spatial aspect. In the first aspect, segregation refers to an absence of interaction between social groups, while in the spatial aspect segregation is the unequal distribution of social groups in the physical space.

According to Fitra and Pradoto (2014), people are often seen to live within their own urban sociology. This term was invented by Gottdiener and Hutchison in 2011 and it emphasizes that in the diverse socio-cultural and socio-economic characteristics, some people live in an own symbolic world. They have a certain value which possesses ideas and attempts to communicate with others by using similar symbols. In addition, people have a tendency to live in a residential area in which the community has the same characteristics such as the same language, race, religion, social class and so on. And apparently, for some reasons some of them prefer to separate from them who do not have a similar identity and therefore engage in social exclusion. Segregation can then be seen as the existence of grouped or enclaved communities who separate themselves from the mainstream.

In the case of Yogyakarta, the city has a unique identity to attract people to live there since it is known to be Java’s centre of culture, tourism and education. And similar to other cities, the high urbanization rate has led to land limitation which caused the city to expand the urban activity beyond its borders.

There are different kinds of segregation, for example based on race or religion, but also based on socio-economic status. Socio-economic segregation means that the city consists of segments where the economic inequalities can be identified between the different parts of town; the high incomes near the public amenities and the low incomes further away.

The most common characteristic of segregation is the fact that there coexist multiple populations at the same time in a place. Firman (2004) addresses that residential area is the most visible and logical place where segregation occurs, because spatial segregation comes into play when specific areas are overrepresented by a certain group, while other areas are being underrepresented.

According to Fitra and Pradoto (2014), segregation has already led to negative consequences such as social exclusion and discrimination, which will cause that cities will become socially fragmented. Since the focus in this research is on socio-economic segregation, the concept contains the unequal distribution of land between different social groups with differing income levels. Pacione (2005) writes that socio-economic segregation is driven by the fact that people with a higher
income have more opportunities to select their residential environment in accordance with their interests and tastes, while people with a lower income are more constrained in this choice because of their weaker market position. This is why most parts of the urban area are overrepresented by people with a lower social status, while the people with a high social status move to a place where there is plenty of space to meet their needs and interests. The process gets further exploited by the realisation of public housing solely in neighbourhoods where it is desired or needed.

In this research, only segregation based on socio-economic differences will be investigated through the city of Yogyakarta, since this income difference may be related to a certain handicap when it comes to accessing the central business district of Jalan Malioboro – in terms of time spent and transportation costs. More specifically, the perceived difference in accessibility to Malioboro area will be measured by interrogating people from different socio-economic levels within a sub-district; this makes it that the researched segregation is not about the difference in segregation in the different sub-districts, but about the inhabitants within the specific areas themselves. Later on it will as well be possible to compare sub-districts with each other. After all, socio-economic segregation implies that the higher income classes get to choose the best places to live – possibly near the central business district, or at least near a road that is well-connected to it – while the lower income classes are indirectly relegated to less attractive areas due to an unavailability of affordance.

However, Vaughan (2005) mentions the segregated areas in her research where in contrast to the bad living quality, the areas were reasonably well-connected with the city centre. In this way it can be concluded that the segregated areas were hidden from public life, yet the areas were overall not particularly distant from the city centre and its economic activities. For the sake of this research, it implies that accessibility to the city centre does not have to be affected by the socio-economic level – while that sometimes may be the case with this type of segregation, as the wealthy people pick the best locations.

Furthermore, Vaughan (2005) writes that these segregated inner-city quarters are a magnet for refugees and immigrants who are seeking for economic opportunity, because there is a sufficient supply of cheap housing and labour – leaving aside the high level of pollution and other problems in such areas.

**Cumulative causation**

Rukmana (2007) mentions, the growing number of migrants in Indonesian metropoles has caused the formation of squatter kampungs in the peripheral areas of the city, mostly around the edges. This is not only a sign of urban growth but as well economic growth, although it does not look like growth. These peripheral areas in fact mainly attract migrants because the areas of land are cheaper and bigger than in the central city – allowing a better living quality, and at the same time the kampung’s infrastructure to the city will be improved with the presence of higher income classes. The city government will have to start investing in these peri-urban areas, so the connection to the central business district can be improved, resulting in more urban and economic growth. Rukmana writes that these areas can grow into a high quality complement to the central city, sometimes specializing in one or two specific sectors. But on the other hand, the downside of this growth also entails increasing disparities between rich and poor, resulting in a higher grade of physical segregation in Indonesian cities; areas that perform well versus yet undeveloped areas.

Also related to this research is the concept of cumulative causation, introduced by Gunnar Myrdal in 1956. In this case, it refers to the process of an expanding city centre at the expense of the city’s periphery. This is caused by a multiplier effect by reinforcing economic and social processes that
can lead to continued growth in wealthy, developed regions and continued decline in poorer regions, despite interaction among the regions (Delaney & Harrington Jr., 2009). This multiplier effect enforces the competitiveness and stimulates further economic growth in such a way that the economic activities of a city will concentrate even more in the centre, resulting in a decrease in employment and prosperity in the urban fringe – and cumulative causation can therefore be seen as a self-enforcing process. Delaney and Harrington Jr. (2009) write that this process has both positive and negative effects for the city’s periphery, known as spread and backwash effects. Spread effects are positive consequences from economic growth in the centre that reach to the periphery, for example when companies decide to relocate to the periphery due to lower costs, or when the periphery’s infrastructure and average wealth increases. On the other hand, backwash effects are the negative consequences for the periphery; a common backwash effect is the brain drain of the periphery, meaning that capital, commodities and people are lured out of the periphery to the centre’s economic growth.

When compared to the phenomenon of urban sprawl in Indonesian cities, it can be stated that the economic success of the city centres have both spread and backwash effects for the periphery. The positive thing is that the periphery is blessed with an improved infrastructure from the centre or even becomes part of the city as it expands its borders and includes these peripheral areas in its development priority, while the disadvantage lies in the fact that these areas can get used as a means to gain more economic growth in the already existing city – while the area itself possibly does not profit like the city centre does. This is dependent on the attractiveness of the specific peripheral area, concerning multiple variables in relation to the city centre that are crucial to the possible occurrence of segregation in new urban areas in comparison with existing urban areas (Rukmana, 2007).

**Examples of backwash effects**

As can be read in the introduction, Spencer (2010) wrote on the future urban inequality being based on settlement patterns, and on risks that create a permanent and residentially segregated urban ‘underclass’. Due to the existence of rapidly developing societies, this leads to the creation of new physical environments. Such socio-spatial inequality can become cemented in the physical distribution of for instance roads, buildings, water supplies or other socio-physical assets. The distribution of these assets becomes particularly important when broad economic growth stagnates and begins to decline – especially noticeable in the unavailability of employment for rural-urban migrants which leads to greater economic segregation in a city (Spencer, 2010) – another example of a probable backwash effect.

Azami (2015) accentuates the troubles that accompany the growth by stating that the high number of migrants that moves into Yogyakarta is being accompanied by an increase of numerous internet cafes, coffee shops, self-service markets and other businesses that are willing to cater to them. Yogyakarta city is partly because of that experiencing the biggest boom in residential property in history, which suddenly became a vital source of revenue for the municipality. However, the key issue in this is the government who allows for the provision of residences, but it cannot stop the aggressive way that real estate developers practice to build solely for newcomers – in the form of apartments, gated communities or hotels. The issue is in the fact that these developers may be contributing to an increasing spatial disparity with this process, enlarging the physical segregation in a city with the less-wealthy being pushed back to more remote areas. Azami (2015) continues by stating that although the property development creates jobs, it is largely uninhibited because it is ultimately destructing the environment. An example can be seen in the realisation of hotels, where the building
project is subject to no rules – which results in water shortages for the nearby local residents. Further problems still must be anticipated, because there may arise a social conflict as a result of the accumulation of local residents’ disappointment with the degree of commercialization of residential developments in their neighbourhoods – with the example of water scarcity or air pollution as key element (Azami, 2015). It is logical that the local residents blame the own government for the ease of issuing the necessary permits to developers for building ‘newcomer residences’, but until now there is only satire and few protests among the residents. The future will tell if the residents’ trust in the government will maintain or backfire as a result of allowing the spatial and income disparities to increase.

In the next chapter will be elaborated on the method that will be used for determining the relation between the concepts of accessibility and segregation under the given circumstance that Yogyakarta is getting increasingly crowded – and what consequences this has for the lifestyle of several inhabitants.
3. Methodology

In the previous chapter, both a conceptual and theoretical framework are presented to provide a guideline of analysis for the conducted research in Yogyakarta. This methodology chapter builds on that guideline, or scope, to make sure that the gathered information is useful for answering the central research question.

After this, the first thing to be illustrated is the research strategy that is used to obtain valid data in Indonesia, which is able to be examined for provisional conclusions. Directly after that, the research’s limitations will be underlined so that there cannot be misinterpretation about the validity of the results. In the second paragraph will be discussed how the analysis of the obtained data proceeded.

3.1 Research Strategy

The research aims to contribute to the understanding of the relation between accessibility and segregation under the given circumstance of a high urbanisation rate. To understand this relationship, phenomenological research has to be conducted on both quantitative objects, such as the number of public transport vehicles that pass in one hour, or the number of roads that lead from one place to the city centre, and qualitative objects, the respondents of the conducted interviews. This information is gathered through empirical research that builds on already existing knowledge in the form of a case study (Verschuren & Doorewaard, 2010). Case studies give insight in the occurrence of certain processes or practices, and also on the reason why these processes or practices occur. They are often used in qualitative research to compare and give meaning to obtained data.

In this case, the new information that will be the result of this research, is as far as known only applicable to these specific sub-districts in the city of Yogyakarta; Depok, Umbulharjo and Kotagede. According to Verschuren and Doorewaard (2010), the examining of three different objects – in this case the sub-districts in Yogyakarta – fits into the frame of the multiple case study. Multiple case studies are conducted in order to gain an integral and in-depth insight in multiple facets of the sub-districts. The specific characteristics of these sub-districts can be found in the next chapter, which shows that they all have a different history in relation to the city of Yogyakarta.

The research that is conducted in these sub-districts, proceeded via a two-level approach; both a descriptive and explanatory aspect. The data that is needed for the descriptive aspect, can be deducted from observations on the number and the quality of roads that lead to the city centre, the frequency of traffic jams and the availability of public transport. The explanatory aspect is driven by the data that is obtained through in-depth interviews with respondents from the different sub-districts, from different socio-economic levels. In this way, the qualitative answers from the respondents will show how the quantitative answers from the observations are interpreted differently and somewhat complement each other – depending on the sub-district and the socio-economic level of an individual.

My stay in Yogyakarta lasted four weeks, in which I conducted this explorative field research in the different sub-districts of the city. The empirical data for this research has been collected in the form of visual data, semi-structured interviews and observations. These different forms of collecting data have been used to increase triangulation, a way of approaching data collection that contains multiple and different sources to provide validity (Creswell, 2013). Verschuren and Doorewaard (2010) add to this that triangulation can help to gain an integral insight of the object of research. In this way, the main concepts of accessibility and segregation can be connected in such a way, that an insight will be gained on the mutual influences that these concepts have in Yogyakarta - particularly in the
fluctuating context of increasing urbanisation. This will not only provide scientific knowledge on the connection between these concepts, but it contributes as well to the understanding of hiccups that spatial planners will also encounter and try to improve or solve for the development of the city.

3.1.1 Semi-structured interviews

According to Creswell (2013), semi-structured interviews provide a base but still have plenty of room to go deeper into the topic and ask for explanations or perspectives. The semi-structured interviews in this research provided information with attitudes, perspectives and ideas on the extent to what Yogyakarta’s city centre Malioboro is currently accessible, to what extent the high urbanisation rate leads to problems, and the occurrence of socio-economic segregation within the chosen sub-districts. This information can be mutually compared, with the aim to find similarities and differences in the way that the respondents perceive their current situation and lifestyle in the city of Yogyakarta. To take a look into the interview guide for an understanding of the questions that were asked, see Appendix I.

It also has to be mentioned that there were some distinctions made in the way of choosing the respondents; based on probable diverse perspectives and answers, there are both men and women interviewed, from high, medium and low-income classes – to get as much diverse answers as possible, next to the fact that the respondents are picked out of the different sub-districts Depok, Umbulharjo and Kotagede. In the table in Appendix III is the respondent information shown, with their name, age, place of living, income class, and profession included – which is as well presented in table 1. It was decided that out of every sub-district, three different respondents were interviewed. These respondents where sorted out, all varying in income class and profession – possibly leading to a different perspective on this relation between accessibility and segregation. The choice to pick more than one case study was made because with the investigation of multiple case studies, the respondents’ perspectives can be compared with the aim to reach a certain heterogeneity among the respondents from the different sub-districts. This heterogeneity can be reached by conducting research on this sample size of nine respondents; gaining different insights in the way the local people of Yogyakarta perceive this existing relation between the main concepts.

The heterogeneity that occurs among the respondents though only tells something about the varying perspectives that exist between the respondents, but this research group is too small to gain a representative view of the opinions and perspectives towards the relation between accessibility and segregation. The heterogeneity particularly tells something about the relation between the respondents’ position within the city and their economical background, and what consequences this relation has on their accessibility perspective and the effects on their lifestyle, but cannot be generalized to the whole population.

The nine interviews consisted of 16 questions, of which three are basically pre-interview questions that were asked to gain an insight in every respondents’ personal background. In this way, potential differences in perspective could be connected to someone’s place of living within Yogyakarta, in which sub-districts they have lived so far – if they have not been living in the same sub-district for their whole life —, or to their profession. In table 1 is the gained respondent information illustrated as an overview, which can also be found in Appendix III.

The other 13 interview questions were divided into three different subjects, aiming for differences between the perspectives of the respondents; intensifying crowdedness, accessibility and segregation. The structure of the interviews was set up in such a way that potential additions by the respondents were allowed, enabling individual differences in perspective.
Table 1: Respondent information, sorted on alphabetical order

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Age</th>
<th>Profession</th>
<th>Living in, since</th>
<th>Income class</th>
<th>Interview date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Mr. Abdul Muhaimin</td>
<td>63</td>
<td>Owner of Islamic boarding school</td>
<td>Kotagede, birth (1953)</td>
<td>High</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>3</td>
<td>Mr. Ari</td>
<td>43</td>
<td>Art seller &amp; artist</td>
<td>Depok, 1999</td>
<td>Middle</td>
<td>05-04-2016</td>
</tr>
<tr>
<td>5</td>
<td>Mr. Hans Rinaldi</td>
<td>38</td>
<td>Tailor</td>
<td>Umbulharjo, birth (1977)</td>
<td>High</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>9</td>
<td>Mrs. Gracia</td>
<td>36</td>
<td>Coconut seller</td>
<td>Kotagede, 1992</td>
<td>Low</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>1</td>
<td>Mr. Mujiono</td>
<td>57</td>
<td>Gasoline seller</td>
<td>Depok, birth (1959)</td>
<td>Middle</td>
<td>05-04-2016</td>
</tr>
<tr>
<td>6</td>
<td>Mrs. Semi</td>
<td>54</td>
<td>Seller of several foods</td>
<td>Umbulharjo, birth (1962)</td>
<td>Low</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>8</td>
<td>Mr. Sidik</td>
<td>47</td>
<td>Becak driver</td>
<td>Kotagede, 2002</td>
<td>Low</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>4</td>
<td>Mr. Triyono</td>
<td>57</td>
<td>Becak driver</td>
<td>Umbulharjo, 1975</td>
<td>Low</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>2</td>
<td>Mrs. Wati</td>
<td>58</td>
<td>Fruit seller</td>
<td>Depok, 1992</td>
<td>Low</td>
<td>05-04-2016</td>
</tr>
</tbody>
</table>

The fact that the interviews were semi-structured also influenced their length, varying between 15 minutes and an hour – depending on the quantity and quality of the information per respondent. All interviews were conducted in the working time of the respondents, but it did not seem to have led to changes in the respondents’ attitude – probably because they just wanted to supply a foreigner from Europe with their insights and knowledge. Before the execution of the first interview, it was expected that respondents might not have the time for interviews, because especially the low-income people have to work long days to keep their head above water in the city. But the approached inhabitants reacted better than expected and all wanted to be part of the research. Although, there were four people who appreciated the fact that they could sell something in return for an interview. And there was one person who had to leave the interview early due to a client whom he awaited with his becak – yet all the questions were asked, the provided answers were only quite brief in this case. In retrospect, these people all turned out to be part of the low-income class and did not want to see their working time go to waste, but they were all friendly after the purchase at their shop – varying from gasoline till coconut juice, mangosteen and prawn crackers.

Another factor that was expected to influence the outcomes was the language barrier that had to be overcome, since the interviews were held in Bahasa Indonesia. Nevertheless, these factors turned out to be no real obstacle as the inhabitants were all willingly cooperating in their own time with comprehensible answers, which is also due to the presence of the UGM students that were helping with translating – Setiyo Nugroho and Widha Ayu – only enabling smaller misinterpretations.

3.1.2 Observations

The observations that are conducted in the different sub-districts were based on multiple visits to that specific place. The aim was to be able to paint a picture of the infrastructure, the public transport and the traffic jams on different times of the day – as well as on different days of the week.

The observation scheme that is used can be found in Appendix II.

To ensure that the insights from the observations were valid for getting a clear view of the extent of accessibility and segregation in the different sub-districts in Yogyakarta, it was decided that these had to be done during several moments of the day to gain an understanding of the busy and less busy periods on the road. During the first three days of the research period in Yogyakarta, a day-long visit was brought to the different sub-districts with the aim to determine the times that the roads are under distinctive circumstances, which are expected to be different in another sub-district – besides that the visit was as well intended to be for sightseeing and getting to know the sub-districts.

After the three visits to Depok, Umbulharjo and Kotagede, there was decided on three specific
moments on the day to go on observations in the sub-districts; these were hour-long visits from 6 till 7 AM, 12 till 1 PM and 4 till 5 PM.

The first observation from 6 till 7 AM was picked because at that time slot, the majority of the people go to work and school – and it therefore is one of the busiest moments of the day.

The second time slot, in which the observation during 12 and 1 PM was chosen, it is expected to be less busy on the roads because everybody is already on their place of destination – either at school or work, or any other place, possibly for recreation. The number of people who engage in traffic at this time of the day is dependent on the mobility pattern in the given sub-district, which is in turn dependent on the freedom for people to choose wherever they want to go when they want to. It is expected to not only get an understanding of the accessibility of the people that are in the given time slot in that sub-district, but as well an understanding of the accessibility to centrally located amenities and the potential segregation that is present in the area.

The third moment of observation was in the time slot of 4 till 5 PM; this one was picked because at this time the majority of the people is done with work or school and returns back home or goes to a next destination. Logically, this would result in a more crowded traffic than on other moments of the day, which leads the city’s inhabitants to varying destinations.

The main focus points in the observations are the quality of the roads, the quality and frequency of the public transport network in the given sub-district, the number and intensity of traffic jams within the time slot of an hour, and the fact if there is any sign of segregation noticeable on the street. And furthermore the number of roads from the specific sub-districts to city centre Jalan Malioboro are taken into account for determining the level of accessibility, since Malioboro is known as Yogyakarta’s centre of economic activity.

In table 2 is illustrated on which exact days and time slots an observation was conducted in the different sub-districts.

<table>
<thead>
<tr>
<th></th>
<th>Kotagede</th>
<th>Depok</th>
<th>Umbulharjo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday 25 March 2016</td>
<td>✓ 6-7 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday 28 March 2016</td>
<td>✓ 12-1 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday 30 March 2016</td>
<td>✓ 4-5 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday 4 April 2016</td>
<td>✓ 6-7 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday 1 April 2016</td>
<td>✓ 12-1 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday 13 April 2016</td>
<td>✓ 4-5 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday 6 April 2016</td>
<td></td>
<td>✓ 6-7 AM</td>
<td></td>
</tr>
<tr>
<td>Monday 4 April 2016</td>
<td></td>
<td>✓ 12-1 PM</td>
<td></td>
</tr>
<tr>
<td>Tuesday 12 April 2016</td>
<td></td>
<td></td>
<td>✓ 4-5 PM</td>
</tr>
</tbody>
</table>

Table 2: Observation times & dates in Yogyakarta

3.1.3 Research limitations

In this research on the relationship between accessibility and segregation under a high rate of urbanisation, certain predetermined limitations can be pointed out. The most important limitation is the relatively short amount of time that was available for conducting the research. Since I stayed in Yogyakarta for four weeks, there definitely is a shortage on respondents to be able to generalize the conclusions to all residents of the sub-districts – the results can only be interpreted to a certain extent how the main concepts are interrelated. This causes the external validity to be limited, since the conclusions are not representative for the whole population.
Another limitation is the language barrier, possibly responsible for misinterpretations. Although there were the two students who supported me by translating, it still caused some difficulties during the interviews – especially when compared to conducting interviews in Dutch or English. Because this limitation was already taken into account, the observations partly overlap the information gained from interviews – so any misinterpretation could be minimised to something that was not observed.

3.2 Research Material & Analysis

To make sure that a proper analysis could be made from the obtained information in Yogyakarta, the data needed to be interpreted in a systemic way. Therefore, the interviews were recorded, analysed and interpreted directly after the interview moments – in cooperation with the UGM students – to avoid any miscommunication or lost information. So the primary data consists of interview recordings and interpretations of the respondents’ answers; there are no real transcripts in Bahasa Indonesia, only Indonesian interpretations of the interviews in Umbulharjo and Depok.
4. Insights in different kecamatan

Illustration of the three different research areas in Yogyakarta

The city of Yogyakarta is geographically located in Central Java, Indonesia. Besides the fact that it also is the capital of the Special Region of Yogyakarta (DIY: Daerah Istimewa Yogyakarta) and therefore gains a special status, it is the only region in Indonesia that is still being governed by a Sultan (Hamengkubuwono X) who can be seen as the hereditary governor of the region who resides in the Kraton, the sultan palace of Yogyakarta. During the Indonesian Revolution between 1945 and 1949, it even was the capital of the country.

The Special Region of Yogyakarta is further divided into four areas on regency level (kabupaten) and one city (kota). The names of the regencies are Bantul (capital is Bantul), Gunung Kidul (capital is Wonosari), Kulon Progo (capital is Wates) and Sleman (capital is Sleman), while Yogyakarta is the city in the region. Every regency and the city are then further divided into sub-districts, which are known as kecamatan – there are 78 kecamatan in total in the Special Region of Yogyakarta, and 14 kecamatan in the city itself.

The city of Yogyakarta is relatively small in general in terms of area and inhabitants, but there is a large metropole around it. Especially when compared to bigger cities like Jakarta and Surabaya, this is an exceptional difference when it comes to the size of the metropole and its service area. Because back in 2010, Yogyakarta had 389,000 inhabitants in the city itself, while the metropolitan area counted 4,010,000 inhabitants (Badan Pusat Statistik, 2010).

Yogyakarta can be seen as the city of culture, education and tourism of Java; mainly because of the rich history of this place and its surroundings – DIY – and the resulting money that’s present for developing. Next to the cultural heritage in and around the city, Yogyakarta houses many universities, of which Universitas Gajah Mada is the most popular university in Indonesia – also the current Sultan studied there.

Furthermore it is not more than logical that Yogyakarta has the highest level of English-speakers in Java – relatively more than in Jakarta, because it attracts many more tourists than the other cities on the island. Several popular tourist attractions like the Borobudur and Prambanan temples are located in another regency of DIY – Magelang and Sleman regency –, and that explains why the region is flourishing – not only the city. But as the city and the region are growing, not all people can ride that wave; the economic differences increase and the place of living within Yogyakarta is more and more depending on someone’s wealth.

Besides illustrating the geographical location of the sub-districts in which the research is conducted, the first section elaborates on the quantitative information regarding the quality and the number of the roads, the number and intensity of traffic jams, and the observability of segregation that is obtained during the observations in the sub-districts.

Furthermore, the second section contains information on the perceived accessibility of the city as a whole. At last, a portrait of several characteristics of inhabitants of the city is illustrated in terms of their individual lifestyle – and hereto related their income class and their accessibility. The reason behind not portraying all interviewed inhabitants in this section is because of the fact that the omitted ones are quite similar to the portrayed inhabitants, in terms of lifestyle. For example, respondents Mr. Sidik and Mrs. Gracia from Kotagede are working in different professions, as a becak driver and a coconut seller respectively, but they have a similar lifestyle with certain freedoms and constraints – also when it comes to their income class and accessibility. In this way it is decided that
Mr. Sidik can be left out in this section that focusses on portraying the lifestyles of several inhabitants that stand out from other ones. Respondents that are omitted from this section will still be connected to the ones who are portrayed, as some of the lifestyles contain different explanations for an individual to live that way.

In this case the research does not concern about the metropolitan region, but it focuses on three different sub-districts in the city itself. These sub-districts will be investigated on their accessibility and segregation, as they are located both in the northern and southern areas of Yogyakarta. Two of the sub-districts – Umbulharjo and Kotagede – are located in the south of the city, adjacent to each other but with a totally different history. The third sub-district, Depok, is part of the Sleman regency in the northern area of DIY and seems therefore less enthralling for this research, but its southern part is within the boundaries of Yogyakarta city and is therefore an interesting research object. The three sub-districts all show in some way a different transformation from how they used to be into what they became; in short, Kotagede was a kingdom’s capital in ancient times and still is perceived that way, Umbulharjo turned from rural area into high income sub-district and Depok also used to be a rural area – but turned into the second economic centre of Yogyakarta city.

Figure 2: Location of Depok within Yogyakarta (Google Maps, 2016)

4.1 Depok
The first sub-district that will be illustrated is Depok, which can be seen in the figure above (figure 2). This kecamatan is divided into a ‘Jogja city part’ and a ‘Sleman regency part’, the border being the ring road around Yogyakarta. According to Badan Pusat Statistik (2010) the whole sub-district housed 181,490 inhabitants in 2010, but in this research only the Yogyakarta area will be investigated. One of the respondents, Mr. Ari, told that the southern part houses the most people because it contains both the largest share of Depok’s area and the majority of economic activities – he estimated the southern area’s population on 120,000 when he was notified with the total number of inhabitants. Next to the significant amount of economic activities in the area, there are many universities in Depok – with in particular Universitas Gajah Mada. Because this part of the city is flourishing and evolving at a rapid pace, the amount of housing in this area almost cannot keep up with the number of inhabitants.
– it is known as the most crowded area of Yogyakarta, after Jalan Malioboro.

Notified with this information, it is hard to believe that Depok was still a rural region in the 1980s. Depok changed from being a rural area to an intensely crowded place - especially after the earthquake of 2006 in Bantul and the eruption of the Merapi volcano -, with the most traffic jams of all areas in the city of Yogyakarta. The crowdedness was particularly caused by the increasing popularity of the universities in Depok and the fact that there is a high level of economic activities in the area, also with the presence of multinational companies. As all students go to the universities by motorcycle, they are frequently causing chaos on the road with their “bad manners”, as respondent Mr. Mujiono describes their style of driving.

Besides Universitas Gajah Mada, the highest rated and most popular university of Indonesia for many years already, Depok houses other big universities such as Universitas Negeri Yogyakarta and Sanata Dharma University.

During the observations that were conducted in the kecamatan of Depok, there were certainly traces visible of the presence of segregation, probably due to the high variation in professions and salaries among the inhabitants; the inhabitants of this sub-district who live along the main roads are the most wealthy, while the poorer people do not get to choose their location of preference and therefore get expelled to inferior areas in small alleys for example. These remote alleys are dirty and smelly most of the time, not allowing much daylight due to adjacent buildings, while the main roads in Depok are almost waste-free.

In the sub-sections hereafter will be described how the state of the main roads, public transport and traffic are observed, allowing to determine a possible relation between the observed level of segregation among both people from higher and lower incomes classes in the sub-district and someone’s level of accessibility to central places – in this case Jalan Malioboro.

Figure 3: Location of main roads in Depok (Google Maps, 2016).
4.1.1 Number and quality of main roads

There are five different possibilities to get out of Depok that connect with Jalan Malioboro; Jalan Kaliurang, Jalan Affandi, Jalan Seturan Raya, Jalan Urip Sumoharjo/Jalan Laksda Adisucipto, and of course Jalan Ringroad Utara – the boundary between DIY and Sleman regency. Most of the people in Depok use Jalan Affandi to get out of the sub-district, since this street is the main hub of the area – located at a central place in Depok (figure 3). Almost all hotels and newly build high-rise apartments are located along that street, as well as a great share of businesses from different sizes – from small local warungs to multinational companies.

Jalan Affandi is represented by the red line in the figure below and symbolizes the heart of Depok. The blue line in figure 3 resembles Jalan Kaliurang and is also used very frequently, since it goes straight through the UGM campus and gets utilized by all those who have to be at the campus – or at the hospital which is in the north of the campus.

Jalan Seturan Raya is the purple line in figure 3 and mainly gets used by the people who are living in the eastern part of Depok - it is calmer than the other main roads in the area.

Furthermore the green line represents Jalan Urip Sumoharjo/Jalan Laksda Adisucipto, an extremely busy road that not only leads to Malioboro, but also leads to the international airport of Yogyakarta – Bandar Udara Internasional Adisucipto.

The final option to get out of Kotagede sub-district is by following the black line in figure 3, Jalan Ringroad. This road is surrounding Yogyakarta on all sides and is mostly used by people who have to leave the city or come from other places. This line also represents the separation of Depok into two totally different areas, the Yogyakarta city area and the Sleman regency area.

Although the roads are very crowded, the quality of the main roads is very good. This is due to the fact that Depok is quite recently built; the urban sprawl caused Yogyakarta to expand on the northern side of the city, where until the late 80s only forests and rice terraces were located. In the observations that were conducted, it became clear that Depok is a well-developed area, since there is diversity. There are universities – the presence of knowledge –, properly maintained roads, a variety of businesses and as well multinational companies. Depok can be seen as the second centre of Yogyakarta after Jalan Malioboro, since it is packed with economic activity and therefore busy at all moments of the day. On a five-point scale from very bad to very good, Depok gets a ‘very good’ when it comes to the quality of the roads, following the observation scheme as a guideline (Appendix II).

4.1.2 Public transport

When it comes to public transport in the area, Depok scores a ‘good’ in the observations. This is because of the fact that there is an adequate amount of taxis, Grabs, Ubers, SayTaxis and GoJeks – the cheaper alternatives for regular taxis using either car or motorcycle, but there is a lack of public buses and there are almost no becaks. This may be a problem for the lower-income inhabitants, since travelling per bus or becak as public transport is the cheapest way to get somewhere – besides using private transport.

Actually Depok is the only place in the city where becaks are hard to find. One of the reasons is that a large share of traffic contains students and people going to or coming from work, and the fastest way is to go with your own vehicle. Simply because buses do not ride on an exact schedule and because a taxi - or any related way of public transport - would be too expensive for every trip on a long-term. A third reason for the sporadic presence of becaks is because of the sub-district’s crowdedness; becaks cannot find enough space on the roads to drive, as the main roads are packed with cars and motorcycles.
4.1.3 Traffic situation

One of the observations in Depok was on a Monday morning between 6 and 7 AM, and the traffic was a mess around Jalan Affandi and Jalan Urip Sumoharjo/Jalan Laksda Adisucipto. It was rush hour at this time on a Monday, and the traffic controllers who usually are present in crowded areas had not shown up yet, so the traffic had to guide itself through the sub-district. The vehicles – even the motorcycles – could not move an inch for quite some time, so that is why the indicator for ‘intensity of traffic jams’ was described as impermeable.

This segment of Depok is the place where the main financial activities are, as well as the majority of street vendors and warungs. Every part of Depok has its own function and its own typical background of selling a specific product – mostly handcraft or fine dishes. This makes it crowded at all times, resulting in a high level of crowdedness during any time of the day – including during the other two observations in Depok.

Figure 4: Traffic in Jalan Kaliurang (near Universitas Gajah Mada)

Mr. Mujiono told that he used to run from Depok to Jalan Malioboro to stay in shape, but that is not an option anymore because the roads have become way too crowded. One of the main reasons behind this is the establishment of the universities; they started to move to a central place where they could concentrate and start a campus in the early 90s and landed in the south-west area of Depok.

“The main causes of [it being] crowded in Depok is growing number of students who use their...
motorcycle and manner on the road which is very low”, blames a disappointed Mr. Mujiono the students and their style of driving that would cause congestion.

To recap on the traffic flow and the general level of accessibility, it is safe to say that it takes a significant amount of time to get to Jalan Malioboro from Depok. Probably the biggest problem in this area – more than in the city as a whole – is the fact that the traffic situation is too intense to provide a smooth traffic. The number of roads is for example too small to serve the amount of vehicles that participates in traffic at the same time. Respondent Mr. Mujiono also told that the Indonesian roads have been designed in such a way that traffic can only be guided via one route from A to B. He said that it is highly necessary to provide different routes to several destinations to avoid a traffic situation as it is now. But due to the high density of the population in the city, and the shortage of unused area, there is no space anymore to expand the existing roads. Mr. Mujiono said “Depok in the future will be like Jakarta City and will be so crowded because of the limited road network”, and adds that the surrounding areas (Kalasan, Banguntapan, Sewon, Kasihan and Gamping) are all getting crowded in such a way that Mr. Mujiono thinks his future prediction will come true.

Another respondent, Mrs. Wati, told that the fact that almost everyone owns a motorcycle is a major contributor to the increasing traffic. This phenomenon is very common among the respondents’ answers, but the reason behind it is quite easy; with a motorcycle someone can get past most of the other vehicles, something that becomes harder while driving a car. The use of private vehicles has increased this much because of the intensifying crowdedness on the roads, since the inhabitants still want to travel independently and as quick as possible to other destinations. Therefore the public transport system is not efficient anymore, because it has no private lane and thus ends up stuck in traffic as well – it is especially not efficient when compared to the price to pay for public transport in relation to a trip by own transport.

4.2 Umbulharjo

The second kecamatan is Umbulharjo, an area that reaches from the far south to the central parts of Yogyakarta. As can be seen in figure 5, Umbulharjo also entails a large share of the city’s area – like Depok – and it counted 76,743 inhabitants back in 2010 (Badan Pusat Statistik, 2010).

In the figure below is also clear to see that the ring road around Yogyakarta shows the new south-eastern boundary of the city – it is the area where for example Kotagede is located, the third research area. Umbulharjo also originally was a rural area, but due to the high pace of urbanisation it transformed into a higher income sub-district that is not in the south-eastern part of the city anymore like where it used to be – because the city expanded beyond Umbulharjo.

Historically, Umbulharjo was a rural area on the edge of the city and was an important supplier of rice, fruit and vegetables. But nowadays all the farmers left the sub-district to more remote areas, also because Umbulharjo changed into a higher income area due to the high pace of urbanisation in Yogyakarta. According to Mr. Triyono, who worked in Umbulharjo as a labour and house keeper on a banana plantation before the sub-district got hit by the urban sprawl, said he had no neighbours around back then – only the workers on the plantation who lived in small cabins on the plantation holder’s property.
In general, Umbulharjo consists either of people that commute to their work in other areas of Yogyakarta or people who have lived there since before the urban sprawl reached this part of the city. The latter are people who used to cultivate their own crops with the aim to sell them on the market. Most of the people who used to live in the area could not afford the new way of living in Umbulharjo, so they moved out. But there are still people from before the transformation, although they are living in small alleys hidden from plain sight, and maybe they switched jobs to become food seller or start a warung in the sub-district – a profession that earns well in an area that is inhabited by a large share of the city’s upper class.

Umbulharjo is transit-oriented in such a way that foreign tourists are nowhere to be found in the area, it is definitely not a destination on its own. Still, the sub-district offers some tourist attractions that are actually mostly visited by local tourists; these are shopping mall XT Square and Gembira Loka Zoo, literally translatable to Happy Place Zoo.

The largest part of Umbulharjo consists solely of villas and warungs – small restaurants or cafes that are usually being managed by families. Some warung owners – four out of seven that were questioned about this – said that they left Umbulharjo to live in a surrounding area where the housing prices are lower, but at the same time could keep their business running in the wealthier kecamatan Umbulharjo. The other three warung owners answered that they were able to stay in the sub-district and sell their things directly from their house; they are not living along the main roads though, but in the smaller streets and alleys where the ground prices are lower.

As there are almost only high income people present in the sub-district nowadays, the perceived level of segregation is very low, as the majority of the less-wealthy population moved out of the sub-district due to increasing land prices. Mr. Triyono added to this that “the distribution of accessibility and facilities among rich and poor in this part of the city is fair [nowadays]. This place has very few tourist places, so the income differences are not really high, because there are so many wealthy people. The number of residents in Pandeyan and Umbulharjo has increased, but not in terms of the housing. So slowly, a housing shortage is expected to occur, unless people will move out of Umbulharjo”. As the
less wealthy sellers move out of the sub-district, there is more space for the wealthy and their villas, but not for an increasing number of newcomers to Umbulharjo.

The next sub-sections will be dedicated to the observations of the state of the roads, public transport and traffic situation, with the aim to see if there is a connection between the presence of segregation and the level of someone’s accessibility to central places.

4.2.1 Number and quality of main roads

To get out of Umbulharjo there are three different main roads possible, which are Jalan Batikan (green line), Jalan Perentis Kemerdekaan (blue line) and Jalan Veteran/Jalan Kusumanegara (red line). The first two main roads that are mentioned, are the most frequently used by people who live in the south of Umbulharjo. The other one, Jalan Veteran/Jalan Kusumanegara is used by inhabitants from the northern and eastern parts of the kecamatan. What needs to be said, is that the northern part of Umbulharjo – around Jalan Kusumanegara – is much closer to Jalan Malioboro than the southern part.

With that in mind, multiple observations were conducted in both parts of the sub-district, as well as the execution of interviews with the inhabitants of Umbulharjo.

In figure 6 below can be seen where exactly in the kecamatan the three main roads are located. The purple road that is shown in the area west of Umbulharjo is the location of Jalan Malioboro.
As a result of this higher-income migration to Umbulharjo, the roads in the area were in need of improvement and in need of maintenance every now and then to satisfy the inhabitants.

The roads were judged with a ‘good’ during the observations, since the general quality exceeded the expectations. The reason why it was not judged with a ‘very good’ is because there were a couple of holes in the roads that had not been fixed even in the end of the research period – the holes were not too much of an obstacle actually.

Respondent Mr. Hans Rinaldi added that the quality of the roads in Yogyakarta is better than in Bandung, referring to his positive opinion on the city’s road maintenance. The disadvantages that he mentioned when it comes to the road network, were the fact that there are only a few roads that lead to Malioboro, and the fact that there is also a shortage of parking lots in the city – and because of that, people park their vehicles along the sides of the road.

4.2.2 Public transport

Public transport in the kecamatan of Umbulharjo can be described as ‘very good’, especially because of the arrival of the higher income people in the area. The government decided at that time that Umbulharjo also needed an adequate accessibility when it comes to transport, so it introduced plenty of buses and taxis. The private companies or independent drivers like SayTaxi, GoJek, becaks and dokars followed this initiative and started to operate in the sub-district as well. Nowadays, the area has a high accessibility since it can be seen as a transit place to other destinations when talking about work or school – it is no real destination on its own.

Especially when compared to the other sub-districts, there are many possibilities in Umbulharjo to get on public transport and go to another place. When looking at figure 11 that Trans Jogja’s bus network, it can be seen that the bus network in Umbulharjo is quite extended when compared to most other parts of the city – many bus lines of the company go through this sub-district. On this bus map though, Umbulharjo is still located in the south-eastern part of the city where the former city boundary used to be; this has to do with the fact that Kotagede – the third research area, east of Umbulharjo – does not accommodate Trans Jogja buses and does not intend to do that in the future.

In general, the public transport in Umbulharjo developed from scratch into the complete transport network that it is now in roughly 20 years. And according to Mr. Hans Rinaldi, the public transport in Umbulharjo is currently good enough to accommodate all the people that are in need of public transport.

Although the supply and variety of different modes of public transport seem to be good enough for now, Mr. Hans Rinaldi mentioned that the people have to wait a long time before getting on for example the bus – a direct consequence of the existing traffic situation in the city. Therefore, the buses produce a high amount of pollution due to the frequent stops that they have to make in traffic, the condition of the buses decreases faster than desired, the buses are always overcrowded and they cannot drive on a time schedule. This is why a large part of the people rejects to use the bus for public transport, travel by own transport, and contribute in that way to a more crowded traffic situation.
4.2.3 Traffic situation

During the observations in Umbulharjo, it seemed that the sub-district is seen as a starting point or headquarters – not as a destination in itself. The people who live in Umbulharjo will leave their house at roughly the same time as the majority of the sub-district’s inhabitants, because the main traffic flow is just in one direction – go to work or school, or somewhere else out of the sub-district. And when work and school are done in the late afternoon, these people all return to Umbulharjo again, causing another traffic jam – this time in the opposing direction.

The early afternoon observation between 12 and 1 pm made it clear that the level of crowdedness is at its highest during the rush hours early morning and late afternoon, but that the traffic is still omnipresent in Umbulharjo. It is not that crowded as in Depok at any given time, but there certainly is a chance that a traffic jam occurs while driving through the sub-district outside the rush hours.

Mr. Hans Rinaldi somewhat disagrees with the previous statement, mentioning that the intensity of the traffic jams in the city is especially noticeable in weekends and during holidays, in places like Jalan Malioboro and Ambarukmo Plaza. According to him, the traffic jams in Umbulharjo are not that heavy when compared to other areas of Yogyakarta. In Depok for example, the traffic is significantly more chaotic because the sub-district works as a magnet to attract people from all over the place. Umbulharjo is in this respect only an area at the edge of the city that functions as a place to live, so
the only traffic jams that happen here are in the early morning and in the late afternoon – when people either leave for work or come home.

4.3 Kotagede

From Umbulharjo a bit further to the east, the kecamatan of Kotagede is located – as can be seen in figure 8 below. It used to be an independent town that was just close to Yogyakarta, but it gradually blended into the Yogyakarta city area as time went by – especially because of a high urbanisation rate and the fact that Kotagede became increasingly popular for its silver craft due to the tourism boom.

Kotagede played a huge role in history, since it was the first capital of the Mataram kingdom during the 16th century. Some of the remains of this era can still be visited in Kotagede, such as the city walls around the edges. Because this cultural heritage is still very important for Kotagede, the population cannot increase much further; in 2010 there lived 31,200 inhabitants, of which a part already had his house to be built outside of the ancient Kotagede boundaries (Badan Pusat Statistik, 2010).

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**Figure 8: Location of Kotagede within Yogyakarta (Google Maps, 2016)**

Kotagede – Javanese for Great City – can be seen as the centre of the old Islamic Mataram Kingdom, of which some remains are still intact and can be visited onsite. The title of Great City refers to the old story of Danang Sutawijaya, the son of Ki Ageng Pemanahan. The latter one stopped a rebellion from advancing to the former Islamic Kingdom of Pajang and he got rewarded by the ruler of the kingdom with a forest called Mentaok.

This forest was located at the exact place where the settlement Kotagede currently is. Pemanahan and Danang Sutawijaya started a settlement in the forest and named it Mataram, since Pemanahan’s nickname was The Lord of Mataram. When Pemanahan died, his son declared himself as the King of Mataram and he was determined to expand his territory; consequently, he took over several parts of Java and declared Mataram as the capital of his kingdom; that is why Kotagede is the symbolical renaming of Mataram. The story above was mentioned by Kyai Haji Abdul Muhaimin, the first respondent from Kotagede.

One of the main characteristics of Kotagede is the fact that the sub-district did not develop as much as the other research areas; this is due to the desire of the local people that the historical character of
the area does not go to waste, and instead they want to remain the appearance of a small-scale town – according to respondent Mr. Abdul Muhaimin. He also mentioned that tourists were still hard to find back in 1965, although the sub-district was the economic hub of Yogyakarta before Indonesia’s independence because it had the biggest marketplace of the city, and also many of the wealthy batik merchants of the city resided in Kotagede.

But there is also another reason for Kotagede to stick to the original appearance; the buildings alongside the main roads in the sub-district are that close to the particular roads, that they are the main reason for the roads not being able to be widened. Therefore the narrow roads are as well contributing to growing traffic problems; Kotagede is after all gaining more popularity among both local and international tourists, resulting in more intense traffic jams than before.

Another characteristic of the wish to remain the historical character and atmosphere in Kotagede is that the level of English speakers is not worth mentioning. Mr. Abdul Muhaimin also said this, reasoning that everybody who lives in Kotagede wants to stay there and enjoy the high level of social cohesion that is present in this sub-district; “but the local culture still exists, and that’s what we desire to let it be that way”.

A third characteristic of Kotagede is the presence of significant differences between people from both low and high income classes. This can be seen in the fact that people with a low income usually work as a seller of fruit, vegetables or Indonesian snacks, or as becak driver. People with higher incomes in Kotagede earn their money with for example owning a silverware factory – which the sub-district is famous for – or as the head of a school like Mr. Abdul Muhaimin.

Put simply, the silverware factories – besides the ancient remains of Mataram Kingdom – are basically the only objects that attract tourists to Kotagede by their crafting on demand of fine silver products. The less wealthy sellers and becak drivers usually operate within Kotagede itself, but according to respondent Mr. Sidik there are some who sell their services outside of the kecamatan – most of the time in or around Jalan Malioboro. These are the main reasons why the roads in Kotagede are relatively inaccessible at times, for example in the early morning and in the late afternoon.

Respondent Mr. Abdul Muhaimin said in the interview that Kotagede also has a special ‘market day’ called Pasar Legi on which the roads are totally impermeable, because everybody in the sub-district visits the central market on this day – in sub-section 4.3.3 more about Pasar Legi.

In Kotagede, the perceived level of segregation is higher than in the other research areas. In the observations, this could be noticed by the way people are living; when walking through the sub-district, you can see many people from the lower-income class live on the street since their house does not accommodate enough comfort or space to stay in all day – next to the fact that the money is to be earned on the street, by selling products or transporting people. The higher and lower incomes in this sub-district are separated, which is better visible since the improved connection between Kotagede and Jalan Malioboro; the wealthy people live in parts of Kotagede that contain relatively big houses and close access to the main roads that lead to central places such as Jalan Malioboro, while the less-wealthy live in small and often overcrowded houses in remote areas of the sub-district.

The observed state of the roads, public transport and traffic will be illustrated in the next sections, as was as well done for the previous sub-districts.

4.3.1 Number and quality of main roads
When it comes to question what the fastest way is to get out of Kotagede, the answer is via Jalan Ngankisgondo – merging with Jalan Perintis Kemerdekaan in Umbulharjo. For the inhabitants who live in the northern parts of the sub-district, it is better to either leave via Jalan Ki Penjawi or continue to
Jalan Veteran/Jalan Batikan in Umbulharjo or to exit Kotagede in the upper north via Jalan Kebun Raya and Jalan Kusumanegara in Umbulharjo. The final option to leave the sub-district is via Jalan Mondorakan/Jalan Tegal Gendu. This amounts to four options to leave Kotagede, which are visualized in the following figure.

![Figure 9: Locations of main roads in Kotagede (Google Maps, 2016)](image)

In figure 9, the red line represents the exit Jalan Ngeksigondo/Jalan Perintis Kemerdekaan and is the fastest way to get out of Kotagede when someone finds himself in the central area of the sub-district. The green line represents Jalan Ki Penjawi/Jalan Veteran/Jalan Batikan and the blue line is via Jalan Kebun Raya/Jalan Kusumanegara; inhabitants of the northern part of Kotagede can decide in that way which road to take to Jalan Malioboro, judging from the actual traffic situation. The yellow line in the southern area at last, represents Jalan Mondorakan/Jalan Tegal Gendu, and is frequently used by sellers and visitors of the central market, *Pasar Kotagede*. This road is at its busiest on *Pasar Legi*, the special market day in the sub-district.

As can be seen in the figure above, there are sufficient options to choose from when leaving Kotagede. This is certainly necessary to compensate the limited width of the main roads, so that the traffic can still move somehow fluently. The fact that there are enough options to leave the sub-district with Jalan Malioboro as destination is also good to explain; Kotagede is the furthest research area away from Malioboro and has in this way the highest number of optional routes to get there. This is because the alternative routes to get on the main roads outside of Kotagede do not differ much when it comes to distance. The only variables that explain the route that someone takes to leave the sub-district, is the place of living within Kotagede and the actual traffic situation.

From own observations could be seen that there are also some recently built tourism villages in Kotagede – although only at the edges of the sub-district. These villages are created to distribute the number of tourists instead of attracting them only to the city centre. The sub-district of Kotagede wanted to participate in this project and realised several tourism villages where they give classes about the process of silverware crafting or where the visitors can learn about the Javanese culture, as well as the particular culture of Kotagede. This is another cause for the sub-district gaining more
popularity than before; visitors can spend a whole day now in Kotagede because of the varietal activities that are growing in popularity – and therefore the roads in the sub-district are congested more often, although the traffic jams are not as heavy as in Depok or Jalan Malioboro.

Also respondent Mr. Abdul Muhaimin mentioned that the actual problem in the sub-district is not specifically the occurrence of traffic jams, but the ever-increasing population density; this is of course not only the case for Kotagede, but for the whole city of Yogyakarta. Nevertheless, the local culture in Kotagede remains the same; Mr. Abdul Muhaimin gives an example by stating that the inhabitants of Kotagede do not need a wedding planner if they want to get married, because the majority of the people is willing to help with everything.

When it comes to the conducted observations in Kotagede, the quality of the roads in the area has been classified as ‘neutral’, the third option on a five-point scale. The reason why the roads were not judged as either bad or good, is because in general the quality is acceptable. The downsides are however the narrow width of the roads – that is not available for expansion, and the occurrence of holes in the road surface every now and then.

Another respondent, Mr. Sidik, works as a becak driver and classifies the quality of the roads in general as good “, but outside of the area it’s even better. Because in Kotagede there are quite some holes in the road, which is not very pleasant for a becak”.

4.3.2 Public transport

When it came to the conducted observations, it was clear that Kotagede does not have as much public transport as the other two sub-districts. The first notable thing was the absence of buses in the sub-district, on which Mr. Abdul Muhaimin had to say that the reason for it is because of Kotagede’s wish to remain the traditional character.

Furthermore, the number of becaks in Kotagede exceeded the number of other public transport vehicles during all observations. According to respondent Mr. Sidik, this has to do with the fact that Kotagede’s traffic is calmer than in certain other areas such as Jalan Malioboro or Depok, making it a better working environment for becaks to move passengers. But in addition, Mr. Sidik said that even in Kotagede he notices the number of passengers decrease for becaks, because there are more modern ways of transport to reach a destination faster – like GoJek or SayTaxi. But on average, both the supply and demand for becaks are still relatively high in the sub-district, especially when compared to other kecamatan in Yogyakarta.

Mr. Abdul Muhaimin somewhat agreed with Mr. Sidik when it comes to the availability of public transport in the sub-district; “In this place [Kotagede] we cannot access public transport easily [not only because the wish to remain traditional, but also], because in Indonesia the people like to reach their destination places directly and don’t want to be dependent of waiting times. So they prefer to use their own transport. Mostly becaks, andongs and a couple of taxis can be found in this sub-district, taxis only because people from outside Kotagede come to here by using the taxi”.

4.3.3 Traffic situation

The occurrence of traffic jams is actually more common in the other parts of Yogyakarta, since Kotagede is still quite a scenic sub-district where traffic jams only happen during certain moments. In this sub-district, there is only congestion during the morning rush hour and in the late afternoon, since everybody goes to their work or school or comes home from it at these times.

Respondent Mr. Abdul Muhaimin confirmed that there are no actual problems with traffic jams that have to be solved right now, but that they might come in the future; “Hmm... I honestly don’t know, because the roads might become busier as the population density increases. But if the city planners do their job good, maybe there is a good solution to expand and solve the problem with the density and the possible consequence of traffic problems”.

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During the process of doing observations at these busy moments in the morning and afternoon, the traffic was better than expected. The vehicles that had to wait for the traffic jam to be cleared, were honking to the vehicles in front to hurry up, but within a maximum duration of 15 minutes the congestion was gone. That is why the intensity of the traffic jams in Kotagede was classified with a ‘mild’, the second option on the applied four-point scale.

During the early morning observation from 6 till 7 am, it was remarkable that bicycles also had enough space on the road. Maybe that is because all the street vendors are already at their place of destination – since the temperature in Indonesia is so high, sellers of fresh crops usually leave their home to start working at 4 am when it is still dark, because they do not want their products to get spoiled by the sun. This contributes to a less crowded traffic in the morning rush hour. Respondent Mr. Sidik had to say on this, that the traffic jams in Kotagede are as well partly caused because the sides of the road are used as parking area, making the streets even narrower for the traffic – see figure 14.

During the afternoon, an observation was conducted between 12 and 1 pm near Pasar Kotagede, but there were no traffic jams to be found around this hour. Even though the streets were full of vehicles, the traffic had the chance to move fluently – mainly because the majority of the vehicles consisted of motorcycles, becaks and bicycles.

The busiest moment of the day in Kotagede is during the afternoon rush hour, between 4 and 5 pm. This is the moment that the sellers of fruits, vegetables and other local products have to leave their spot and get replaced by warung owners, preparing dishes for tonight’s dinner. Because of the fact that there are both people coming into the sub-district – the warung owners – and leaving because their work is done, the traffic gets the most intense for Kotagede standards.
The local people do not experience huge problems at times when traffic is likely to be crowded though; most of them only drive motorcycles instead of cars, so it is easier to get past other vehicles – if they have to, they even pass other vehicles via the pavement. This makes the traffic flow more fluently – but as well chaotic – than if there were only cars or enlarged self-built vehicles on the road, which is a common thing when the street vendors come and go and bring their whole shop with them.

There is at last a third moment for the roads in Kotagede to be congested – besides the rush hours in the early morning and late afternoon – happening on ‘market day’, and at that moment the traffic is at its worst. Mr. Abdul Muhamim mentioned that “it [traffic jam] ALWAYS happens on pasaran day or pasar legi”. Then he gave an explanation; “Pasaran is the name of the five-day week in Javanese calendar. So there are five days in Pasaran called Pon, Wage, Kliwon, Legi, and Pahing. The market day in Kotagede market is in Legi, “Pasar Legi” became a magnet that causes a lot of sellers and buyers to come to the market so the crazy traffic jam happens. Traffic jam also happens at the morning when people went to their office or school of course.”

Compared to the Gregorian calendar with seven-day weeks that is used by the majority of the world, this means that Pasar Legi will be on a different day every week. For the people that use the Javanese calendar, it will be easier to handle the intense traffic jams of that day around the central market, but for people from outside Kotagede – living a week in seven days – it may be confusing when Pasar Legi exactly will occur, unless they check before departure of course.

With this information it is realistic to assume that Kotagede is quite well accessible, even though the roads are narrower than in other parts of Yogyakarta. There were no real intense traffic jams when conducting research in the sub-district, except for the visit to Pasar Kotagede on Pasar Legi – this day can be described as a weekly exception.

4.4 General accessibility

In general, the accessibility of Yogyakarta seems quite good. As can be seen in figure 11, the city contains a bus network that covers the majority of sub-districts in Yogyakarta if the traffic situation allows it. And furthermore, there are private companies operating as the cheaper alternative for regular taxis, using the names Uber, Grab and SayTaxi. The operators are very popular as they drive on a meter and can be called up by using their application on a smartphone. Another cheap alternative for a normal taxi, but in the form of a motorcycle, is GoJek. It is in fact cheaper and more efficient than all other public transport options – except for the bus – and it turned out to be the fastest way to get through the city; this is because motorcycles are more agile to anticipate possible traffic jams. In that way, they can manoeuvre through traffic by saving time and money. This mode of transport is however not that popular yet, but its efficiency in travel time and costs will ensure an increase in popularity in the future. In Yogyakarta, there are also still becaks and andongs operating, but they see their clientele decrease; mainly because of the preference for private transport and the cheap public transport alternatives that take less time to reach a destination.
But when it comes to traffic jams, Yogyakarta can be perceived as less accessible than it seems. This is because the road infrastructure is not of the same quality in every area of the city; sometimes it is good enough to accommodate a large traffic flow, but in other cases the roads are often damaged or too narrow and are in that way responsible for slowing down traffic. This does not happen during the whole day and in every area of Yogyakarta, but it is a common phenomenon that will occur more frequently in the future as the city gets more crowded.

As respondent Mr. Ari mentioned: “In Yogyakarta, accessibility is most comfortable. When you want to go to anywhere in Jogja, it is relatively very close. All modes of transport are readily available, the only point is that the traffic jams can cause problems. But compared with the areas around Jogja city, such as Bantul - which is still difficult to reach - the city has a very high accessibility”.

To decrease the pressure on the traffic somehow and increase the city’s accessibility, the Yogyakarta government created a plan to realise a monorail system that would add an extra layer over the existing traffic. In that way, travellers can reach a destination faster, both with the monorail as with other transport – it gets less crowded on the main roads. According to Berita (December 2015), the government of the city is planning to build either a monorail or LRT (Light Rail Transit) system to avoid long and intense traffic jams in downtown Yogyakarta. Sigit Haryanta, the head of the Indonesian Department of Transportation, Communication and Information said that the city will find a solution to congestion by realising a monorail or LRT system through Yogyakarta with Tugu Station – the central station of the city – as its centre hub and multimodal node.

This long-term plan for building another transport system that could decrease the traffic on street level, was made public during the 2008 discussion at UGM by Professor Ahmad Munawar, chairman of the Transportation Master Plan Preparation Team of Yogyakarta. The team developed a transport model with future predictions on the traffic in the city and they determined that 35 per cent of the
main roads will be jammed during rush hour in 2015, while this percentage will increase till 55 per cent in 2025 if nothing will be done about it (Gusti Grehenson, December 2008). Professor Ahmad Munawar divided the master plan into three different stages; the first one already being executed in 2009/2010 – a relatively small stage where only the number of Trans Jogja vehicles increased to 120 buses, more facilities for pedestrians and bicycles were subject to improvement, and where the public transport such as Trans Jogja was given priority on intersections – accommodating 51,000 passengers per day.

The medium-term is set between 2011 and 2015, and comprises another expansion of the Trans Jogja vehicles to transport more passengers, but also the introduction of smart cards to check in and out of public transport to facilitate a pleasant and easy journey – this term aims to accommodate 113,000 passengers per day.

The final stage of this master plan is set to be realised between 2016 and 2025 and contains the establishment of a monorail system with the aim to accommodate 330,000 passengers per day, a mode of transport that is innovative and able to carry a big share of the passengers who are currently stuck in traffic every day. Besides, the monorail creates a new level of traffic in the air so that the street level traffic does not get disadvantaged from this extra mode of transport – there is only space needed for building the poles – and the construction and maintenance are significantly cheaper than those of a subway. However, this plan has been postponed a couple of times already since it is also dealing with opposing protest from several actors.

4.5 Particular inhabitant lifestyles

4.5.1 Mr. Hans Rinaldi
He works as a tailor with a high income in Pandeyan, central Umbulharjo, the sub-district where he was born 38 years ago. He remembered that Umbulharjo and everything around the place consisted of fields and fertile land when he was young. Also the roads were not nearly as good as they are now, and there was not even electricity. Mr. Hans Rinaldi only had two neighbours around, until he was approximately 10 years. By then it became more crowded in Umbulharjo, somewhere between 1986 and 1990.

In front of Mr. Hans Rinaldi’s shop there was a motorcycle that belongs to him. Furthermore he owns a car and there are three more motorcycles in his family – which consists of five persons.

Besides, Mr. Hans Rinaldi is part of the high-income class - as was stated before a known characteristic of Umbulharjo that applies to the majority of its inhabitants - and he is as well the person with the highest level of accessibility and income among all the respondents in this research. For him it is no problem to switch between modes of transport if the traffic gets crowded, albeit that the roads in Umbulharjo are already less crowded than in Depok or Kotagede. And besides, Mr. Hans Rinaldi can decide on the type of transport whether he needs to go to a shop to get more fabric for his business, or he needs to deliver a tailor-made suit at someone’s house. In this case it is logical to use a motorcycle for the first case and a car for the latter. In the next chapter will be elaborated on these differences and the advantages of having a choice in mode of transport.

4.5.2 Mr. Abdul Muhaimin
This 63 year old owner and founder of Islamic boarding school Pesantren has been living in Kotagede since birth – his house is located in the southern part, near the central market. He gains a high income and is an important figure for the Islamic community, not only in Yogyakarta but on international basis. He receives international publicity through attracting students from all over the world to his boarding school, who want to be taught about Islam by a Kyai Haji. This honourable title refers to
someone in Islamic culture that has accomplished the following; a kyai is someone from Java who has a large expertise in the Islam, and the title of haji is given to those who accomplished their hajj pilgrimage to the Kaaba in Mecca.

The reason why Mr. Abdul Muhaimin can speak English, is because he founded this internationally renowned Islamic boarding school in Kotagede – people from over 70 countries have already visited the boarding school to learn about the Islam and the specific culture of Yogyakarta. Therefore Mr. Abdul Muhaimin also has to travel a lot to other countries to give speeches about the Islamic religion with the aim to expand the core of followers, and he also contributed to a documentary about the Islam that even premiered on Dutch television – that was about 15 years ago.

When it comes to the level of accessibility, Mr. Abdul Muhaimin has both a motorcycle and a car at his disposal, due to his high income. He did not mention the number of vehicles that his family owns in total, but when his options for transport came to question, Mr. Abdul Muhaimin mentioned that he can choose between his motorcycle and his car – travelling per public transport is no option for him.

The fact that the level of accessibility for this respondent is lower than for Mr. Hans Rinaldi has both to do with the lower quality of the roads in Kotagede, and the absence of a good public transport network – in the next chapter will be elaborated on these aspects. The only options for public transport in Kotagede are becaks and taxis, which only get to Kotagede every once in a while.

4.5.3 Mr. Triyono
The first interviewed inhabitant from Umbulharjo is Mr. Triyono, a poor becak driver of 57 years old. He moved to Sorosutan, Umbulharjo in 1975 when it was still rural, to work as a house keeper. He mentioned that back then when he moved from Bantul to the sub-district, there were no cars around, only becaks and andongs. There were also some motorcycles to be seen in the sub-district every once in a while, but those were all rejected during the inspection in other countries such as Japan, so they were cheaper for Indonesia to import.

But since Umbulharjo is a high-income sub-district, the public transport network is well-developed – resulting in many options to reach a destination; bus, taxi, becak, andongs, Gojek, private transport.

Mr. Triyono has been part of the low-income class during his entire life, since he came to Umbulharjo to work as a house keeper when he was 16 years old. He was employed in that profession till he turned 31, and then purchased his own becak to work independently. Therefore, his mobility increased and it became easier for Mr. Triyono to access central places such as Jalan Malioboro, although his income did not increase significantly.

When asked about his transportation options, Mr. Triyono said he uses his motorcycle when he does not need to work with his becak. And when he goes to any place with his family, they travel with the Trans Jogja bus network if he does not have to work, because the family cannot afford a car. Thus, on average Mr. Triyono has a relatively high level of accessibility compared to the height of his income – which is also decreasing slowly.

Another respondent with a similar lifestyle, Mr. Sidik from Kotagede, works as well as a becak driver. Although his salary decreases due to a lower demand for becaks, his level of accessibility is still relatively good because he drives his becak around. But in comparison, Mr. Sidik’s level of accessibility is worse than Mr. Triyono’s, who can easily find his way out of Umbulharjo with more and larger roads and a better public transport system than Kotagede.

4.5.4 Mr. Ari
The final respondent from Depok, Mr. Ari, works as an art seller and framing artist and is part of the middle class when it comes to income. He mentioned that the crowds get coming to not only Yogyakarta as a city, but as well to Depok. This is a notable thing, because when Mr. Ari moved to
Depok in 1999, it was still relatively quiet in the sub-district with lots of empty land – according to him at least. But starting from 2006, when there was a heavy earthquake and an eruption of the Merapi volcano, people began to move into the sub-district. It was their choice to specifically move to this place, because the ground was still cheap and the prospects were good – also because of the fertile land that was surrounding the area. And nowadays, Depok is the second centre of Yogyakarta in terms of economic activity. This high level of economic activity has both advantages and disadvantages for the general accessibility in the sub-district, which will be illustrated through the respondents’ opinions in the next chapter.

When it comes to Mr. Ari, he has a mediocre level of accessibility and income. The fact that these aspects are both identified as mediocre, is on the one hand because Mr. Ari owns a small-scale art shop in the southern part of Depok which he cannot leave every now and then. Furthermore, the traffic is crowded to such an extent, that the Yogyakarta government decided not to let buses operate in the sub-district – lowering the level of accessibility for the inhabitants.

And on the other hand, although Mr. Ari earns a moderate salary per month, he did not seem to feel the urge to buy a car. This could be noticed after the interview, when Mr. Ari added “it may seem better to have a car to reach a destination quickly, but in Depok it is not really necessary”, in which he referred to the agility of motorcycles to avoid traffic jams compared to the agility of cars – resulting in shorter travel times by motorcycle. This is another reason for not buying a car, besides not being able to afford one or saving money for other things. In the interview, Mr. Ari emphasized this choice once again by saying that “accessibility in Depok is getting easier. [If you] want to go anywhere, [public transport] is increasingly affordable”, preferring even the public transport network over the possession of a car – while there are no buses in Depok, only taxis, GoJeks and a few becaks.

Another example of a respondent with an average income is Mr. Mujiono – yet he does not own a car, there are three motorcycles in his inventory – who earns his money by working as an independent gasoline seller. He told that he has to work days of 12 till 14 hours to take care of himself and his family – a wife and three children, although his salary is higher than for example a becak driver. Due to these long working days and the absence of a car, there are not much time and options for Mr. Mujiono to visit other places, leading to a decrease in his level of accessibility – next to the fact that Depok already has a relatively low accessibility because of its crowdedness and lack of buses.

### 4.5.5 Mrs. Gracia

Another respondent from Kotagede is Mrs. Gracia, who is 36 years of age and came to live in the sub-district back in 1992. She sells coconuts and coconut juice for a living in the poorest of the three sub-districts and is part of the low-income class as well, earning approximately the same as becak drivers.

When it comes to Mrs. Gracia’s level of accessibility, this is identified as low; because her income is not high enough to purchase a car, she is dependent on travelling per motorcycle – since there are no buses in Kotagede, and taxis or GoJeks are not affordable. Furthermore, the quality of the road network in Kotagede is in several parts insufficient to accommodate the increasing traffic, leading to more traffic jams, also contributing to a decreasing accessibility to central places.

However, if Mrs. Gracia still wants to take the public transport to reach a destination, she either has to take a becak from Kotagede or first go to adjacent sub-district Umbulharjo and wait for the bus there, the latter consuming a larger amount of time – which is scarce in a poor woman’s life. The first option, travelling per becak also takes more time than when Mrs. Gracia travels per motorcycle, resulting in a logical preference for using the motorcycle for almost everything.

As a final note can be stated that Ms. Gracia used to live in Gunung Kidul before she moved to Kotagede, a large district south-east of Yogyakarta city that is part of the Yogyakarta metropole. Compared to when she lived here, her accessibility to central places in Yogyakarta city has definitely
increased since she came to Kotagede, although it is still not that high in comparison with the other respondents.

4.5.6 Mrs. Semi

The last characteristic respondent in terms of level of accessibility and income is Mrs. Semi, who is 54 years old, has a low income and lives in Umbulharjo since birth. She works from out of her backyard in a small alley as a seller of homemade foods, like prawn crackers and tofu. Therefore she is one of the few people with a low income that could stay in the sub-district of Umbulharjo, although the prices of land increased significantly.

When it comes to the level of accessibility, Mrs. Semi is the respondent with the lowest level among all the interviewed inhabitants. Although, she can afford it to take the public transport every now and then to reach other destinations – because she earns slightly more than a becak driver, especially in a high-income area – she can almost never leave her shop due to her activities. And furthermore, Mrs. Semi cooks her products only by herself, so on busy days she is both making the products and selling them to her customers. Because the respondent has her hands full with her shop, she rarely visits other places – only during holidays with her family, when there is enough financial space. And still then, Mrs. Semi uses the motorcycle to visit any destination; this is not only due to the fact that the average public transport costs more than travelling per motorcycle, but also because the travel time by motorcycle will probably be shorter.

Still, this does not fully explain why Mrs. Semi’s level of accessibility is determined as the lowest of all respondents – because the road network and the public transport system in Umbulharjo are well-developed. As the respondent leaves her shop so rarely, she did not even know that there are traffic problems occurring in the city – in some parts heavier than in others – and that the bus that she used to take, the city bus, does not operate anymore due to a clientele that was not worth mentioning during the last decade. These are signs that Mrs. Semi is dedicated to her shop and the surrounding area – being Umbulharjo, a relatively calm sub-district that facilitates already a high amount of amenities – in such a way, that she has not experienced the increasing traffic problems in more crowded areas yet, explaining her lower level of accessibility – caused by the unavailability to leave the shop and the sub-district.

Also Mrs. Wati is an example of a respondent with both a low income and a low level of accessibility, although the fact that she owns a fruit stall next to a main road in Depok makes her more accessible to for example Jalan Malioboro than Mrs. Semi – who lives and works in a small alley in Umbulharjo, further away from the closest main road in the far east of the sub-district.

The roads in Depok may be too crowded sometimes, but Mrs. Wati can directly participate in traffic when she is done with work, leaving per motorcycle – keeping in mind that her house is not that far from her shop along main road Jalan Urip Sumoharjo/Jalan Laksda Adisucipto.
5. Diverging Lifestyles
Explaining the existing relation between accessibility and segregation

It is important to start this chapter with the introduction of a diagram which visualizes the differences in accessibility and income level among the interviewed inhabitants of Yogyakarta. The presence of this diagram is an omnipresent aspect of this research, because the respondents’ individual lifestyle can be emphasized in this way – resulting in a better explanation of the differences and similarities that are worth noting to get an answer to the central research question.

The diagram can be found below and is created to illustrate the proportions between the interviewed inhabitants of Yogyakarta. This diagram will be used to enhance the understanding of the differences in the opportunities and choices among the respondents. Characteristic portraits of the respondents that are based on two primary dimensions will be shown, being accessibility and income class.

![Diagram on the accessibility/income class ratio per respondent](image)

On the x-axis, the level of accessibility is being visualized – not only referring to the available number of transport options from the respective sub-district to reach Jalan Malioboro by both private and public transport vehicles, but also to the number and the quality of the roads and the occurrence of traffic jams. The further a Yogyakarta resident is placed to the right of the x-axis, the better his or her accessibility; and vice versa, a respondent on the left side of the x-axis has a lower accessibility to reach Jalan Malioboro.

The y-axis on the other hand contains the respondents’ income class, with the high-income respondents in the upper part of the y-axis and the low-income respondents in the lower part. A distinction can be made by the specific professions that the respondents are employed in, which is in turn connected to their socio-economic position in the city – depending on the salary and status of the profession.

With these two axes, the diagram is completed and shows in general how the different respondents are located within Yogyakarta in terms of income class and level of accessibility, on a scale from -5 to 5.

Figure 12: Diagram on the accessibility/income class ratio per respondent
5. Furthermore it accentuates how these differences depend on the kind of profession that someone has, and how this is related to freedom of choice in mobility. The individual respondents are depicted as colours and numbers in figure 12; the colours refer to the place of living – as can be seen in the legend – and the numbers refer to the order that the respondents were interviewed in – this order can be seen in table 1 and appendix III.

What else can be seen in the diagram in figure 12, is that there are four different quadrants in which the respondents are placed – based on their level of accessibility and income level. In this way, differences can be explained more specifically than when the diagram did not contain the quadrants; in the next sections, every quadrant will be elaborated upon independently, with the aim to portray the living standards and positions within society of the interviewed inhabitants of Yogyakarta, to ultimately transform this into useful information for answering the central research question.

5.1 Forging ahead

This first quadrant contains the accessibility/income level ratio of respondents Mr. Abdul Muhaimin and Mr. Hans Rinaldi, respectively from Kotagede and Umbulharjo. In terms of the ability to get to central places and the amount of money that they earn from their jobs, it can be stated that the location of the two respondents in the diagram is similar to the grey trend line – meaning that a higher income level seems to be resulting in a higher level of accessibility.

If this hypothesis is true, it is as well plausible that the increasing differences between rich and poor are not only in terms of income, but as well in terms of accessibility – resulting in the unjust distribution of land in relation to central places, or in increasing segregation.

5.1.1 Mr. Abdul Muhaimin (#7)

Mr. Abdul Muhaimin is the first respondent from this quadrant who will be portrayed in terms of accessibility and income level. Before the illustration of Mr. Abdul Muhaimin’s individual accessibility is given, the respondent was asked about the general accessibility of Kotagede. This is done to compare possible differences in perception among the individuals with the perceived general accessibility of the
sub-district. Mr. Abdul Muhaimin’s opinion on the general accessibility in Kotagede was the following: “Since 1985 Kotagede is already well-connected with Malioboro and other areas/districts. There was a Nakamura’s research which told that the culture in Kotagede would change because of modernization and influences from the bigger city [Yogyakarta] that would happen there, but in reality it didn’t change a lot – just a bit more local tourists”, ignoring the fact that Kotagede is gaining increasing popularity from international tourists lately, resulting in more traffic in the sub-district – especially on Pasar Legi, when the traffic is definitely lowering the general level of accessibility.

Also the other respondents from Kotagede, both Mr. Sidik and Mrs. Gracia – two people from the low-income class – think that Kotagede is well-connected with other areas and sub-districts in Yogyakarta, even with the parts of Yogyakarta metropole that are further away from the city; like Bantul and Gunung Kidul.

Furthermore, Mr. Abdul Muhaimin claimed that “Kotagede can still be reached easily by own or public transport like becak/pedicab, and andong. Buses do not drive to Kotagede because the Kotagede council doesn’t want buses in the area. Kotagede is a development area of Yogyakarta but we also can’t find cafe or cinema here. This is because of the fact that Kotagede is well known as an old town and will hang on to its local culture”.

Although Mr. Abdul Muhaimin mentioned the presence of becaks, andongs and taxis in the area, he thought in general that the supply does not need meet the demand of fast public transport, all because of Kotagede’s desire to stay as traditional as possible. But in his opinion, this does not have to be a serious problem; because the Indonesian people like to be in control of their trip, reach their destination directly and do not want to be dependent on waiting times, they prefer to use private transport, as was also mentioned in the previous chapter – as long as they can afford a private vehicle.

According to respondent Mr. Abdul Muhaimin, the general accessibility of Kotagede has been classified as good. But he added that there is a significant difference among the inhabitants between the access for public and private transport, because the Kotagede council wants the sub-district to remain as historical as possible – not allowing buses to operate in Kotagede. This contributes in a way to the level of segregation in the area, on which Mr. Abdul Muhaimin had to say: “the downside of this [not allowing buses in Kotagede] is that the poorest people maybe cannot move to other places, because they have no vehicle for transport, and no money for a vehicle”.

Besides the citation above, Mr. Abdul Muhaimin has another well-thought explanation for the increasing segregation in Kotagede. He explained that “distribution of the population is proceeding in less conceptual form; we cannot enjoy Kotagede anymore as the old town from before, because the increase of the population causes many people to live outside the traditional town borders – so it is not well-thought while we want to hang on to the local culture”. Directly after stating this, the respondent said that the biggest contributor to the recent changes in the sub-district is the economic aid from Yogyakarta’s government to promote Kotagede’s silver industry.

According to Mr. Abdul Muahaimin, this economic aid enlarges the budget that is available for the silver factories to produce their handicrafts in larger workshops and souvenir shops, but it also leads to an increase of the workers’ salary in this industry. This macro-economic policy of the government – or kesurutan – should ensure the enhancement of design protection and design development of the silver products, and it should accommodate the lack of supply of raw materials. But on the other hand, the remainder of the industries and shops in Kotagede – which include many of the poor people in the sub-district – do not get any economic support. And this makes it that the differences between rich and poor will increase, resulting in a less fair distribution of land where the increasingly wealthy people can choose to pick their location and mode of transport according to their preference, and the low-income groups will be evicted to less accessible parts of the sub-district.
Individual situation

When it comes to the individual level of accessibility, Mr. Abdul Muhaimin has both a motorcycle and a car available, which could be afforded because of his high income. He did not mention the number of vehicles that his family owns in total, but when his options for transport came to question, Mr. Abdul Muhaimin mentioned that he can choose between his motorcycle and his car. In this respondent’s lifestyle is no room for reaching other destinations by public transport, as it takes more time than travelling by own transport. And in addition, Mr. Abdul Muhaimin stated that “on the long-term, this public transport lifestyle will turn out much more expensive than having an own vehicle, also when it comes to the time that I’m on my way”. The fact that people still have to do their chores but as well want to socialize in other places, makes it that they keep up their travelling lifestyle as long as their available time and money allows it.

It takes roughly 20 minutes by motorcycle to get to Jalan Malioboro and 1 hour by car in the case of Mr. Abdul Muhaimin. “But it’s different when there is a holiday, then I can access Malioboro within 35 minutes by motorbike”. The respondent told that he decides to travel per motorcycle if he has to be somewhere fast, but if he takes out the family for a trip, or when he needs to attend a formal meeting, then Mr. Abdul Muhaimin prefers to take the car.

In comparison with the other respondents from Kotagede, Mr. Sidik and Mrs. Gracia, the time that is needed for Mr. Abdul Muhaimin to reach Jalan Malioboro is not necessarily lower; Mr. Sidik said in the interview that he can reach Malioboro within an hour by becak, while it takes him 25 minutes per motorcycle. However, it should be mentioned that Mr. Sidik lives in Central Kotagede, while Mr. Abdul Muhaimin lives in the far south near the central market.

Also Mrs. Gracia lives in Central Kotagede, and she claimed that it only took ten minutes to get to Jalan Malioboro by motorcycle when she first came to the sub-district back in 1992; “now it takes more than 30 minutes. If I use public transportation like city buses it takes longer and will be up to 1 hour, because they don’t ride in Kotagede area. So I need to go to Umbulharjo to get the bus from there”, which takes more extra time.

In general, it does not seem that Mr. Abdul Muhaimin’s accessibility is significantly better than the lower-income people in the sub-district of Kotagede because the travel time is kind of similar, but the real difference is made by the main road along which this respondent lives – while Mr. Sidik and Mrs. Gracia live in smaller alleys in the overcrowded central part of Kotagede. In this way, Mr. Abdul Muhaimin’s income level allows him to live in a location of preference that enables direct participation in traffic – in this case along main road Jalan Mondorakan/Jalan Tegal Gendu – making the respondent better accessible to central places, possibly resulting in an increased travel frequency or mobile lifestyle – besides the fact that he already enjoys a larger amount of spare time for recreation.

5.1.2 Mr. Hans Rinaldi (#5)

The second respondent in this quadrant with both a high income and a high level of accessibility is Mr. Hans Rinaldi from Umbulharjo – who is blessed with the highest ratings of income and accessibility among the interviewed inhabitants. The reason why Mr. Abdul Muhaimin’s level of accessibility is lower, is because Kotagede contains a road network with a lower quality than Umbulharjo, but as well lacks a variety of public transport options.

Before an illustration will be given of Mr. Hans Rinaldi’s individual accessibility, the respondent was asked about his opinion regarding the general level of accessibility in the sub-district. This is done to ultimately compare the individual differences with the perceived general accessibility of a specific area.

When it came to question how the state of the roads in Umbulharjo is perceived, Mr. Hans Rinaldi mentioned that the quality of the roads is better than for example in Bandung, another big city on the island of Java. This can be seen as an advantage for the perceived accessibility of the sub-district as a
whole, being able to accommodate the traffic as fluently as possible. The respondent also told about
the downside of the road network in the sub-district; the fact that there are only a few roads that lead
to Jalan Malioboro from Umbulharjo.

Concerning the quality of public transport, this respondent is satisfied with the current options
that someone can choose from in Umbulharjo – saying that it is good enough to accommodate all the
people that are in need of public transport. Also Mr. Hans Rinaldi mentioned the fact that people have
to wait for a long time before they can get on a bus as a downside of the current public transport
network, although this is due to the fact that the majority of the inhabitants prefers to take private
transport – contributing to an increasingly crowded traffic situation.

In this way, Mr. Hans Rinaldi agrees with Mr. Abdul Muhaimin that the current bus system in
Yogyakarta cannot operate efficiently, leading to an eventual decrease in general accessibility.

It is not leading to severe traffic problems in Umbulharjo yet, as Mr. Hans Rinaldi said that the
traffic jams in the sub-district are not that heavy when compared to the traffic jams in for example
Depok. This is due to the identity of Umbulharjo to act mainly as a place of living, not specifically for
economic activities – causing the traffic to be less crowded at any given moment.

When asked about his predictions for the future, Mr. Hans Rinaldi said that the whole city of
Yogyakarta needs an increase in public transport by bus, taxi or motorcycle because it gets too busy on
the roads under the current circumstances. “[There is] too much own transportation on the road and it
gets even more crowded. Andong/Dokar and pedicab should just be placed near Malioboro and Kraton
area”, refers Mr. Hans Rinaldi to the allocation of certain types of public transport to solely touristic
hotspots of Yogyakarta. Mr. Hans Rinaldi concluded that people have to go somewhere by public
transport to avoid increasing traffic jams in certain areas – although he sees no good in creating the
monorail in the city. When he was confronted with that plan, he said: “Monorail, if applied in Jogja it’s
a good concept, but the Jogja city is too small for a system like this. Monorail can make that
andong/dokar and pedicab (becak) will not exist anymore and they leave the andong and becak drivers
unemployed. This all because the monorail has much capacity and has a correct and exact time
schedule [so that most of the people will use that mode of transport]”.

For the rest, Mr. Hans Rinaldi added that the future of Umbulharjo is dependent on the
development of XT Square, the shopping mall in the sub-district, and Gembira Loka Zoo. If these places
turn into tourist hotspots, then there is a higher chance for Umbulharjo to turn into a crowded area
with more traffic jams than there currently are – unless everyone changes their lifestyle from using
own transportation into public transport. But Mr. Hans Rinaldi mentioned as well that currently there
is a sufficient supply of health and educational facilities in Umbulharjo such as hospitals and schools,
referring to the fair distribution of the land in the sub-district. All of these amenities can still be easily
reached by everyone from within Umbulharjo, meaning that the actual impact of the low segregation
on the level of accessibility is not significant in this sub-district.

Individual situation

As was also stated in the previous chapter, Mr. Hans Rinaldi was seen coming to work per motorcycle.
And there are as well a car and three more motorcycles in his family’s possession, so it is not rash to
state that the respondent’s level of accessibility does not get influenced by his transport options –
since he also has the ability to travel per public transport.

This accentuates the fact that Mr. Hans Rinaldi is well-supplied in terms of vehicles, next to the
possibility to take public transport to reach a destination. This suggests that the respondent has a high
level of accessibility to reach Jalan Malioboro, since he can decide which mode of transport to take
depending on the actual traffic situation and the purpose of the trip – either for leisure, business,
esential groceries, and so on, creating a pattern by switching between vehicles depending on the
activity.
Mr. Hans Rinaldi told that it takes 30 minutes by motorcycle to get to Jalan Malioboro nowadays, while this was 15 minutes in the past. When he decides to travel per car, it takes almost double the time to reach Jalan Malioboro due to more jams that can be mostly avoided when travelling per motorcycle. In addition he said that it takes a lot more time to get to Jalan Malioboro when someone wants to go by public transport, because of the crowded traffic situation and indirect routes to destinations.

The level of accessibility is not only determined by the number of options that Mr. Hans Rinaldi has to get to Jalan Malioboro, but also depends on the place of living within the sub-district in relation to the main roads, the number and quality of the roads and the occurrence of traffic jams. Since there are enough high-quality main roads in the sub-district to accommodate its population on their way in or out and there are enough options for public transport so that the amount of private vehicles is somewhat decreased, the traffic jams do not get really intense. Because of this, plus the fact that Mr. Hans Rinaldi lives in Pandeyan, centrally located in Umbulharjo, it is logical that he is assigned with the highest level of accessibility among the interviewed inhabitants of Yogyakarta.

5.2 Be(cak) ready to survive

5.2.1 Mr. Triyono (#4)

In the second quadrant, there is only one respondent; this is Mr. Triyono from Sorosutan, located in the southern part of Umbulharjo, who has been living in the sub-district since 1975. Mr. Triyono works as a becak driver since 1990 and moves people to other destinations, and before that, starting from 1975 he came to Umbulharjo to work as a labour and house keeper for an owner of a banana plantation. Mr. Triyono’s former house was at the edge of an enormous banana plantation where neighbours were hard to find – there were only the people who lived in the house and worked on the plantation.

Mr. Triyono thinks that the city is turning more crowded every year; this is due to the fact that all kinds of people come to Yogyakarta – for example for culture, tourism and education – and besides, all types of public transportation are easy to get onto. Mr. Triyono adds to this that generally every
single person in the city owns a motorcycle, empowering his own statement about the increasing crowdedness.

When Mr. Triyono was asked about his opinion regarding the general accessibility in Umbulharjo, he said that the accessibility in the sub-district is better now than in the past since the inhabitants can use every mode of transportation to reach another place. In the past there were no buses or taxis around, and the people could only go somewhere by becak or andong – which takes a significantly longer amount of time.

This is at the same time a disadvantage for people like Mr. Triyono, because becak drivers notice a decrease in the number of clients they move. Mr. Triyono said on this; “you see, in the past, much people were looking for pedicab (becak), but now pedicab’s driver has to look for passengers himself”.

Another disappointment that the becak drivers have to endure, is the fact that there also are bemo’s nowadays – becak motor, the faster motorized version of the becak – that are just a little more expensive. For the becak drivers, this meant that they had to cut their prices to remain attracting customers; Mr. Triyono told in the interview that a becak driver could ask 15.000 Indonesian rupiah for a single trip to Jalan Malioboro from Umbulharjo about ten years ago. Currently, Mr. Triyono can only ask 10.000 rupiah for that trip, meaning he had an income loss of 33 per cent compared to a decade ago – unless he encounters people who are inexperienced when it comes to bargaining and still are willing to pay the old price.

However, Mr. Triyono’s biggest fear is not this loss of income due to motorized becaks, but it is the possibility of the realisation of a monorail system in the city. He said that a system like that could make Yogyakarta better in terms of decreasing the crowdedness on the roads, but he is more worried about the decrease in clientele for becaks and andongs, saying “maybe they [we] will not exist anymore, because the drivers will lose all of their clients and also their income”.

In this respect, Mr. Triyono shares the same opinion as Mr. Hans Rinaldi regarding the realisation of a monorail system in the city. Eventually this development will result in a higher level of social-economic segregation among the inhabitants in the future, at least in the city as a whole. For the sub-district of Umbulharjo it could be another scenario, since the lower-income people will move out if they cannot afford to live there anymore – and then the level of segregation in Umbulharjo will consequently decrease as only the higher incomes will stay. But the becak drivers who cannot afford to live in the sub-district anymore will lose their income, resulting in the poor getting poorer, while the wealthy people get richer – leading to an increase in segregation in the city as a whole.

As the majority of the less-wealthy population moved out of the sub-district due to increasing land prices, the perceived level of segregation is very low in Umbulharjo. Mr. Triyono added to this that he thinks that the distribution of accessibility and facilities among rich and poor is fair nowadays, as was also stated in the previous chapter. An argument that Mr. Triyono used for the fact that the level of segregation is low in Umbulharjo, is that the sub-district has very few tourist places to offer, so the income differences are not varying that much from each other – the less-wealthy people who could stay in Umbulharjo can be seen as an exception to this argument.

Individual accessibility
Mr. Triyono is a perfect example of an outlier in relation to the trend line in the diagram, because Mr. Triyono earns not much with his job as a becak driver, but still scores a reasonable level when it comes to accessibility, in fact a shared second highest level – not in correspondence with the alleged hypothesis that the level of accessibility follows the height of income.

The most obvious reason why Mr. Triyono has been classified with a positive level of accessibility is that he lives in Umbulharjo, of which can be said that the whole sub-district is well-accessible for its
inhabitants – provided with high quality roads, relatively few traffic jams and a large amount of public transport facilities. Another reason for Mr. Triyono’s accessibility to increase, was the moment that he switched professions and bought his own becak, resulting in a higher mobility to reach other destinations.

As was also mentioned in the previous chapter, Mr. Triyono owns a becak and a motorcycle, which he uses when there is no work to be done. Furthermore, Mr. Triyono’s family cannot afford a car, so if they want to go on a trip together they travel by Trans Jogja bus. For Mr. Triyono it takes roughly an hour to get to Jalan Malioboro, albeit that he goes there by becak – one of the slower modes of transport –, while this trip used to last approximately 20 till 25 minutes. If Mr. Triyono decides to go to Jalan Malioboro by motorcycle, it used to last roughly ten minutes, but this increased to at least 35 minutes.

In comparison with Mr. Hans Rinaldi, who lives in Pandeyan, a central kelurahan of Umbulharjo, this is not bad for someone with a low income who lives more to the south of the sub-district. This comparison not only shows that the differences in accessibility are close to zero in the sub-district of Umbulharjo, but as well creates an answer in the question why this respondent is an outlier in relation to the given trend line in the diagram; because Mr. Triyono lives in a high-income area as someone with a low income, he enjoys the same amenities as the majority of the inhabitants, resulting in an exceptional case. Mr. Triyono’s low income does not necessarily affect neither his accessibility within the sub-district from his location of living, nor his lifestyle of travelling to other places.

When someone says that the same reasoning is applicable to Mrs. Semi – the other respondent from Umbulharjo which is also part of the low-income class –, it can immediately be contradicted by Mrs. Semi’s own statement that she rarely visits other places as she is busy all day with running her shop – producing and selling drinks and food. Therefore, her need to be accessible is not present in her lifestyle and can be considered as inapplicable.

5.3 Inaccessible poor

Figure 15: Quadrant 3 with respondents #8, #9, #2 and #6
The third quadrant contains the most respondents in the diagram, illustrating the accessibility/income level ratio of Mr. Sidik and Mrs. Gracia from Kotagede, Mrs. Wati from Depok and Mrs. Semi from Umbulharjo. These respondents are all classified in the low-income class as they all work as becak driver or seller of food or drinks, badly paid professions.

It can immediately be mentioned that the presence of these four respondents in this quadrant is corresponding to the given hypothesis regarding the grey trend line in the diagram. If the height of income is indeed in relation to the level of accessibility, this means for these respondents that their low income influences and decreases their accessibility to central places.

The following portraits of individual perceptions within this quadrant will show if the trend line can be taken as a plausible object for determining the relation between accessibility and segregation.

5.3.1 Mr. Sidik (#8)
The first respondent of this quadrant that will be elaborated upon in terms of accessibility perception and income level, is Mr. Sidik from Kotagede. Among the respondents who are portrayed in this third quadrant, Mr. Sidik has the highest level of accessibility – due to the fact that he works as a becak driver and therefore is concerned by having a level of accessibility that is as high as possible, to reach other destinations quickly.

When Mr. Sidik was asked about his opinion regarding the general accessibility of sub-district Kotagede, he mentioned that there are several roads available to reach Jalan Malioboro which are all under pressure, referring to the fact that “of course we will find traffic jam on the way to get there. I think that to reduce the traffic jams in the future, drivers/vehicles should be given more optional directions than just a couple of roads”. Mr. Sidik thought that the narrow roads in this sub-district lead to more traffic jams as the current traffic cannot move fluently through Kotagede, therefore leading to a lower level of accessibility to central places. Another reason for the traffic jams to happen in this sub-district is because the sides of the road are used as parking area, making the streets even narrower for the traffic – as was also stated in the previous chapter.

Concerning the other aspects of accessibility, the quality of the roads and public transport, Mr. Sidik is again not completely satisfied. This can be concluded by his answer on the question how the quality of the roads is perceived, on which he said: “The quality of the roads in Kotagede is good, but outside of the area it’s even better. Because in Kotagede there are quite some holes in the road, which is not very pleasant for a becak”, referring to the circumstances under which he has to work. And furthermore, Mr. Sidik claimed that especially the traffic jams in Kotagede during Pasar Legi are causing problems on the narrow roads for becak drivers like him; “I felt so panicked when traffic jam happens, because all the vehicles pass the becaks with high speed, hardly leaving any space for becaks on the road. Especially this is horrible during pasar legi”. But directly after this statement, the respondent said that he still thinks that Kotagede is on average a better place for becak drivers to be employed, since the area is calmer than for example Depok or Jalan Malioboro. In Kotagede, not only the supply of becaks is high, but as well the demand – since other modes of public transport are hard to find in the sub-district, as buses do not operate there.

When it came to the perceived segregation in Kotagede, Mr. Sidik was mentioning the same reason as Mr. Abdul Muhaimin for the increasing segregation by stating: “I think the income differences are not so big [in Kotagede], but they have increased in the last decades because only the silver industry gets more economic attention than ever. Therefore they [workers in the silver industry] get more money than the other people who live in Kotagede, which causes them to gain more profit and live in the bigger houses of this kecamatan, in more attractive places”, meaning that the accessibility of the higher incomes will further increase, while the low-income people notice their accessibility remain the same or even decrease.
**Individual accessibility**

Mr. Sidik’s individual level of accessibility is inferior to Mr. Abdul Muhaimin’s accessibility, because the latter can afford it to live along a main road in the sub-district and as well has multiple options of private transport available, enabling him to be more accessible in relation to central places.

But when it comes to the time that it takes for both respondents to reach a central place like Jalan Malioboro, they do not differ much from each other.

Mr. Sidik said in the interview that he can reach Jalan Malioboro within an hour by becak, while it takes him 25 minutes per motorcycle. A quick reminder to Mr. Abdul Muhaimin’s situation; it takes him 20 minutes per motorcycle and 1 hour by car. It should be mentioned that Mr. Sidik lives in Central Kotagede, while Mr. Abdul Muhaimin lives in the far south, leading to a longer travel time for Mr. Abdul Muhaimin. It still is odd that a trip by car for the latter takes the same amount of time as a becak ride for Mr. Sidik to reach Jalan Malioboro, an indicator that the roads in Kotagede are not capable enough to accommodate the current traffic in the sub-district in an efficient way.

In general, it does not seem that Mr. Sidik’s lifestyle is severely impacted by his income level, as he is still able to access other parts of the city with his becak or motorcycle quite easily. The reason why Mr. Sidik’s level of accessibility still is classified as negative, is because of his current place of living within Kotagede – and this has to do with his few options to pick a location of preference, due to a low income. But in relation to the trend line in the diagram, Mr. Sidik’s accessibility is still better than the expected accessibility for that specific income level – scoring -2 instead of -4 on the x-axis.

**5.3.2 Mrs. Gracia (#9)**

The second interviewed inhabitant of this quadrant is Mrs. Gracia, who has been living in the central part of Kotagede since 1992. Mrs. Gracia is as well classified with a low income, because she sells coconuts and coconut juice for a living and in the diagram can be seen that her level of accessibility is also low. In comparison with the grey trend line, the respondent’s accessibility is somewhat better than her income would suggest, although the difference is very small.

One of the main reasons why Mrs. Gracia was judged with this specific level of accessibility, -3, is because Mr. Sidik, with an accessibility level of -2, works as a becak driver and therefore needs to be better accessible to several places, while Mrs. Gracia needs to sell her products in one place. And the other reason is because the other two respondents in this quadrant are classified with an even lower level of accessibility, due to varying reasons that will be explained in the next two sub-sections.

Mrs. Gracia had her own prediction for the future developments in the sub-district by using logical reasoning; “As time goes by it’s getting more crowded in Kotagede; every year it’s growing increasingly crowded. So in the future the crowdedness in Kotagede will definitely increase more. For example, especially around my house there are already more boarding houses and rentals than before, packed with students. Since the last 4 years Kotagede getting more crowded than it ever was, so I don’t see this change in the near future”.

When the respondent was consequently asked about the possible influence that this increasing crowdedness has on the level of accessibility in the sub-district, she said that there are internal differences in Kotagede when it comes to accessibility; most of the time, the traffic jams occur around the central market in the southern part, because it is a popular place. And thus, the accessibility to reach the central market is lower than in other parts of Kotagede – as it is a popular place, the sides of the roads are used as parking area, leaving less space available for the traffic to pass. Also the increasing population density contributes to a lower accessibility of the sub-district, again especially around Pasar Kotagede. “My feelings are concerned about this, because sometimes those who have motors use them for everything, even if it’s not necessary”, blames the respondent the fact that everybody transports themselves to other places instead of travelling by public transport.
Mrs. Gracia added that the occurrence of traffic jams also definitely contributes to the increasing heat in the atmosphere.

Mrs. Gracia had no idea when it came to the questions on segregation, but at least she had something useful to mention when she was notified with the used definition; “Ooh ya I see, I think in Kotagede not much segregation. This is because the people in here do pretty much the same kind of jobs, like seller of any kind of food or drinks, or becak driver, or in handicraft. So their income is also kind of the same. The richer people on the other hand work as owners of bigger businesses, like in silver or in boarding schools.”

Because Mrs. Gracia said there is no high level of segregation in Kotagede, she also could not acknowledge that the land in the sub-district is getting distributed more unfair because of increasing differences in income – due to the macro-economic policy on silverware. According to her perspective, the division of land in Kotagede is still proceeding in a fair way, albeit that it is getting more crowded than ever before.

**Individual accessibility**

As was also stated in sub-section 5.2.1, it took only ten minutes per motorcycle to get to Jalan Malioboro from Kotagede when Mrs. Gracia first came to the sub-district in 1992. Due to the increasing traffic it nowadays takes her more than 30 minutes.

Because of the unavailability to buy a car, Mrs. Gracia and her family take the bus if they want to go somewhere together. The problem however is that there are no buses in Kotagede, so that Mrs. Gracia has to go to Umbulharjo first for taking this mode of transport, adding more time to the duration of the trip.

It can be said that Mrs. Gracia’s lifestyle is certainly being influenced by her level of income and location of living; whenever she wants to visit another place, she has to make a choice between the motorcycle and the public transport. And because public transport is certainly more expensive than travelling by private transport when travelling frequently, someone tends to go somewhere by motorcycle – especially if that person has a low income and needs to save as much money on transport as possible. In this way, Mrs. Gracia’s lifestyle is impacted by her limitations in transport – due to a limited income and a location of living which can be described as an over-crowded part of Kotagede. Her travel frequency for especially recreational needs is therefore restrained, since she is either assigned to her motorcycle or a travel time that is twice as long – family trips are for example done per motorcycle.

5.3.3 Mrs. Wati (#2)

Respondent number three in this quadrant is Mrs. Wati, originating from Bantul and living in Depok since 1992. As can be seen in the diagram, she is classified with a higher income than Mr. Sidik and Mrs. Gracia, but on the other hand with a lower level of accessibility. The reason behind the higher income level is because Mrs. Wati owns a popular fruit stall along Jalan Urip Sumoharjo/Jalan Laksda Adisucipto in the ever-crowded sub-district Depok, resulting in more sales and higher profits than the sellers from Kotagede.

Mrs. Wati’s lower level of accessibility is caused by the higher level of crowdedness in the sub-district of Depok, with traffic jams that are more intense than in Kotagede, leading to an increased travel time to reach other destinations. And furthermore the supply of public transport in Depok is currently not meeting the demand; because of the high amount of private vehicles on the roads, it is harder for people from the lower-income class to get to another place – since not everyone can afford a private vehicle.

When the respondent was asked about differences in accessibility between the sub-districts in Yogyakarta, Mrs. Wati started with the statement that the public transport is declining. She mentioned that bus company Trans Jogja is the only public transport service that is expanding their territory to all
possible areas in Yogyakarta, but on the other hand the company cannot operate in every sub-district due to area-specific reasons. The reason for Depok not to let Trans Jogja buses operate in large quantities is the fact that the area already deals with massive traffic in the form of private transport, which is preferred over public transport by the majority – due to the aim to save time and money. And furthermore the traditional city buses, which are smaller and cheaper than Trans Jogja buses, even vanished out of the city as a whole, reducing the number of public transport options. However, in other sub-districts of Yogyakarta, the public transport system is better and therefore the traffic jams caused by private transport are less intense – resulting in a higher general level of accessibility than in the case of Depok.

After the statement that the public transport is declining, it could be assumed that Mrs. Wati believes that the level of accessibility in Depok is not that high. But instead, the respondent said that the accessibility in Depok has been getting better and it consequently became more affordable to reach other destinations; even under the current traffic situation. But Mrs. Wati thinks that the realisation of a monorail in Yogyakarta will enlarge the general accessibility, because the congestion will be reduced, as well as the use of private vehicles. With this monorail system the accessibility will further increase in the sub-district with shorter travel times as the most important result.

When it came to the visibility of segregation within Depok, Mrs. Wati mentioned that she notices the groundwater quality to worsen as the sub-district is getting increasingly crowded – real estate developers are often the cause for pollution. Because Mrs. Wati sells fruit for a living and has to be shared under the lower income class, her words on the groundwater quality can be seen as a sign that the differences between rich and poor are increasing – leading to a more unfair distribution of the amenities in the area. Furthermore Mrs. Wati did not have much more to say about the perceived segregation, in her case especially because her shop is along a main road in Depok. When she goes somewhere from her shop – her home not being far from there – she is already on a main road so her level of accessibility is not really impacted by her low income level or location within the sub-district, possibly blurring her vision on the existing level of segregation among other low-income inhabitants.

**Individual accessibility**

For Mrs. Wati, the trip from Depok to Jalan Malioboro lasts approximately 15 minutes when travelling per motorcycle. Public transport is in this respondent’s case inferior to the motorcycle, because firstly the sub-district lacks a thorough public transport network, secondly costs more money than travelling per motorcycle, while the third reason is that it takes more time – as an agile motorcycle can get past larger vehicles like cars and therefore reaches a destination faster.

The unavailability to buy a car is in this case not a huge disadvantage, since Mrs. Wati thinks a car is definitely not necessary in a sub-district like Depok. And because travelling per motorcycle is by far the most efficient way to reach other places, Mrs. Wati’s lifestyle is not per definition restrained by her income or location of living, since not only poor people suffer from the absurd traffic situation – everybody does – causing that in Depok, everyone’s level of accessibility is limited to a certain extent. But in the end, Mrs. Wati has to work long days in the fruit stall and is therefore classified with the lowest level of accessibility among the respondents in Depok, since she cannot leave whenever she wants, and has to save a larger share of her money than the wealthier inhabitants of Depok – limiting the time for recreational purposes.

**5.3.4 Mrs. Semi (#6)**

The final respondent in quadrant three is Mrs. Semi, a low-income resident of Mujamuju in northern Umbulharjo. Mrs. Semi sells homemade *tempe, tahu* and *krupuk*, traditional Indonesian snacks, as well as several drinks from out of her backyard in a small alley in Mujamuju. Nevertheless Mrs. Semi’s shop is frequently visited by residents from out of the whole sub-district; during the interview there were
seven other customers at different times to buy her products. It seemed that this respondent’s business is well-known in Umbulharjo, making it easier for her to stay in Umbulharjo — despite the increased land prices.

As can be seen in the diagram, Mrs. Semi is classified with an income level that is similar to Mrs. Wati’s, because they both own a successful shop in affluent sub-districts. When it comes to the level of accessibility for Mrs. Semi, this turns out to be the lowest classified respondent in the research. This will be explained after the illustration of Mrs. Semi’s perception on the general accessibility in Umbulharjo.

When Mrs. Semi was asked about the intense traffic jams that occur in several parts of Yogyakarta and the effects of that on the accessibility in the sub-district, the respondent said that the traffic jams in Yogyakarta are not a serious problem because she rarely goes to other places. For her it seems that the traffic situation in the city is not an actual problem, since she can sell her food to the wealthy people in the Umbulharjo sub-district and makes a living out of that.

Although Mrs. Semi said that the traffic problems in Yogyakarta are not that serious, she mentioned that the city is getting more crowded every year. According to her it takes longer than before to go to Jalan Malioboro, but she does not blame the traffic for it — instead, Mrs. Semi blames the fact that the city bus does not have an exact schedule so she has to wait for a long time.

Mrs. Semi mentioned that she uses the city bus and not Trans Jogja bus line, since it is a cheaper alternative; but she did not know that the city buses already have disappeared out of the city, on which can be said that her knowledge of the actual transport options is low.

After that, Mrs. Semi also admitted that she did not know much about the accessibility in the sub-district, again because she rarely leaves her workplace — leading to a logical assumption that Mrs. Semi’s own accessibility is as well not really high.

Also the topic of segregation was not her field of expertise, because the definition also had to be explained to her; Mrs. Semi then mentioned that every place she needs to go is easy to reach, like the local schools or hospitals. This is on the one hand remarkable, because she earns not too much with selling her own foods and drinks in an alley, therefore being part of the small low-income class of Umbulharjo. But on the other hand, Mrs. Semi lives in an affluent sub-district with a general high level of accessibility, due to the high quality roads and the solid public transport network.

From this perspective, it can be stated that the lower-income people in Umbulharjo do not seem to feel disadvantaged by the availability of amenities, and that they could reach these amenities with as much comfort as the people from a higher income class — if they have the time to go there at least.

**Individual accessibility**

According to Mrs. Semi, it took her 45 minutes to get to Jalan Malioboro with the city bus — when the waiting time is not taken into account. The respondent does not own a motorcycle for herself, but there are two motorcycles in her family that consists of four persons. It is plausible to say that the disappearance of the city bus had consequences for Mrs. Semi’s level of accessibility, as she cannot access every destination with the same ease as before anymore. Furthermore the respondent is working seven days a week in the shop, making it harder for her to go to other places at any given moment.

When asked about the duration of the trip from their place of living to Jalan Malioboro, the other respondents from Umbulharjo answer differently than Mrs. Semi — who lives in Mujamuju in the north of Umbulharjo. This is also due to the fact that Mr. Triyono lives further to the south of the sub-district — in Sorosutan — and therefore has to deal with a longer travel time from Jalan Malioboro.

Mrs. Semi’s lifestyle and level of accessibility are not impacted by her level of income or her location of living, because in her case it is almost inevitable to stay in the same location. Given the fact that
Mrs. Semi earns more than Mr. Sidik, Mr. Triyono and Mrs. Gracia, her accessibility would be also higher according to the hypothesis. But due to this unavailability to leave the workplace, Mrs. Semi’s accessibility is very limited – which also explains why she was more surprised than the other respondents that a foreigner wanted to interview her.

The only place where Mrs. Semi usually goes when she is done with work, is the lottery centre close to her shop. The respondent mentioned that her faith will be paid out at some time in the future, because “you see, there are more rich people in here”.

5.4 Victims of crowdedness

The fourth and final quadrant of the diagram consists of two respondents, Mr. Mujiono and Mr. Ari, who are both living in Depok. Mr. Ari works as an art seller and painting artist in the southern part of the sub-district, while Mr. Mujiono earns his money by selling gasoline in the heart of Depok along Jalan Affandi. The respondents have been classified with an average income of 0 and 1 on the scale from -5 to 5, as they earn certainly more than a becak driver or a seller of foods and drinks – also due to the high number of economic activities in Depok –, but earn significantly less than an owner of a boarding school or a tailor.

Furthermore, both respondents have an accessibility level of -1 which signifies that they certainly have the ability to reach central places without many detours or obstacles, but it also signifies that there as well are several factors that restrain the respondents’ level of accessibility. As both of the respondents are living in Depok, it is a logical assumption that the intense traffic situations have led to a limited accessibility for them, as well as the lack of a solid public transport network. In relation to the grey trend line, it can be seen that the respondents’ position in the diagram is left of the trend line – meaning that the respective moderate income levels are associated with higher levels of accessibility.
The first respondent in this quadrant is Mr. Mujiono, who is born in the sub-district of Depok. As he is born in 1959 and has been living in the same place during his life, the respondent experienced the increasing crowdedness in Depok closely. In the interview, Mr. Mujiono told that Depok is getting crowded since the 1980s and if it stays this way, the situation will emerge into the insane traffic situation of Jakarta – especially if there is no space for additional roads in the sub-district.

Mr. Mujiono believes that the realisation of a monorail that drives over the existing traffic will have many positive consequences; a monorail will not only directly reduce congestion, but it will also ride on an exact time schedule – something that the bus companies in Yogyakarta cannot do because of the traffic. This will cause more people using the monorail, so that the traffic situation will be less pressured. Also respondent Mr. Ari agreed on this topic by stating: “Monorail in Jogja better be made soon before it’s too late. Now in Yogyakarta it’s getting stuck. If we wait then it will be jammed like Jakarta. And more people want to get on to the monorail because in that way it becomes easier and quicker to reach their destination”.

According to the aforementioned perspectives, it seems that Mr. Mujiono believes that Depok has a decreasing general level of accessibility, which is enforced by the statement that “[Jalan Malioboro is] real close, but it seems more and more distant. The road is getting crowded and jammed”. In the previous chapter was as well stated that Mr. Mujiono used to run from Depok to Jalan Malioboro to stay fit, but this activity is impossible nowadays because of the traffic situation.

The respondent thinks that the main reason for the sub-district to be inaccessible to such an extent is the concentration of the universities, attracting students and employees to Depok. The real downside is the fact that they all travel per private transport and therefore contribute to the decreasing accessibility – let alone that the students are claimed to have “bad manners on the road” which results in traffic situations that are harder to get through.

The public transport in Depok is on average quite good, but as well expensive. This is because of the low amount of relatively cheap buses and becaks that are operating in the area, while the more expensive public transport options – such as SayTaxi, Uber, Grab, Gojek and regular taxis – are well-represented in Depok. Consequently, a dichotomy is created where the lower-income people either stay at the same place or travel per motorcycle and the higher-income people have the ability to choose from many modes of transport to reach a destination. It ultimately leads to the questions on perceived segregation, as this dichotomy influences the individual accessibility of the sub-district’s inhabitants, and therefore also possibly their mobility lifestyle. The addition of enough buses and becaks to meet the demand for public transport among the lower-income people is no possibility in Depok since the current traffic is too crowded right now – because the buses have no bus lane in this area, and because the becak drivers have a significant chance to get hit by drivers of faster motorized vehicles.

The aforementioned public transport circumstances in Depok lead to an increasing level of segregation in Depok, also according to Mr. Mujiono. The respondent stated that “distribution of the population in Depok gets more and more worse and divided from year to year, rich and poor people are separated from each other. But then also the public facilities are getting better in the whole sub-district though”, as Mr. Mujiono refers to the growing level of segregation as a result of urban development, leading to the wealthy people moving close to the public amenities while the poorer people move to less accessible areas in the sub-district.

**Individual accessibility**

Mr. Mujiono told in the interview that it nowadays takes 45 minutes to get to Jalan Malioboro from main road Jalan Affandi in Depok. To compare this with the travel time that it used to take; when the
first buildings in Depok had just been realized in the early 90s, it took only 15 minutes to get to Jalan Malioboro. It is getting increasingly difficult to get to Jalan Malioboro nowadays, said the respondent with his statement that the relative distance is growing.

This increased travel time is of course not only applicable to Mr. Mujiono but to the majority of the sub-district. The reason why Mr. Mujiono is however more heavily impacted by the increasing crowdedness than the wealthier people, is because his income level is still not sufficient enough to increase his number of transport options to reach central places. The remarkable aspect about this is that Mr. Mujiono has the money available to purchase a car or travel with public transport more frequently, but next to the fact that the motorcycle is preferred in travel time and expenses, it also creates the opportunity to save money for other things instead of spending it on another mode of transport. In this way, Mr. Mujiono’s income level is certainly influencing the respondent’s lifestyle in mobility, but it is a rational choice that Mr. Mujiono made to enable other expenses for him and his family.

There is no detailed information on the respondent’s location of living within the sub-district, but he mentioned that he lives close to his workplace along Jalan Affandi – where on the one hand the economic centre of the sub-district is located, but on the other hand where the houses are small and mainly built in remote alleys amidst high-rise apartments and multinational companies. Thus Mr. Mujiono lives in absolute distance close to the public amenities in Depok, but in relative terms it is more difficult to get out of the small alleys to participate in the traffic on the main roads.

5.4.2 Mr. Ari (#3)
The final respondent is Mr. Ari, who has been living in Depok since 1999, and he owns a small-scale art shop along Jalan Urip Sumoharjo/Jalan Laksa Adisucipto. Mr. Ari told that he moved directly to this sub-district when he came to Yogyakarta back in 1999. He moved to the city because he is a painting and framing artist who tries to sell his art to as many people as possible, and in 1999 the land prices in Depok were really low since it was recently developed at the edge of the city – where only a few people lived, a lot of them being artists in need of a workplace.

The difference between Mr. Mujiono and Mr. Ari is that they both have a different opinion on the period that Depok started to develop and became increasingly crowded – a deviation of almost two decades. It must be noted that Mr. Ari lives in the south-eastern part of Depok, which is more recently built, but still the urban sprawl did not take 20 years to reach that part of the sub-district. The difference lays in the fact that the respondents have different definitions of the concept of crowdedness, which is likely to be explained because Mr. Mujiono was born in Depok while Mr. Ari came later and experienced therefore a different phase of the urban sprawl – that already turned the previous farmland into urban area.

When the respondent was asked about his opinion regarding the current accessibility in Depok, Mr. Ari answered that the accessibility in Depok is currently good enough, although the sub-district suffers from increasing traffic problems. According to him this is because the public transport is better affordable than before, also due to the government policy to promote public transport so that the private vehicle usage can be limited. Mr. Ari compared this statement with the general accessibility in Yogyakarta by saying that “in Yogyakarta as a whole, accessibility is most comfortable. When you want to go to anywhere in Jogja, it is relatively very close. All modes of transport are readily available in the city, the only point is that the traffic jams can cause problems. But compared with the areas around Jogja, such as Bantul - which is still difficult to reach - the city has a very high accessibility”.

But on the other hand Mr. Ari told that the disappearance of the cheapest city bus recently led to a small decline in public transport in Yogyakarta as a whole. And besides he talked about Trans Jogja, the biggest bus company in Yogyakarta, driving less buses than before in Depok. The company
decided to send less buses to Depok due to the current traffic situation in the area, because nowadays it takes roughly an hour to get from Depok to Jalan Malioboro, due to traffic. Mr. Ari said that Trans Jogja actually drives fast, but takes an indirect route to get to Jalan Malioboro. In that way it is not an efficient alternative if someone can use their motorcycle or car as well, and reach his destination in half the time that it takes by bus. The other modes of public transport however are growing in supply, but the problem is that not everyone can afford it to use these or prefers to save money for other expenses and therefore still travels by private vehicles.

The increase in the supply of more expensive modes of public transport eventually led to the connection with the perceived level of segregation, on which Mr. Ari immediately started talking about the change in demand for becaks. In the past, people were looking for a ride while now the drivers have to offer their services to everyone for promoting their cheap transport. This severe loss of clientele is a reason for many becak drivers to change their profession, as they earn significantly less money. The clients that used to take a becak for public transport now choose for either own transport, or get on one of the public transport facilities as GoJek, SayTaxi, or Trans Jogja — which are given much attention nowadays. These companies get richer, while the becak drivers are left empty-handed.

Furthermore, Mr. Ari claimed that the level of segregation can also be expressed in the number of private vehicles – which explains a lower need for using public transport. This lower demand for public transport is as well supported, however indirectly, by the fact that it can be seen as a detour to reach a destination – at least this applies to Trans Jogja’s bus network, not specifically to more expensive public transport options such as taxis or GoJeks. And because the buses take inefficient and indirect routes to central places like Jalan Malioboro, it is clear that people prefer to use their own car or motorcycle to get somewhere quickly. But if someone cannot afford a private vehicle, and still needs to visit other places every once in a while, that person is almost obligated to travel per bus since it is the cheapest way besides walking. The connection here with segregation can be made by stating that the poor people who are assigned to take the bus because of the absence of an own vehicle, are cursed by a lower accessibility due to a longer period of travel time, as they are relatively further away from central places. This is also in terms of costs; one cannot constantly afford to travel by bus if that person lacks the resources to buy a private vehicle.

In this way, the level of segregation seems to be related and accountable for influencing the level of accessibility, because people who can afford to buy private vehicles are not only advantaged by the fact that they can reach other destinations quicker, but as well are able to live in a better location that is closer to public amenities or central places — enabling a multiplier effect in someone’s accessibility as they become wealthier. The higher someone’s income level, the more variation that person can bring in his inventory of vehicles, being able to decide which vehicle to use for every traffic situation and activity of interest — which as well influences their lifestyle. The only uncertainty in an increasing level of individual accessibility is the fact that on the long-term, more people are probably able to afford at least a motorcycle to increase their mobility, and therefore contribute to an ever-growing traffic — leading to a decrease in general accessibility, since it also takes more time for private vehicles to reach a certain place then. And exactly because of that, the Yogyakarta government now plans to increase the attention that is given to public transport, since it may solve part of the traffic problems.

**Individual accessibility**

When it comes to the duration of the trip from Depok to Jalan Malioboro for Mr. Ari, it must be noted that the respondent’s location of living is along Jalan Seturan Raya in the south-eastern part of Depok. In absolute distance this is further than from Mr. Mujiono’s place of living, but due to the fact that Jalan Seturan Raya is considered more calm than the roads in the heart of Depok, it is plausible to
believe that it takes Mr. Ari 30 minutes to reach Jalan Malioboro – especially because the respondent can avoid the busy routes through the centre of Depok. In this way, Mr. Ari is an exception in Depok in terms of heavily increased travel time to reach central places, although it still takes more time to get there compared to the situation when he came to live in Depok.

Based on Mr. Ari’s income level, it can be assumed that he has multiple modes of transport available to get to other places, depending on the kind of activity and the expected traffic situation of that exact moment. But after the interview, Mr. Ari told that he feels no urge to purchase a car because it is not necessary to have one in Depok, and rather travels per public transport if he wants to visit a certain place with his family and therefore cannot travel per motorcycle. This is in fact the same opinion as Mr. Mujiono, who also considers owning a car as unnecessary, although this respondent thinks the same of travelling per public transport and thus only travels per motorcycle.

It can therefore be concluded that the interviewed inhabitants of Depok that are assigned to this quadrant do not experience changes in their lifestyle because of their income or place of living; the people who earn enough to provide themselves with the basic needs and something extra every once in a while, do not seem to differ that much in lifestyle from the city poor like becak drivers or sellers of food. Of course they can spend more money because of their higher income, but in this case, the respondents who happened to be designated to the middle class in terms of income, they both have a mediocre level of accessibility. For them, this is mainly due to the fact that they have to work long days to keep the lights on and do not think it is worth the money to purchase a car because of the insane traffic in the sub-district. It seems that the main reason for them to usually travel per motorcycle – or use public transport every now and then – is to keep as much money available for other things, besides the fact that it is the fastest way to go from place to place. Recreational trips are therefore guaranteed, but not in a very high frequency.
5.5 Summary of insights

**Depok**

The interviewed inhabitants of this sub-districts all think that the current accessibility is adequate despite the severe congestion that occurs day and night. However, they admit that the accessibility is declining, due to both the increasing crowdedness on the roads and an expensive public transport network. According to all respondents from Depok, the public transport in the area is only made up out of taxis, alternative transport services (Uber, Grab, SayTaxi and GoJek), and the Trans Jogja bus line – the latter the least present in the sub-district. Back in the day when the city was not as crowded as it is now, people in the city were looking for public transport – becaks are the cheapest option – but now it is the other way around with the becak drivers asking around for passengers. This reduction in clientele is a reason for the becaks to disappear out of Depok, besides the fact that the traffic is too crowded and dangerous for the presence of these vehicles. The disappearance of the becaks, with as well the limited amount of buses in the sub-district, contributes to increasing differences in affordability in terms of public transport. The wealthier people can still afford it to take a taxi or GoJek, but might as well think it is not worth the money that can also be spend on more important things as private transport is cheaper on the long-term. On the other hand, the poor are limited to the use of travelling per private transport in the form of a motorcycle since it is the cheapest way of private transport, as long as they have the money to buy one.

The reasons that promoting the public transport does not work yet, are because of the high prices that are currently asked for using it and because the monorail system is still under construction. And furthermore, the interviewed inhabitants of Depok all do not own a car and barely travel per public transport because they want to keep their money available for other purposes, for example to save for another private vehicle that is cheaper on the long-term than travelling by public transport. However, all respondents mentioned that the city of Yogyakarta needs the monorail system soon because otherwise the city will be as jammed as Jakarta already is right now – they said that they would certainly use the monorail, because it is a fast alternative to reach a destination and it will increase the accessibility in the sub-district.

In the case of the respondents in Depok, it is plausible to mention that the height of someone’s income is not significantly changing that person’s lifestyle in terms of mobility, because someone still goes to other places to a certain extent that is needed to provide himself with basic needs and desires – not only the necessary trips like doing groceries or going to work, but as well hang out with friends or visit family. This can be done a certain amount of times until that person runs out of time or money to go on these trips, or when he thinks it is not worth the travel time anymore. The latter is however a sign that someone’s lifestyle is as well somehow limited due to the low level of accessibility in Depok, because someone cannot do everything he wants whenever he wants, unless he does not mind to get stuck in traffic – which is the case for the majority of the inhabitants who still visits other places despite the congestion. The downside is that a person loses more time while stuck in traffic than other inhabitants of the city who are able to reach their destination faster.

Also the location of living does not really matter for the inhabitants’ mobility lifestyle in this sub-district because it is crowded everywhere and the people still have to do their chores or want to socialize in other places, causing a decreasing general accessibility of Depok. An exception to this is Mr. Ari, who can avoid the main roads by travelling to Jalan Malioboro via other sub-districts and reach Jalan Malioboro quicker, since he lives in the south-eastern part of the sub-district.

It is the case that the level of segregation in Depok is directly affecting the level of accessibility of the inhabitants, because the wealthier people can pick a location of preference that is well-connected
with all desired destinations while the less-wealthy are designated to the less popular areas in the sub-district with connections that are worse. However, the accessibility of the wealthy people in Depok is as well limited to a certain extent – the highest level of accessibility among Depok’s interviewed inhabitants is -1, albeit in the middle-income class – because of the high crowdedness on the roads and a public transport network that does not completely meet the demand yet. And furthermore, the wealthier people in the sub-district can bring more variation in their inventory of private vehicles so that they have the choice between a car and a motorcycle, depending on the kind of activity they want to do and the expected traffic situation on the way to get there.

In this way can be concluded that the distribution of the land in Depok among rich and poor is affecting the level of accessibility of the inhabitants directly, but what must be mentioned as well is that the inhabitants do not feel restrained as they still go to other places when the urge is present. The only limitation could be that someone does not own a private vehicle yet and therefore is not able to travel freely, but this was not the case for the interviewed inhabitants of Depok – all respondents own a motorcycle, even Mrs. Wati from the low-income class.

**Umbulharjo**

In terms of the general accessibility in Umbulharjo, the respondents all believe that the sub-district has high-quality roads that are definitely good enough to accommodate the traffic in a crowded city. Umbulharjo has no intense traffic problems like Depok, but is only crowded during rush hours in the morning and afternoon. This is mainly due to the sub-district’s identity to function as a place of living for high-income residents, not specifically as a centre of economic activity – causing that many of the wealthier people leave the sub-district for work and come back when they are done.

Concerning the quality of public transport, the respondents told that they are satisfied with the current options that are available when it comes to public transport, because they can use every mode of transportation to reach another place. However there are downsides of this increasing variation in modes of transport; for example Mr. Triyono, the *becak* driver from Umbulharjo, sees a severe loss in his clientele because of the faster modes of public transport that are just a little more expensive.

When asked about future predictions, Mr. Hans Rinaldi said that the whole city needs an increase in public transport by either bus, taxi or motorcycle operators because it gets too busy on the roads under the current circumstances – especially with the extraordinary amount of private vehicles. The respondent concluded that people have to go somewhere by public transport to avoid increasing traffic jams in certain areas – although he sees no good in creating the monorail in the city, since this probably causes *becak* and *andong* drivers to be left unemployed. This opinion is of course supported by *becak* driver Mr. Triyono, who predicts a further loss in clientele as well when the monorail system is finished. He said that a system like that could make Yogyakarta better in terms of a decreasing crowdedness on the roads, but he is more worried about losing clients. The third respondent, Mrs. Semi, said that it will be a good mode of transport that she will definitely use to go to other places – being the only respondent from Umbulharjo who fully supports this monorail system. The construction of this system will however result in the poor *becak* drivers getting poorer, since they will lose their income as a result of a reduce in clientele, while the wealthy people get richer with the faster modes of public transport – leading to an increase in segregation in the city as a whole.

When it comes to the individuals’ level of income and the location of living within Umbulharjo, it can be mentioned that these variables have no direct effect on the respondents’ personal mobility lifestyle, just as in Depok. This is because respectively Mr. Hans Rinaldi has to travel often for clients or fabrics, Mr. Triyono is always on the road with his *becak*, and Mrs. Semi rarely goes to other places due to her popular shop – all in relation to their profession. The income level of the respondents is
indeed in correspondence with the location of living within the sub-district, and therefore provides the respondents with a higher level of accessibility. But it is not the case that the frequency of travelling is per definition restrained if someone’s income is lower, it just takes more time or money to reach a certain destination.

All respondents from Umbulharjo agreed on the fact that the sub-district is fairly distributed. If compared to the used theory on segregation, there is no real segregation noticeable because almost everybody in Umbulharjo has an average or higher income, and the distribution of facilities is acclaimed to be fair.

Only the fact that the low-income families – who used to be farmers before Umbulharjo got developed – do not live alongside the main roads but in small alleys that are hard to reach for people who do not know about the existence of these alleys, may be a sign for a low presence of segregation in relation to someone’s level of accessibility. However, this can be contradicted by the statement that every place in the sub-district is easy to access, even when someone lives in a back alley.

The perceived level of segregation in Umbulharjo is almost non-existing because the majority of the low-income people are already pushed out to other sub-districts that are more affordable. The low-income people who are still living in the sub-district therefore enjoy the same advantages as the wealthier people, who are mainly present in Umbulharjo. All public amenities are for example easy to reach, and the quality of the roads and public transport are as well nothing to complain about.

In this sub-district can be seen that the level of segregation is not per definition affecting the level of accessibility of the interviewed respondents because all public amenities are easy to reach in Umbulharjo, for every income level; the respective levels of accessibility are distributed in this way because of the specific occupations that the lower-income respondents carry out.

The fact that Mr. Hans Rinaldi has such a high level of accessibility is not only because he needs to be highly accessible for work, but as well because he can afford it to purchase multiple vehicles, travel per public transport and live along a main road. Mr. Triyono furthermore is a perfect example of an outlier in relation to the trend line in the diagram, because he earns not much with his job as a becak driver, but still scores a reasonable level when it comes to accessibility – not in correspondence with the alleged hypothesis that the level of accessibility follows the height of income.

Mr. Triyono’s low income does not necessarily affect neither his accessibility within the sub-district from his location of living, nor his lifestyle of travelling to other places. For Mrs. Semi, the need to be accessible is not present in her lifestyle because in her case it is almost inevitable to stay in the same location. Given the fact that Mrs. Semi earns more than Mr. Sidik, Mr. Triyono and Mrs. Gracia, her accessibility would be also higher according to the hypothesis. But due to this unavailability to leave the workplace, Mrs. Semi’s accessibility is very limited despite the fact that she could reach a destination pretty easy.

**Kotagede**

The respondents from Kotagede think in general that the accessibility of the sub-district is good in relation to other parts of Yogyakarta, even with the parts of Yogyakarta’s metropolitan area that are further away from the city; like Bantul and Gunung Kidul. The accessibility especially improved compared to the situation when the sub-district was no part of Yogyakarta yet.

However, also Kotagede is a victim of the intensifying crowdedness in the city; the sub-district is historically renowned because of its fine silverware, causing many tourists to come to Kotagede besides their visit to the remains of the ancient Mataram Kingdom. The silverware is the reason why the main focus of economic aid from Yogyakarta’s government to Kotagede is put on this sector, since it enlarges the popularity of Kotagede on international scale. Another development in the sub-district that is growing in size is the number of tourist villages, which are built to introduce the tourists to the
traditional culture and practices of Indonesia’s regions and villages – and as well to relieve the pressure on the city centre around Jalan Malioboro.

This increasing popularity of the sub-district causes the already narrow roads to be congested more often. The interviewed inhabitants of Kotagede agree on this and add that the limited number of roads that lead to Jalan Malioboro lead to more traffic jams as the current traffic cannot move fluently through the sub-district, therefore leading to a lower level of accessibility to central places. Another reason for the traffic jams to happen in this sub-district is because the sides of the road are used as parking area, making the streets even narrower for the traffic.

Of course there are internal differences in Kotagede in terms of accessibility; most of the time, the traffic jams occur around the central market in the southern part, because it is a popular place that attracts the highest number of newcomers. And thus, the accessibility to reach the central market is lower than in other parts of Kotagede. The accessibility in the sub-district is at its lowest on Pasar Legi, the so-called market day.

There is a significant difference among the inhabitants between the access for public and private transport, because the Kotagede council wants the sub-district to remain as historical as possible – not allowing buses to operate in Kotagede. This contributes in a way to the level of segregation in the area, on which Mr. Abdul Muhaimin had to say: "the downside of this [not allowing buses in Kotagede] is that the poorest people maybe cannot move to other places, because they have no vehicle for transport, and no money for a vehicle". Mr. Sidik said that he thinks that Kotagede is on average a better place for becak drivers to be employed, since the area is calmer than for example Depok or Jalan Malioboro. In Kotagede, not only the supply of becaks is high, but as well the demand – since other modes of public transport are hard to find in the sub-district, as buses do not operate there. All three respondents from Kotagede thought that the realisation of a monorail system in Yogyakarta is no solution for Kotagede to reduce traffic jams, because it does not fit to the historical image of the sub-district.

In terms of travel time, it does not seem that Mr. Abdul Muhaimin’s accessibility is significantly better than the lower-income people in the sub-district of Kotagede, but the real difference is made by the main road along which this respondent lives – while Mr. Sidik and Mrs. Gracia live in smaller alleys in the overcrowded central part of Kotagede. And furthermore, Mr. Abdul Muhaimin has due to a high income multiple options of private transport available, allowing him to live in a location of preference that enables direct participation in traffic – in this case along main road Jalan Mondorakan/Jalan Tegal Gendu. This makes the respondent better accessible to central places, possibly resulting in an increased travel frequency or mobile lifestyle.

In general, it does not seem that Mr. Sidik’s lifestyle is severely impacted by his income level, as he is still able to access other parts of the city with his becak or motorcycle quite easily. The reason why Mr. Sidik’s level of accessibility still is classified as negative, is because of his current place of living within Kotagede – and this has to do with his few options to pick a location of preference, due to a low income. But in relation to the trend line in the diagram, Mr. Sidik’s accessibility is still better than the expected accessibility for that specific income level.

For Mrs. Gracia it can be said that her lifestyle is certainly being influenced by her level of income and location of living; whenever she wants to visit another place, she has to make a choice between the motorcycle and the public transport. And because public transport is certainly more expensive than travelling by private transport when travelling frequently, someone tends to go somewhere by motorcycle. In this way, Mrs. Gracia’s lifestyle is impacted by her limitations in transport – due to a limited income and a location of living that can be described as an over-crowded part of Kotagede.
When it came to the perceived segregation in Kotagede, the respondents agreed with each other on the reason for the increasing segregation. The following statement is Mr. Sidik’s: “I think the income differences are not so big [in Kotagede], but they have increased in the last decades because only the silver industry gets more economic attention than ever. Therefore they [workers in the silver industry] get more money than the other people who live in Kotagede, which causes them to gain more profit and live in the bigger houses of this kecamatan, in more attractive places”, meaning that the accessibility of the higher incomes will further increase, while the low-income people notice their accessibility remain the same or even decrease.

This economic aid enlarges the budget that is available for the silver factories to produce their handicrafts in larger workshops and souvenir shops, but it also leads to an increase of the workers’ salary in this industry. But on the other hand, the remainder of the industries and shops in Kotagede – which include many of the poor people in the sub-district – do not get any economic support. And this makes it that the differences between rich and poor will increase, resulting in a less fair distribution of land where the increasingly wealthy people can choose to pick their location and mode of transport according to their preference, and the low-income groups will be evicted to less accessible parts of the sub-district. The rapid increase of this sector caused some people in Kotagede to move to other areas, since the surroundings of the central market became more exclusive for silver craftsmen. The higher prices of central places in Kotagede made it that the population separated itself into separate neighbourhoods, all characterized and represented by a specific income class based on someone’s profession, varying in level of accessibility to central places via main roads or public transport.

In this way can be concluded that the increasing segregation in Kotagede leads to different levels of accessibility for its inhabitants to reach central places, and is therefore in correspondence with the alleged hypothesis that says that someone with a higher income is blessed with a higher level of accessibility. But the same thing applies to Kotagede as to Depok, where the less-wealthy respondents do not feel restrained by their lower income or lower level of accessibility; they still travel to other places whenever they need or want to, since they all own at least one motorcycle as private transport.
6. Public transport as a saviour

This chapter contains an answer to the central research question and tries to develop new insights in the alleged relationship between someone’s level of accessibility and the level of segregation in a given sub-district in Yogyakarta, Indonesia. This will be done by starting with linking the important differences among the respondents to the respective sub-districts, after which will be illustrated why people feel the need to be accessible – and what this eventually means for the state of segregation. The third sub-section reveals the importance of stimulating the public transport network in the city, with the aim to avoid a decreasing level of accessibility and an increasing level of segregation.

Furthermore, the chapter contains recommendations with an eye on future studies and a critical reflection on the experience of conducting fieldwork in Indonesia after that.

6.1 Determining the main relation

In the previous chapter on the respondents’ lifestyles, a hypothesis was set up that said “that a higher income level seems to be resulting in a higher level of accessibility”, and refers to the possible fact that the wealthier a person is, the higher his or her level of accessibility is to reach another destination. This has to do with the opportunities that come with a higher income level, such as living in a location of preference – either to live in an oasis of silence or to be well-connected with all important places within the city. Another advantage of a high income level that leads to an increased level of accessibility is being able to purchase multiple vehicles to ensure a comfortable trip on the one hand, but on the other hand to create the choice to pick the fastest way to get to another place.

The central research question is outlined again to get clear what is particularly important in this research and to provide answers that are in correspondence with this question;

How does accessibility relate to socio-economic segregation in the city of Yogyakarta while being impacted by a high urbanisation rate?

The diagram that was introduced in the previous chapter is an important aspect in getting an answer to the central research question, because it emphasizes the particular lifestyles of the interviewed inhabitants as a result of their income level, accessibility, and location of living within the investigated sub-districts of Yogyakarta. The respondents’ lifestyles show to be influenced by these factors to such an extent that the existing relation between the main concepts accessibility and segregation can be illustrated with the help of this diagram – which further accentuates the differences in lifestyle between and within the four quadrants.

Furthermore, a connection can be made between the particular lifestyle of an individual and the specific sub-district where that person lives, so that differences and similarities in both living standards and accessibility can be explained thoroughly. This ultimately enables and emphasizes the importance of the relation between the main concepts of this research.
6.1.1 Linking individual differences to the *kecamatan*

In general, the hypothesis about the grey trend line is largely correct, since the majority of the interviewed inhabitants of Yogyakarta is assigned with an accessibility level that fits their specific income level, meaning that a higher level of accessibility is one of the consequences of an increased income. In the diagram, this is visualized with four of the five low-income respondents located in the third quadrant in the bottom left, meaning that they have both a low level of income and accessibility. The respondents in the middle class are assigned with a higher score on both variables, and are located in the fourth quadrant in the upper left. These respondents are assigned with a lower accessibility than their income suggests following the trend line, but since they live in Depok, their accessibility is limited because of the intensity of the traffic and the low priority of public transport.

The respondents in the high-income class are as well assigned with the highest levels of accessibility, which is not only due to their priority position to live in a location of preference and their variation in modes of transport when they want to travel, but is as well the result of the sub-districts that they live in; Kotagede and Umbulharjo. These sub-districts are in better connection with Jalan Malioboro and other central places, and therefore guarantee a more fluent traffic than Depok. Although the accessibility of Kotagede is decreasing slowly, because the roads cannot be expanded anymore and the sub-district lacks an adequate public transport network, it is still easier to reach the city centre than from Depok. The sub-district of Umbulharjo has the best state of the roads, public transport network, and the least traffic jams of the three sub-districts in this research, especially due to the fact that Umbulharjo consists mainly of high-income residents. Therefore, the general accessibility of the sub-district can be considered as high, and with the income that is available for multiple vehicles and a higher travel frequency, the individual accessibility is as well high for the wealthier people. This makes it that the inhabitants of Yogyakarta who live in Umbulharjo are assigned with the highest level of accessibility in this research – which is also due to the low level of segregation in Umbulharjo, because there is only a limited amount of low-income inhabitants that is enjoying the same advantages as the higher-income residents.

Two of the three respondents from Umbulharjo are part of this limited low-income class, and are as
well outliers to the grey trend line in the diagram. The most remarkable outlier is Mr. Triyono, who generates a low income by transporting people with his becak, but is assigned with a high level of accessibility – the second highest of all respondents. Mr. Triyono cannot only enjoy the same amenities that are present in the wealthy sub-district, but as well benefits from the high quality roads and the public transport network; enabling him to have more modes of transport to choose from if the income allows it.

The other outlier is Mrs. Semi, who is also living in Umbulharjo but cannot benefit from the high level of general accessibility in the sub-district. This is because of the fact that she cannot leave her shop often, reducing her individual accessibility to central places. Mrs. Semi is almost completely assigned to local economic activities, without many trips to other places.

A remarkable but logical process that was noticed in the lifestyles of the lower-income respondents, was that all of them would rather be inaccessible in terms of transport for quite some time while they save their money for a private vehicle in the form of a motorcycle. These inhabitants are willing to sacrifice certain activities further away from home for now, with the aim to ultimately increase their accessibility to these places with a private vehicle. If it is really necessary, the inhabitants can travel by public transport every now and then, but on the long-term this mode of transport is too expensive. In this way can be stated that the accessibility of someone in the low-income class is very limited and fixed to their own surroundings, but as soon as they saved enough money to purchase a motorcycle, their level of accessibility increases significantly as they are well-connected to the rest of the city. But until then, these respondents are assigned to economic activities in the local realms.

In terms of segregation, this increase in accessibility does affect the mobility lifestyle of an individual since he can reach other places with more ease and therefore travels more frequently, but the location of living is still dependent on the differences between having a low or a high income. This can be explained by the fact that among the interviewed inhabitants, the higher-income people not only live in a location that is definitely better connected with other areas, but they as well had the choice between multiple private vehicles and public transport when it comes to travelling. In that way, the level of accessibility is highly in correspondence with the height of someone’s income, as that person has more options to choose from, resulting in a higher comfort when that person has or wants to travel. When compared to people from the lower-income class, there is still a gap in the level of accessibility between rich and poor, that is caused by on the one hand locations of preference, but on the other hand by the amount of time and money that someone has available to travel – people in the lower-income class are assumed to work longer days and save as much money as possible to keep the lights on, which is lowering their accessibility as they travel less frequently. The exceptions to this statement are the becak drivers, who have to transport people to all places and are therefore guaranteed with a higher level of accessibility.

But in general, it is the fact that people want to socialize with family, friends or strangers in other parts of town that drives them to be more accessible. If someone wants to spend his spare time in a different setting than he lives or works in, that person travels with either private or public transport to reach that certain destination and therefore contributes to an increased traffic in the city. One person more or less has of course no effect on the intensity of traffic jams and therefore a decreased accessibility, but as long as an increasing number of inhabitants can afford it to purchase a private vehicle, the amount of vehicles on the roads is increasing drastically – because people want to reach their destination as soon as possible, meaning that they currently still travel by private transport usually.
6.1.2 The urge to be accessible

It is highly necessary to have a good accessibility to other places to be able to pursue a mobility lifestyle in which someone can reach any destination if he wants or needs to. This contains not only the ability to travel to a market for groceries or to the post office for a parcel as in basic needs, but it as well entails the recreational needs of an individual, for example when that person wants to meet a friend on the other side of the city for socializing. Although in the case of Kotagede it is different, because public amenities such as a cinema or a bar cannot be found in the sub-district due to the desire to remain as traditional as possible. Thus, inhabitants of Kotagede who want to visit places like that, have to travel beyond the sub-district’s borders to satisfy themselves – therefore leading to a higher need to be accessible with other places and an increased crowdedness on the way to get there. So in general, people need to be accessible to not only meet their basic needs, but as well to be able to participate in activities in the field of for example cultural or family-related trips.

It is however the level of income that determines the frequency and distance that someone can travel for recreational needs, or to what extent an individual can afford it to go to other places for recreation in terms of time and money. This is motivated by the fact that the lower-income inhabitants of Yogyakarta need to work long days to be able to take care of themselves and their family and are therefore supposed to limit their expenses on travelling when it comes to recreational activities. The higher someone’s income level, the higher the number of destinations that an individual can reach for basic needs and especially leisure purposes; that person’s mobility dynamics increase because his income level allows it to spend more time for recreation, meaning that a change in lifestyle is caused as someone’s income level increases. Someone with a higher income cannot only afford it to travel more frequently to various places, but as well has the advantage of a higher level of accessibility due to the choice to live in a location of preference that is well-connected with other areas. In this way, someone’s income, location of living, and the resulting lifestyle are the aspects that influence that person’s level of accessibility and travel frequency to other destinations.

The downside of the fact that more people are able to purchase a private vehicle on the long-term, is that the increased individual accessibility and travel frequency can be seen as the root cause of congestion, which lowers the general accessibility of that specific place – since it takes more time to reach that place with the increase in vehicles and traffic jams. For the wealthier people, this means that their accessibility is somewhat restrained but they are still able to reach another place without many obstacles, since they often live in a well-connected location. But for the people in the lower-income class, it means that their location of living is relatively even further away from central places than it was before; these inhabitants had no option to live in a location of preference in the first place, and now the increased traffic makes their accessibility level even lower – especially if they do not own a motorcycle or other private vehicle yet. And because travelling per public transport also is no option for the lower-income inhabitants, because of its high prices, inefficient routes to other places and increased travel time due to the intense traffic situations, it can be stated that they are more disadvantaged than the inhabitants of the higher-income classes. This in turn leads to an increased level of segregation among the inhabitants of the city, since the poor are more severely impacted by the increased amount of private vehicles on the roads, which limits their accessibility and travel frequency to other destinations. The lower-income inhabitants are in this way restrained in their reach to for example Jalan Malioboro because it takes more time and money to get there, probably causing the elimination of the urge to go if it is not necessary.

6.1.3 Affordable public transport is decisive

As was stated in the sub-section on the operationalisation of the main concepts of this research, cities are traditionally a magnet of economic activities and employment, since they are a place where these
variables can be concentrated with the aim to accumulate capital and quick economic expansion. Despite the current problems in cities, the population of cities keeps growing because their image of being the centre of economic growth remains - leading to the departure of residents from rural areas to cities. This urban sprawl leads not only to an increase in urban population but involves as well an increase in private vehicles on the roads, causing more traffic jams, higher CO₂ emissions, and a lower accessibility to reach other places. If the current increase in inhabitants and vehicles does not stagnate, both the traffic and the environment have to endure severe challenges in the future, which will lower the image of the city and consequently its chances to attract new inhabitants, tourists or companies. These actors are basically the motor of the further growth of the city and its metropolitan region.

Also the public transport has to deal with the negative consequences of the increasing urban population, because this mode of transport becomes less efficient if it has to deal with more intense traffic jams as well – given the fact that there is no private lane for public transport on the roads. One of the solutions to the increasing traffic jams is the realisation of a monorail system that drives on a time schedule, something that the buses cannot do because of the frequent congestion. This monorail system can relieve the pressure on the roads and reduce the number of vehicles that use them, since more people will discover that the monorail is in fact an efficient way to travel to various destinations. As long as the fees are not very high, this mode of transport can attract many travellers and transport them quickly, resulting in a traffic situation that flows more fluently.

However, the completion of the monorail has been pushed back for a while now due to protestors from several backgrounds – becak drivers are of course among them – since this mode of transport has negative consequences for other sectors. But until the construction of this system has finished, the government needs to find a way to promote the current public transport in Yogyakarta, so that more intense traffic problems can be avoided in the near future. This solution was mentioned by the majority of the interviewed inhabitants in the three sub-districts of Yogyakarta, who are willing to travel by public transport if it is efficient and cheap as private transport. Because in that way, not only the accessibility of both a place and an individual increases, but as well the CO₂ emissions from private vehicles that are stuck in a traffic jam will be reduced – resulting in a higher travel frequency among all income classes, a somewhat healthier atmosphere and a better public transport network that meets the demand to get fast access to other destinations.

Guaranteeing a high-quality public transport network that is available for all inhabitants is a priority in the near future, because it eventually results in less private vehicles on the roads and therefore leads to a better accessibility. The fact that a higher level of accessibility is ensured for all residents of the city with the promotion of public transport, makes it that the level of segregation will reduce – since both urban rich and poor will be well-connected to other destinations via this public transport network, leading to smaller differences in the distribution of amenities or ease to reach other places among different income classes. In this way can be said that the reduction of congestion is a necessity, because the negative consequences of traffic jams will not only lead to a restrained level of accessibility for the whole population, but as well lead to economic stagnation of the city and its metropolitan region – with increasing differences among rich and poor inhabitants in relation to the access of other places.

6.2 Recommendations
In this sub-section will be criticized how the research could have been performed better if the relation between accessibility and segregation in Yogyakarta will be examined again in future studies. With an eye on giving recommendations for these future studies, it is necessary to firstly come up with flaws that occurred during this research. Secondly, it is illustrated how future studies can ensure the
avoidance of these flaws by stating possible solutions. And last but not least, the societal relevance of this research is mentioned in this sub-section, with the addition of a recommendation for improving the current traffic situation in Yogyakarta.

The first and most important flaw that was experienced during the fieldwork, was the fact that the amount of time to conduct the research was too limited to gain valid results that can be generalised to a greater number of people. Therefore, it can be stated that the current external validity is low, not being representative for the whole population of a certain sub-district or the city.

To gain a representative perspective on how this relation between the main concepts is constituted, it is important to interview more respondents in every sub-district. This could only be done if there is more time to conduct the research, for example in the form of a longitudinal study. The benefit of this extended research period is not only that there are more respondents to be interviewed, resulting in more useful data concerning the research subject. But also the fact that more area-specific reasons can be found, or deep-rooted causes for a specific sub-district to develop differently than the others.

Furthermore it is an idea to operationalise the desired backgrounds of the respondents more in-depth and to distinguish further in terms of professions. Because in that way, respondents can be categorized even more after which the mutual differences and similarities can be quoted. In this way, coincidental relations can be discovered and left out – eventually leading to a better understanding of the ongoing processes between the main concepts and the consequences for the local inhabitants.

Another point of interest that came up during the research, was the fact that most of the interviewed inhabitants assumed that it is the most efficient way to travel by private transport, despite the increasing crowdedness and chaos on the roads – because right now it is still the fastest and cheapest way when they need to go to another destination. Future studies can as well investigate the kind of activities that people carry out when they travel to other places, creating an opportunity to further explain the need to be accessible, making a distinction between the various respondents. Especially in a longitudinal research, the motives and patterns of mobility lifestyles can be illustrated clearly, besides a more detailed explanation how both rich and poor inhabitants from different backgrounds are able to keep up their lifestyle as the city gets more crowded. The interviewing of a higher number of Yogyakarta’s residents will lead to results that are more specific and distinctive in terms of the justification of their mobility lifestyle, profession and income, location of living within the city and the sub-district, and so on. In that way, the conclusions will be more in-depth and complete than they are right now with the limited number of respondents and the time frame that was available for this research. New hypotheses can also be created and tested in a longer research period.

With an eye on the relevance for society, it is ultimately important for the Yogyakarta city and metropolitan region to focus on the promotion of public transport. There may be plenty of protest to the realisation of the monorail system, but it ultimately guarantees less traffic on the roads since it creates another layer of transport above the existing roads. But as long as the completion of this project is kept pushed back, it is especially important to increase the attention to other modes of public transport and guarantee lower prices for it – to reduce the number of private vehicles and the number of traffic jams.

This will eventually result in a higher attractiveness of the city, leading to more accumulation of capital in the future. In terms of urban development, the focus on public transport ensures a higher population and traffic capacity of Yogyakarta’s metropolitan region, because it is able to sustain the increased number of inhabitants and vehicles. The creation of a private lane on the roads for buses is one possible solution, which will probably lead to an increased popularity of public transport and a reduction of the number of private vehicles.

Future studies may however show that the monorail system is already completed by then,
which will probably have an impact on traffic flows and congestion – leading to a different mind-set among the inhabitants of the city.

6.3 Reflection

The final sub-section reflects on the whole experience of the research in Yogyakarta. When the opportunity to visit either Yogyakarta or Semarang in Indonesia presented itself in the curriculum of the GPM bachelor thesis, I thought it was a wonderful opportunity to visit this country again and to dig deeper into the lifestyles of the inhabitants of Yogyakarta city. The overall process of conducting the fieldwork in a country that is roughly 12,000 kilometres away, turned out to be an amazing experience. In advance, there were some difficulties expected because of the given time frame that was available, meaning that the start of the research period was quite hectic with the setup of the meetings and to get to learn the city.

The fact that there is a language barrier that had to be overcome to get answers to the research question turned out to be no real problem; with the help of two UGM students I was able to understand almost everything that the respondents mentioned during the interviews. The respondents as well helped me with developing new insights in the way that they perceive certain things or processes; which contributed to a better understanding of life in Yogyakarta.

And furthermore, I learned a lot of Indonesian words and expressions during the meetings with several inhabitants – not only respondents of the research, but I made as well new friends who taught me a great deal, also in terms of having conversations. Also the Indonesian culture taught me more than the last time I visited the country; not only because I stayed for a longer period, but also due to the profound and varied conversations that I had with several people who live in the city but are originating from several places in the country. This was varying from for example the owner of a local deli from Padang to the Indonesian guys from Borneo against whom I played futsal several times. Every single person contributed to a better understanding of the local culture and the differences between every city or region, leading to the consequence that made me decide to go back to Indonesia as soon as possible. This cultural bonding was by the way a mutual process, since every person wanted to know everything about our culture as well. The people with whom I had the best connection therefore either got a set of clogs in the form of a key ring or a pack of stroopwafels as a gift – just like the respondents of the interviews.
7. References


Appendix I: Interview guide

Name: 
Gender: Male / Female 
Age: … (if desired) 
Ethnicity: 

Prior to the interview: 
- Explain the purpose of the interview to the respondent 
- Indicate the expected duration of the interview 
- Indicate how many questions the interview consists of 
- Ask permission for (digital) tape recordings 

Pre-interview questions: 
1. For how long have you been living in Jogjakarta? 
2. Did you always live in the same district/quarters/neighbourhood? 
3. Do you have a job? If so, what kind of work & where? 

Questions on the crowdedness in the city (high urbanisation rate & tourism): 

1. How do you notice the increasing crowdedness in the city? 
   And do you think this is a serious problem? 
2. How much time did it roughly take for Jogja to transform into such a crowded city? 
   Years, decades? 
3. What are your prospects for the future? Any insights maybe? (around 2030) 

Questions on accessibility: 

4. What do you think of the number of roads in this part of the city? Is it enough? [to get to 
   Malioboro for example] 
5. Is the quality of the roads good enough for you? 
6. What is your opinion on the traffic jams in Jogja? Do they happen often? 
7. What makes it that the traffic jams can get so intense and long-lasting? 
8. What do you think of the public transport in this area (your neighbourhood) of Jogja? 
   How many times can you take the public transport every hour? 
9. How long does it take to go to the city centre from here? 
   Is the travel time significantly longer than before? 
10. The Jogja government has a plan to build a monorail system in the city to decrease the traffic 
    problems. What do you think of this plan? 

Questions on segregation: 

11. Do you think there is a difference in accessibility between different neighbourhoods in Jogja? 
    And how can that be noticed? 
12. What is your opinion on these patterns of spatial distribution in the city? 
    Is it fairly distributed? Or do you think it is a matter of injustice? [wrong/right] 
13. Can you give some examples of the reasons behind this? (overurbanisation/tourism/etc.) 
    Or just give me your opinion on this topic as a whole 

End 

- Do you have any other questions or things to say? 
- Give a short indication of how the data will be processed 
- Thank the respondent with a little gift
# Appendix II: Observation scheme

**Observation scheme**

Duration of observation: 60 minutes  
Time: ..:.. till ..:..

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Kotagede</th>
<th>Umbulharjo</th>
<th>Depok</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of roads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of the roads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of public transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic jams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity of traffic jams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Segregation noticeable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Scale of observation units:**

- **Number of roads:** number of main roads to a frequently visited place, in this case the city centre [Malioboro Street]; no detours & only main roads of chosen district
- **Quality of the roads:** very bad – bad – neutral – good – very good
- **Public transport:** very bad – bad – neutral – good – very good
- **Frequency of public transport:** number of public transport vehicles *[buses/becaks/taxis]* that pass in 1 hour
- **Traffic jams:** yes – no [during moment of observation]
- **Intensity of traffic jams:** light – mild – heavy – impermeable
- **Segregation noticeable:** yes – no [followed by specific aspects of segregation]

**Other remarks:**
Appendix III: Respondent information

Sorted on alphabetical order:

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Age</th>
<th>Profession</th>
<th>Living in, since</th>
<th>Income class</th>
<th>Interview date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Mr. Abdul Muhaimin</td>
<td>63</td>
<td>Owner of Islamic boarding school</td>
<td>Kotagede, birth (1953)</td>
<td>High</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>3</td>
<td>Mr. Ari</td>
<td>43</td>
<td>Art seller &amp; artist</td>
<td>Depok, 1999</td>
<td>Middle</td>
<td>05-04-2016</td>
</tr>
<tr>
<td>5</td>
<td>Mr. Hans Rinaldi</td>
<td>38</td>
<td>Tailor</td>
<td>Umbulharjo, birth (1977)</td>
<td>High</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>9</td>
<td>Mrs. Gracia</td>
<td>36</td>
<td>Coconut seller</td>
<td>Kotagede, 1992</td>
<td>Low</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>1</td>
<td>Mr. Mujiono</td>
<td>57</td>
<td>Gasoline seller</td>
<td>Depok, birth (1959)</td>
<td>Middle</td>
<td>05-04-2016</td>
</tr>
<tr>
<td>6</td>
<td>Mrs. Semi</td>
<td>54</td>
<td>Seller of several foods</td>
<td>Umbulharjo, birth (1962)</td>
<td>Low</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>8</td>
<td>Mr. Sidik</td>
<td>47</td>
<td>Becak driver</td>
<td>Kotagede, 2002</td>
<td>Low</td>
<td>11-04-2016</td>
</tr>
<tr>
<td>4</td>
<td>Mr. Triyono</td>
<td>57</td>
<td>Becak driver</td>
<td>Umbulharjo, 1975</td>
<td>Low</td>
<td>09-04-2016</td>
</tr>
<tr>
<td>2</td>
<td>Mrs. Wati</td>
<td>58</td>
<td>Fruit seller</td>
<td>Depok, 1992</td>
<td>Low</td>
<td>05-04-2016</td>
</tr>
</tbody>
</table>

Table 3: Respondent information, sorted on alphabetical order