

A comparative study of students' experiences of public transport in Johannesburg and Berlin

Berlin, Germany



Johannesburg, South Africa



A comparative study of students' experience of public transport in Johannesburg and Berlin

Maryam Nwabisa Monakali

A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, in fulfilment of the requirements for the degree of BSc with Honours in Urban and Regional Planning.

Johannesburg, 2015



Declaration

I declare that this research report is my own unaided work. It is being submitted to the BSc with honours in Urban and Regional Planning Degree to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.



(Signature of Candidate)

11 December 2015
..... day of,
(day) (month) (year)



Abstract

This research report is an analysis of the main debates, arguments, and concepts pertaining to the topic of public transport and the experiences of students' using public transportation in Johannesburg and Berlin. The purpose of a comparative study is to understand the manner in which public transport is experienced in different contexts, whilst the case study method will be used to narrow the subject area of public transport down through using students' as the analytical lens. A semi-structured questionnaire was conducted on students' at The University of the Witwatersrand. The questionnaire revealed that public transport in Johannesburg is not efficient, as it does not work to improve the experience and participation of students' in this city. I argue that due to the paralysing system of apartheid, South Africa has been left with a dysfunctional administration system that lacks the capacity to actualise policy. With the use of the Berlin case study, I further argue that there are lessons to be learnt from the successful model of public transport systems in this city. These are two contradictory cases that reveal the importance of a combination of policies, financial means, capacity, and the built environment to establish a good public transport system that does more than just enable mobility. This body of research reveals that efficient public transport makes it possible for everyone in the city to contribute to its vitality, making it one of the most important tools of integration between the urban and the people. This recognises that there is a need for transport planning and urban planning, as two spatial tools, to be used in conjunction in the planning of cities that are inclusive for all students' and urban dwellers.



Acknowledgements

First and foremost, I thank my father, Yahweh, for blessing this journey and seeing me through. This has all been possible through you, who has strengthened me, thank you Lord Jesus.

A number of people have contributed to my successful journey through university. My parents, Nosipho Monakali and Ben Odiegwu, being in the forefront of this group, as it is the love, support, encouragement, and prayers that have ushered me through the difficult and testing times I have encountered along this journey. I thank God for you and thank you for being my pillars of strength, shoulder to cry on and for giving me hope for tomorrow.

My dearest and best friend Nomathemba Dladla, walked this journey with me from day one, and I am so grateful and blessed to have met you through this degree, as it is my time I have spent with you that has made this experience one that I will never forget.

Thank you to every lecturer that has played a role in my degree, for it is through you that I have grown in my passion for planning. A special thanks to Solam Mkhabela, who has motivated me, encouraged me and inspired me to achieve greatness in this degree, and has grown a love in me for planning that cannot be quenched.

I also thank Geoffrey Bickford for taking time out of his schedule to respond to my emails and going out of his way to meet me after hours to assist me in this process. Your support was very helpful and much appreciated.

To my supervisor, Dr Brian Boshoff, thank you for the guidance and support through this journey. I appreciate the time you have taken out of your busy schedule to see me through this process, and for pushing me to achieve my best and to keep going. This end result would not have been possible without you, I appreciate you for putting up with me, and seeing me through till the end. Thank you so very much.



Table of Contents

DECLARATION	II	1.5 Research question	9
ABSTRACT	III	1.5.1 Sub-questions.....	10
ACKNOWLEDGEMENTS	IV	1.6 Methodology	12
LIST OF FIGURES	1	1.6.1 The type of research	12
LIST OF TABLES	2	1.6.2 Information needed	13
LIST OF GRAPHS	3	1.6.3 Collection of data	14
LIST OF MAPS	4	1.6.4 Ethical considerations	15
LIST OF ACRONYMS	5	1.6.5 Report structure	15
CHAPTER 1 INTRODUCTION	6	CHAPTER 2 LITERATURE REVIEW	16
1.1 Research title	7	2.1 The city	16
1.2 Research background	8	2.1.1 The right to the city	21
1.3 Research rationale	9	2.1.2 Social exclusion and accessibility	23
1.4 Aim of the research	9	2.2 Public transport	26
		2.2.1 Transportation	26
		2.2.2 Why do we need public transport?	30
		2.2.3 Mobility	32
		2.2.4 Access	32
		2.2.5 Efficiency	33
		2.3 Students	37
		2.3.1 How do students get around?	38
		2.3.2 Student finances	39
		2.3.3 Lifestyle	41
		2.3.4 Forced to work	41
		2.3.5 Free public transport for students	41



CHAPTER 3 CASE STUDY REVIEWS.....44

3.1 City Profiles..... 44

3.2 Berlin, Germany 46

3.2.1 Historical overview of public transport in Germany 46

3.2.2 Current trends in public transport 48

3.2.3 Policy framework 52

3.3 Johannesburg, South Africa 54

3.3.1 Historical overview of public transport in South Africa 54

3.3.2 Spatial influence of the apartheid city 54

3.3.3 Current trends..... 59

3.3.4 Policy framework 66

CHAPTER 4 FINDINGS AND ANALYSIS69

4.1 Interview questions..... 69

4.2 Interviewee profiles 70

4.3 Location location location 71

4.4 Lifestyle 74

4.5 Does public transport make life easier?..... 77

4.6 Assessing the efficiency of public transport for students in Johannesburg..... 84

4.6.1 Time 84

4.6.2 Intermodal connections..... 84

4.6.3 Comfort..... 85

4.6.4 Safety 85

4.6.5 Ease of use 86

4.6.6 Maintenance 86

4.6.7 Affordability 87

4.6.8 Reliability..... 88

4.6.9 Operating times 88

4.6.10 Service 88

CHAPTER 5 CONCLUSION 90

5.1 Limitations of the research 90

5.2 The quality of life and public transport 92

5.3 Efficiency of public transport for students and the right to the city 93

5.4 History shaped tomorrow 94

5.5 What lessons can be learnt and what does this mean for planning? 96

REFERENCE LIST 100

APPENDIX A: QUESTIONNAIRE 110

APPENDIX B: PARTICIPATION INFORMATION SHEET..... 113

APPENDIX B: CONSENT FORM 115

DECLARATION BY PARTICIPANT:..... 115

DECLARATION BY RESEARCHER: 116

APPENDIX D: PERMISSION FROM REGISTRAR..... 117



List of figures

Figure 1- The Garden City concept (Mumford & Osborn, 1971)19

Figure 2- Evolution of transportation: BC-1880s (South African History Online, n.d: Lambert, n.d: Lambert, 2014).26

Figure 3- Evolution of transportation: 1990s-2000s (South African History Online, n.d: Lambert, n.d: Lambert, 2014).27

Figure 4- Images showing how much space different modes of transportation take in the city (Washington Post, 2015).28

Figure 5- Quality service attributes, RCSSA (McKnight, et al., 1986)31

Figure 6- The role of efficient public transport in integrating the city and the people.37

Figure 7- Students' time spent on activities in the UK (Grove, 2012).38

Figure 8- Student spending trends (%) (Casey, 2013)40

Figure 9- The Apartheid City Model (Chu, 2001).....58

Figure 10- MSA public transport objectives (Luke & Heyns, 2013, p. 3)67

Figure 11- TU-Berlin student with bicycle in the U-Bahn.83

Figure 12- Blogger, Liz Warden in taxi (Warder, 2014)83

Figure 13- Prams, wheelchairs and Bicycles allowed on U-Bahn.83

Figure 14- Rules of Gautrain- no bicycles allowed.83



List of tables

Table 1- Students' general social status (Bullock, 2004, p. 50)41

Table 2- Problems with public transport by municipality (GCRO, 2014, p. 29).....64

Table 3- Biggest problem with public transport reported by users according to the mode of transport they used (GCRO, 2014, p. 30)64

Table 4- Areas of the city that are more and less accessible to Wits students.....75



List of graphs

Graph 1- Number of annual public transport trips per capita in Europe between 2005– 2010 (Buehler & Pucher, 2012)	46
Graph 2- Passenger numbers for bus and trains in Berlin (Stein & Runge, 2013, p. 22).	50
Graph 3- Passengers satisfaction with public transport (Stein & Runge, 2013, p. 23).....	51
Graph 4- Pubic transport punctuality and Reliability (Stein & Runge, 2013, p. 24)	51
Graph 5- Household use of public transportation in Gauteng (Statistics South Africa & Department of Transport, 2014)	62
Graph 6- The purpose of trips in Gauteng (Gauteng City Region Observatory, 2014).....	63
Graph 7- Geographic location of students in Gauteng (Statistics South Africa & Department of Transport, 2014)	65
Graph 8- Students use of public transport in Gauteng (Statistics South Africa & Department of Transport, 2014)	65
Graph 9- Do students' feel they can do everything they need to do in the city?	77
Graph 10- How late can the students stay out in the city.....	77
Graph 11- What mode of transport do students' use.....	79
Graph 12- Students' perceptions of public transport.	80
Graph 13- Time spent travelling each day.....	81
Graph 14- How much students spend on public transport per month.....	81
Graph 15- How long students have to wait for public transport and walking distance to catch public transport.....	81
Graph 16- The comfort, ease of use and maintenance of public transport.....	82



List of maps

Map 1- Locality map and demographics of Johannesburg and Berlin.	45
Map 2- Public Transport Network in Berlin (Stein & Runge, 2013).....	50
Map 3- A map of the horse drawn tram route (Beavon, 2001).	55
Map 4- Electric tram terminals and routes (Beavon, 2001, p. 8)	56
Map 5- The growth of suburbs towards the north (Beavon, 2001, p. 7)	56
Map 6- The functional zones of the CBD, and restricted entrances from the south of Johannesburg (Beavon, 2001).	57
Map 7- Map of public transport in Gauteng.	61
Map 8- Main transport routes and intermodal stations in Gauteng.....	72
Map 9- Locating students' homes.	73
Map 10- Where students go in the city for different activity.	74
Map 11- Shopping malls in Gauteng (Google Maps, 2015).....	74



List of acronyms

- BRT- Bus Rapid Transit
- BVG- Berlin Transport Authority
- CBD- Central Business District
- CSIR- Council for Scientific and Industrial Research
- JHB- Johannesburg
- LRTB- Local Road Transportation Board
- MSA- Moving South Africa
- NSFAS- National Student Financial Aid Scheme
- NDP- The National Development Plan
- PT- Public Transport
- PUTCO- Public Utility Company
- RCSSA- reliability, comfort, service, safety, and affordability
- UK- United Kingdom
- VBB- Verkehrsverbund Berlin-Brandenburg
- Wits- University of the Witwatersrand



Chapter 1 Introduction

Urban growth brings about numerous issues and challenges in the development of cities, especially pertaining to sustainability and increasing access for all. Public transport will continue to play an important role in mitigating issues experienced in urban environments and the people who may be affected by some of these issues. Public transport is a crucial determinant of the growth of sustainable, successful, inclusive, and equal cities. Transportation plays an important role in cities, however, public transport specifically, plays an even more important role in shaping the cities of tomorrow. The public transport infrastructure and networks of a city often illustrate its geographic, political, and historical condition. Mature cities are often characterised by a more extensive network that brings about good connections to the inner city and its hinterlands. Thus, the use of public transport needs to be increased through creating a system that is efficient. This is critical in creating cities that are accessible to every person who is an inhabitant, as it makes life easy and convenient in the city. People should not feel that they are unable to pursue all the activities they would like to pursue in the city because they do not have the financial means or a private car. Just as a disabled person should not feel restricted to staying at home because it is too much work to get from one point of the city to another. As cities are meant to include everyone in its daily activities, so should it be that everyone has access to these things through efficient public transport. Efficient public transport makes an efficient city, as there is a movement of people which means the economy is kept active, as spaces in the city are filled with people on the move. A city that is stagnant is a city that is dead. It is everyone one who contributes to the vitality of the city, from the wealthy person that runs the city, down to the student who cannot afford a car and relies on their parent's income. Efficient public transport makes it possible for everyone in the city to contribute to its vitality, making it one of the most important tools of integration between the urban and the people.

As a future planner it is important to understand the complexities of spaces in the city and to successfully reinvent them for the betterment of its inhabitants. It is very crucial to unpack and critically understand how these different elements of space work together, influence and impact one another and the citizens, whilst also understanding what this means in the process of shaping the city. This report seeks to understand the role that public transportation plays in shaping the cities of tomorrow. Transportation has been an element of space that has shaped the development of cities in a positive and negative way, an element that has improved the lives of some. As cities grow, public transportation takes on a crucial role in shaping the ability for the inhabitants to experience and participate in the activities



of the city. Public transport is also crucial in shaping and influencing change in the city and facilitating people's access to spaces in the city. This may be for economic, social, or leisure related activities. Whatever the reason, public transportation is a crucial tool in urban planning.

Public transport has been a topic of discussion for many years, because of the role it plays in shaping cities. However, this discussion has been shaped by the different forces encountered in different contexts. Johannesburg and Berlin will be the two case studies used to understand how public transport is experienced in different cities and thus, what lessons can be learnt from these different contexts. The conditions in these two cities have resulted in shaping different experiences for the inhabitants. It is in understanding these different experiences, and what elements of the public transport systems have influenced and shaped these experiences, that the following report will take shape. As the city has a variety of actors, this report will narrow the focus area down to the study of students and how their experiences of public transport has shaped their right to participate in and interact with the city.

It is important for students to be active and engaged citizens in their communities, so they can be part of the important issues in their surroundings and play a part in civic engagement. How students cope with the start of their independent entrance and transition into society and how society welcomes them into the rest of their lives, is what make this group interesting to study. Understanding where students are positioned in society will help us comprehend how public transport can influence their lives and better their experience and participation in the city. Students are used as the main analytical tool of efficient public transport in this study. Public transport is a very broad topic and the use of this study group will help narrow down the topic and enable this research report to be more specific.

1.1 Research title

“A comparative study of student's experiences of public transport in Johannesburg and Berlin”

The proposed research report will look to analyse the main debates, arguments, and concepts pertaining to the topic of public transport and the experiences of students using public transportation in the cities of research, Johannesburg and Berlin. The purpose of a comparative study is to understand the manner in which public transport is experienced in different contexts. Context plays a crucial role in determining how public transport works for the people who live in cities. The history of and policies on public transport reveals the current trends and how public transport works for the people in the two cities. Students are a common denominator in this study, and it is the different elements in each city that affect these students in different ways and sets them apart. What makes public transport



different in these two cities, and how are the lives of students impacted by this difference in their everyday activity? Does public transport have an effect on their lives in a positive or negative manner? This reveals the power and influence that public transport has to create successful or unsuccessful cities, according to the way students' experience public transport systems in the two cities of study.

1.2 Research background

In the cities of spatial fragmentation that we live in, it is very important to understand how public transport integrates the city and the people. Through urban sprawl, suburbanisation, the big highway development, and access to private cars, cities are become more and more unsustainable for the people that live in them, especially those who cannot afford to sustain this fragmented lifestyle (Kyte, 2012).

Public transport is essential in every city as it facilitates the mobility of people and how they interact with the city and gain access to the city and its facilities. Public transport is a topic that has been discussed for many decades, a topic that has evolved over time along with the evolution of cities, public transport has become an even more important element of space (Lambert, 2014). However, public transport has also evolved in its meaning and purpose, as cities have become more complex and nuanced with a juxtaposition of politics, ethnicities, conflicts, cultures, and beliefs. Public transport takes on an even more complex and crucial role to play in the machine that is the city (Harvey, 2012). There are other imperatives to public transport, as it goes beyond the idea of just mobility and getting from point A to point B. In the contemporary city the latter also alludes to health, the environment, education, social exclusion, urban development, and the economics of the city (Newman & Kenworthy, 1999). This has given public transport more substance and relevance beyond the basic understanding of this element serving the purpose of mobility to enhance access.

Public transport should serve the interests of all groups in society, whether it may be the disadvantaged, the rich, old, young, black, or white. In understanding the other imperatives of public transport one also begins to understand the major impact and effect that public transport has on the lives of those who live in the city. The numerous debates around public transport for students are an indicator of the fact that public transport is a crucial component in the lives of a lot of university students. Students are just like any other social group in society, as they need to traverse the city and gain access to the activities in their desired spaces. For students in particular, affordable and efficient public transport systems are needed to sustain their lifestyles. Understanding how students move through the space



between home, school, libraries, areas of entertainment and so forth, is a measure used to understand how public transport inhibits, or promotes a person's right to the city, inclusion, and the ability to participate and engage with the spaces that have been made for people.

1.3 Research rationale

The spatial development of South Africa has resulted in cities that are socially, spatially, economically, and racially fragmented and segregated, due to apartheid planning (Chu, 2001). This has resulted in car dominated cities, as the public transport systems that are in place do not serve the interests of all (Beavon, 2001). As a student, who does not own a car, just like a lot of other students, I am forced to make use of the public transport that has failed me and many others, through its inefficiency. I was given the opportunity to go to Berlin for two weeks in May 2015, two weeks that changed my ideas and perceptions of public transport, as it gave me a glimmer of hope. If the lives of students in Berlin could be made easy through efficient public transport systems, then South Africa could learn a lesson from this case. For me to truly grasp how public transport can impact the lives of student in different contexts, I will undertake a study to question how students from the two cities experience public transport and if they are able to participate and experience the city through the use of public transport. By following the narratives of student's from different backgrounds, classes, races, ages and sexes in these cities, this research will contribute to literature by bringing about an understanding of how efficiency may influence how students move through space and how they the experience it through the use of public transportation The results of this research and the lessons to be learnt from the comparison of these two case studies will also contribute to literature as a body of research that has not been explored yet.

1.4 Aim of the research

With public transport becoming more important in society there needs to be an understanding of how transport systems work, their impacts on the surroundings, society, the city and the people who use it, as well as what lessons can be learnt and improvements made to better public transport. The aim of this research report is to establish an understanding of how public transport contributes to creating inclusive cities that influence the right to the city for students in different contexts.

1.5 Research question



How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?

Themes to be covered in this research report have been classified into three concepts, as informed by the research question. The three overarching themes are “The City, Public Transport, and Students.” The city is a space in which all activities of urban life take place. The experience of the city differs for different inhabitants and there are different factors that may shape and influence this. This research question requires there to be an understanding of the city, what it is, and what role it plays for the students who have to live in these spaces. Have cities been made for the betterment of the lives of students living in them or have certain factors shaped a city that does not include everyone, as cities are meant to? Transportation is one such element that has played a major role in the functioning of the city and what meaning it takes on for different people. This research question requires there to be an understanding of the role that public transport has played in creating cities that everyone can participate in. It is through studying the evolution of transport and the city that an understanding of where and what public transport is today can be established. Lastly, it is important to understand students. By understanding the lifestyles of students and how they interact with the city, one will be able to understand the impact and role that public transport plays in shaping and influencing students' experience of and participation in the city.

1.5.1 Sub-questions

1) What is the right to the city?

“The right to the city' is understood as the right that everyone should have to participate in all the activities and opportunities offered by the city” (Morales, 2010, p. 27). No matter who one is, how much they earn, or where they come from, the city is a space that speaks a universal language that should be understood and written by all. An understanding of what the right to the city is will establish people's belongingness in space. In understanding this, it will be made clear that people belong in the city and that all the elements of the city need to create spaces that people have the right to. What elements of the city give one the right to participate and experience the city? Public transport is one such element that should work to enhance one's right to the city. Criteria for efficient public transport will be established to assess if public transport enhances one's right to the city. It is in understanding this that the position of students in the city can be analysed. As cities are meant to be for everyone to participate in, students should also be able to participate through the use of an efficient public transport system that enhances their experience of the city.

2) How does the public transport system work in the cities of study?



This question seeks to study the public transport systems in Johannesburg and Berlin and to establish a better understanding of the current context of public transport before engaging in the field work that will produce the findings of this report. The question will explore how different cities have managed to deal with public transport, and the issues and pressures this industry faces. This will be done through studying the history, policy framework and the current trends in each city. In order to be able to assess the theme of public transport and how it shapes the city, there needs to be an understanding of how public transport operates and works in the two cities. This sets the foundation of the comparative component of this research report, as the data found through answering this question, will assist in the analysis and comparison of the findings from the questionnaire.

3) How do students traverse through the spaces of the city?

All the themes will be tied in together through answering this question. This question will be answered through the use of a questionnaire to understand student life and how they use the spaces in the city through public transport, and thus, how they experience and participate in the city. With an understating of the background of the two cities, the historical events that shaped its current trends, the policy framework that guides it forward and the literature on the city, public transport and students, this question will make use of the research to analyse the information and understand what this means. It will be through understanding what the city means for students, if they are included in the city and how life in the city can be promoted or inhibited by public transport that the research question will be answered.

- Narratives- students will take us through their journey with public transport
- Experiences- they will reveal what their experience of public transport is in the city and the places they travel to.
- Perceptions- how do students view public transport and does it work for them the way they need it to?

4) What lessons can be learnt from different contexts?

This will be the concluding question, where all the information is synthesised, and the question “so what” is asked. What happens next, how can this information be relevant and used to enhancing the experiences of students in the two cities through the use of public transport? What lessons can be learnt from the experience of students in the two cities, and how can these lessons be used to improve the way students participate and experience the city through the use of public transport in Berlin and Johannesburg?



1.6 Methodology

1.6.1 The type of research

The research methods used in this research report is the qualitative case study method and the comparative research method. Comparative research has been used, as to bring about a comparison between the two case studies (May, 2001). For the case study method to yield the in-depth results of this study, the results of the case study are compared to answer the research question. Case study research “means conducting an empirical investigation of a contemporary phenomenon within its natural context using multiple sources of evidence” (Hancock & Algozzine, 2006, p. 15). There are a number of topics that can be investigated through the use of case study research (Hancock & Algozzine, 2006). Case study research is defined by some characteristics (Hancock & Algozzine, 2006). There firstly needs to a focus on a group and there needs to a phenomenon that is addressed (Hancock & Algozzine, 2006). The qualitative case study method is used to focus on students as the group of study in the two cities. Public transport is looked at as the specific area of activity. Students are used as the lens to narrow the subject area, as public transport is a large topic to cover in its entirety for this research report (Creswell, 2004). The second characteristic of the case study method is the activity of study being located in a context (Hancock & Algozzine, 2006). The study of public transportation for students takes place in the context of the two cities, Johannesburg and Berlin. The context is very important when making use of case study research, as “its benefits are a strength of doing intensive investigations of individuals or groups as well as events, situations, programs, activities, and other phenomena of interest (Hancock & Algozzine, 2006, p. 16). Thirdly, case study research is very descriptive as it relies on various sources for information (Hancock & Algozzine, 2006). This method of research requires information from participant’s interviews to “create mental images that bring to life the complexity of the many variables inherent in the phenomenon being studied” (Hancock & Algozzine, 2006, p. 16).

Yin (2003), further goes on to state that case study methods should be employed under the following circumstances:

- “a) the focus of the study is to answer “how” and “why” questions;
- b) you cannot manipulate the behaviour of those involved in the study
- c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or
- d) the boundaries are not clear between the phenomenon and context” (Baxter & Jack, 2008, p. 245).



It is in employing this research method that a topic needs to be identified that will lead to an in-depth analysis, in a specific context, with the use of a number of sources for information (Hancock & Algozzine, 2006). The use of this qualitative method is due to the ability of qualitative research to study the complex phenomena in the area of study (Baxter & Jack, 2008). "This ensures that the issue is not explored through one lens, but rather a variety of lenses which allows for multiple facets of the phenomenon to be revealed and understood" (Baxter & Jack, 2008, p. 544). Authors such as Yin (2003) and Stake (1995) propose different approaches to this method that aim to explore the topic of interest well, as to assure that the essence of the topic is revealed.

According to the case study research method that has been employed, the research design has assisted in avoiding a situation where information and data will be collected that does not address the research question at hand. In case study research, the following five components are important in shaping the research design (Yin, 2009):

- 1) Research question- How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?
- 2) The position taken in the research, if there is any- public transport plays a crucial role in society, but this differs in different contexts.
- 3) The lens of analysis- students' experience of public transport in Johannesburg and Berlin.
- 4) The criteria to interpret the findings – assessing the efficiency of public transport in the two cities, through the interviews, the literature, and case study review.

1.6.2 Information needed

Information on the transport systems available in the two cities and how these transport systems work as well as the network it generally covers. This information will show how public transportation works in the city, as well as to giving us an understanding of the current situation. It is important to understand the movement patterns of students in that city, knowing where students go for entertainment, leisure, and how they gain access to any other facility in the city, as to understand student life in the two cities.

Statistics and data on the public transport systems were needed, as to assess how well transport is integrated and the supporting transport infrastructure, meeting the demand of urbanisation, the accessibility to public transport, affordability, availability and any other data that will give us a general understanding of public transport in the two cities. Students are used to unpack how public transport works for them in the two cities, thus the data on the following was needed: comfort, safety, time, ease, modern infrastructure, intermodal connections, punctuality, reliability, maintenance, availability, affordability and the quality of service. These



attributes are used as the indicators of efficient public transport, which will be discussed further in the literature review, and whether this hinders or encourages student's right to the city due to the quality of service.

1.6.3 Collection of data

The collection of data has been done through the use of desktop research, library sources, as well as questionnaires. The collection of data on public transport and how people use it has been done through desktop research and library sources.

For the collection of data on students' use of public transport, a questionnaire was used to obtain the relevant information, please see Appendix A for full questionnaire. A semi-structured format has been used to design the questionnaire. This structure combines structured questions, which obtains basic information in the form of short specific questions about the students (Desai & Potter, 2006). This format is used at the beginning of the survey as to increase the value of the interview, by asking easier questions then slowly build up to thought provoking questions (Desai & Potter, 2006). Then I will gradually move onto exploring the ideas, opinions, and perceptions more, by using more unstructured questions which are open ended (Desai & Potter, 2006). Semi structured questionnaires are more lengthy and can take up to 30-60 minutes (Desai & Potter, 2006). This method is the best option for my research report, as in-depth information is needed to have a collection of narratives.

A series of interviews were to be conducted on students at Wits University and TU Berlin, from different degrees, sexes, and ages. However, only Wits students were able to participate, this will be explained in Chapter 4. Purposive sampling is when the judgement of the researcher is used to select the people to be interviewed, and the sampling group is often small (Palys, 2008). The purpose of this sampling technique is to focus on particular characteristics in the group being interviewed. In this case, the use of purposive sampling is to obtain a balance of males and females, and different age groups to get a good mix of responses from a variety of students' (Palys, 2008). The interview questions are divided into three sections. The first being a set of personal questions, that looked to understand students demographics and location within the city they live in. The second set of questions is based on the students' lifestyle to understand what type of lifestyle they what to pursue in the city, if this is possible to pursue it and what restrictions hinder them from doing this. These set of questions help us grasp if students are able to exercise their right to the city by participating and experiencing everything the city has to offer. The last set of questions are based on understanding the mobility of the student, specifically what modes of transport they use and if they feel this is an efficient public transport system according to the questions asked



about the elements of efficiency, to be discussed further in the literature review. This set of questions tackles the main topic at hand, which is public transport, and if this influences the participation and experience of students in the city. Each section of the questionnaire is further discussed in Appendix A. The interviews will bring about an understanding of the three concepts to be discussed in the literature review, “The City, Public Transport, and Students,” by looking at ones right to the city and if this is facilitated by public transport through the lens of students. The questionnaire begins to also challenge students to interrogate their positioning in the city, what this means to them and how this is affected by public transport.

1.6.4 Ethical considerations

The personal information to be gathered from the respondents will be where they live and their personal views and opinions. To address the ethical issue that may arise from the collection of information from students, I have ensured that confidentiality is given to gain the confidence of the respondents by ensuring they sign a consent form. The consent form is confirmation that the participant has read and understood all the information explained and given about the questionnaire and the research report in participation information sheet, both available in the Appendix B and C. Permission from the Registrar has been given to conduct research on campus and this was presented to all the students prior to the interviews being conducted, please see Appendix D for letter from the Registrar.

1.6.5 Report structure

The second chapter is the literature review that unpacks the three main concepts of this study, The City, Public Transport, and University Students. These reviews critically look at different debates and how various authors' view and understand these three concepts. Chapter 3 is the case study review, where Berlin and Johannesburg's transport system are unpacked extensively. This chapter contextualises the two case studies as the transport systems, policies and current trends are studied, as to create the foundation and understanding that aids the analysis of the data collected in the next chapter. Chapter 4 presents the research and data obtained during field work. The information and data obtained in the findings is then discussed and analysed to answer the research question. The conclusion will be the final chapter, which integrates all the data found in the previous chapters to answer the research question “How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?” Limitations to the research, what all the data collected means for urban planning and what lessons can be learnt from the case studies will also be discussed in this final chapter.



Chapter 2 Literature review

The themes to be covered in this research report have been classified into three concepts, informed by the research title, as discussed above. The three overarching concepts are the city, public transport, and students. This chapter will make use of literature to understand the three concepts and establish their meaning, as they will be used throughout the report to inform the findings and conclusion. This literature review will unpack the understanding of the city, what it is, how it has been shaped, and what this all means for the students who have to live in these spaces. Have cities been made for the betterment of the lives of students living in them or have certain factors shaped a city that does not include everyone, as cities are meant to? Transportation is one such element that has played a major role in the functioning of the city and what meaning it takes on for different people. This section of the literature review will understand the role that public transport has played in creating cities that everyone can participate in. It is through understanding this that the role public transport plays in the way students' experience the city is revealed. The last section of the literature review looks at the group of study. By understanding the lifestyles of students and how they interact with the city, one will be able to understand the impact and role that public transport plays in shaping and influencing students' experience of and participation in the city.

2.1 The city

Ideally the city is like the engine of a car, all the pieces need to work together as one to be able to function as a whole. If one part of the engine is not working well, and this may be the tiniest part, then the whole car will stop functioning. Thus, cities cannot be defined by the use of one term, or component. The machine that is the city is made up of a complexity of components that drive its success as a whole by working as one. This literature review on the city will look at a number of authors that discuss what the meaning of the city is and what makes it. However, due to the plethora of views and interpretations of what the city is, the meaning and interpretation will be narrowed down to focus on one component, the relationship between people and space as this relates to the discussion in this report.

"The world's best cities invite people from all walks of life to meet and spend time together, find peaceful respite, or enjoy being 'alone together'" (Gehl Architects, 2015). The city offers social, economic, and spatial opportunities that are meant to cater for the needs and wants of the multitude of urban dwellers. Lefebvre stated that the city is the home to a society that is a concoction of different people who inhabit spaces in the city, "rather than these being dominated by spatial



inscriptions of the state or the market” (Huchzermeyer, 2012, p. 4). Lefebvre further goes on to describe how it is land use management that allows diversity and complex moments of intensity in the city to emerge, and allowing for the excluded and poor to be conveniently located on land that is not determined by the generation of profits (Huchzermeyer, 2012). Lefebvre’s perspective on what a city is is based on the manner in which policy and urban strategies shape the spatial elements of the city and what effects this has on the social elements of society. However, Gehl (2015) believes that the city should be developed to meet the needs of the people rather than gratifying the concepts and plans of planners and architects. According to Calvino (1974) cities are spaces that are constructed according to human desires, as spaces are arranged to entrap the fulfilment of these desires (Calvino, 1974). Cities are spatially arranged to be presented as memorable, dynamic environments, that evolve with the inhabitants and a site that continues to perform the functions of these evolving inhabitants (Calvino, 1974). The human quality is expressed through the city, just as writing or religion (Burdett & Sudjic, 2007). Calvino (1974) identifies two ways to describe the city. It may be identified through its geography and history, as the material and composition of the city are explored, or through identifying the manner in which the different elements of the population interact (Calvino, 1974). The second way is through understanding how significant the physical location is for an individual, their lifestyle, and livelihoods. This is because living in the city has provided people with more freedom and opportunities of development than those living outside them (Burdett & Sudjic, 2007).

Cityness is a term used to explain the nature of a city and what elements make it what it is. This is a concept with proponents such as Sassen (2005) and Pieterse (2010), who discuss the importance of contextualising the understanding cityness, as there is no one definition of what makes a city. Sassen (2005) mentions that difference is an important aspect to look at in cities (Sassen, 2005). The intersection of difference in the urban landscape produces something in cities, whether this is bad or good, but this intersection is significant (Sassen, 2005). Creating cityness is a trade-off between the different components of the city. There needs to be negotiations and a dialogue between the differences in the city to reach these intersections of productivity that produce something. This is where cityness occurs, a form of urbanity that is not determined by western ideologies of what a city is, it is rather “urbanities that may be constituted in very different ways” (Sassen, 2005, p. 2). Cityness can cease to exist where there are no productive intersections. These intersections are not confined to urban form as they may come in the form of inefficiency, anarchy, disorder, or anything that brings about a possibility to produce something (Sassen, 2005). Disorder, for instance, is not all that bad, as it is needed in certain contexts to create the instability required to reach a higher state of (Kihato, 2011). However, applying chaos to an already overly disordered system “is the same as putting more boiling water into an already full pot” (Kihato, 2011, p. 71). All this does is exasperate the issue further in a manner which requires even more work to fix it (Kihato, 2011). But when one element of the city, such as disorder, is seen as a potential to create something, to make something



happen, by removing it from what it has been classified as, which is negative, then there is a plethora of possibilities for cityness to be created through unconfined thinking (Sassen, 2005).

“In 50 years’ time, more than 75% of the world’s population will live in cities” bringing about a concoction of difference (Burdett & Sudjic, 2007, p. 6). Cities have been successful models of urban development for more than 5000 years as people have continued to stream into the city in the search of a better life for themselves and their loved ones (Burdett & Sudjic, 2007). However, this unlimited growth has been accompanied by a concentration of problems. These include financial, cultural, spatial, environmental, religious, economic, infrastructural, social, and political problems. These issues bring about the production of intersections, intersections that have negative externalities in many contexts (Sassen, 2005). Burdett and Sudjic (2007) predict that by 2020 there will be 1.4 billion people living in slums. Homelessness and poverty have brought about major issues in the city. This begins to question how the city will continue to facilitate “the future of prosperity and positive human interaction,” as cities continue to degrade natural environments (Burdett & Sudjic, 2007, p. 7). The successful model of urban development, termed the city, comes into question, due to the city’s abusive dependency on the natural environment, which has quickly led to a future crisis in the social, economic, and environmental sectors of life (Burdett & Sudjic, 2007). At the current rate of consumption, degradation of renewable and non-renewable natural resources and as cities continue to put more pressure on the built and natural environment, we seem to be staring at the disaster prone fate of the city straight in the eye, whilst failing to anticipate and take action against future crisis and problems (Burdett & Sudjic, 2007).

In cities’ that revolve around technology and has minimal physical interaction with nature, the way our cities have been designed becomes a crucial matter, as cities are becoming more and more unsustainable, due to the lack of human interaction and the production of a lot of waste (Kellett & Rofe, 2009). People are constantly in doors, whether it is in the house, office, or in the car (Kellett & Rofe, 2009). Planners have not provided people with the opportunity to live on the street by riding their bikes, taking walks in the park, and interacting with their neighbourhood and surroundings (Kellett & Rofe, 2009). However, there are cities such as Vancouver, which is well on its way to becoming the most sustainable and green city in the world. With mass transit, bicycle lanes, greenways, and hydropower that makes up to 90% of its energy supply, as well as other sources of energy like wind, solar, and wave power (d’Estries, 2011). San Francisco, also labelled the electric vehicle capital of the US, is another city recognised for its environmentally sustainable practices (d’Estries, 2011). With its waste management, eco-friendly commuting methods, and high quality air, these cities are leading the way in sustainable development (d’Estries, 2011).



The physical form and culture of cities has led to the development of an individualistic ethos which has resulted in a society of people that are detached from their

surroundings, only leaving room for them to be concerned with sustaining their immediate environments. The city has become a centre of self-gain, a place where one does what needs to be done to benefit themselves and their loved ones, and this is done no matter what externalities may be the result.

This questions the evolution of cities and their purpose. From the inception of the first cities, their purpose was to fulfil man's desires as discussed above by Calvino (1974). However, the ills of the city have become first priority and this has resulted in concentrating on implementing measures to solve these ills, however, only worsening them in some cases. The industrial revolution in the 19th century called for some desperate measures to be taken in response to rapid urbanisation and the pollution that took place (Mumford & Osborn, 1971). Ebenezer Howard advocated the Garden City Movement, aimed at producing "balanced cities" that counteracted overcrowding, deterioration of and unhealthy living conditions, pollution and the wretched quality of living (Mumford & Osborn, 1971). This was done by bringing the town and the country together to create cities away from the city, as seen in Figure 1.

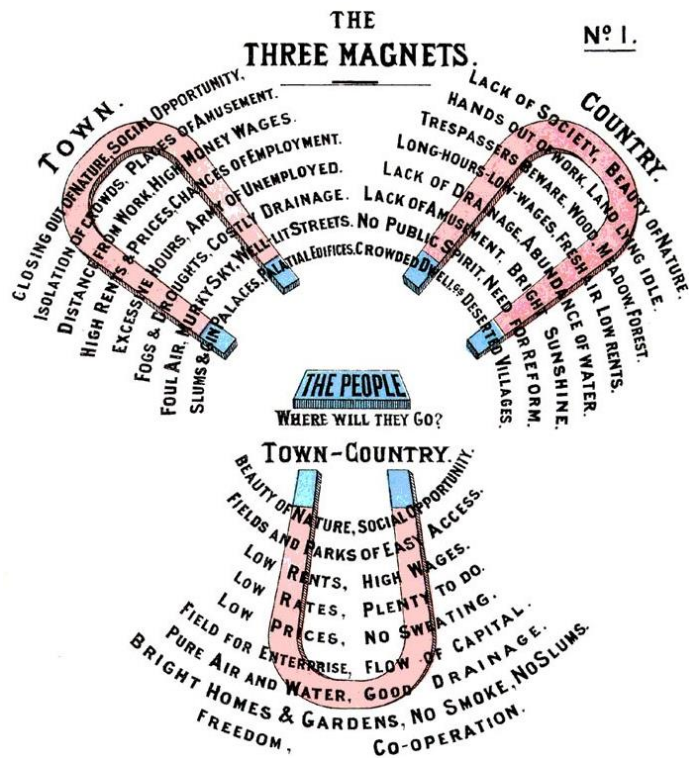


Figure 1- The Garden City concept (Mumford & Osborn, 1971)

The profession of urban planning and movements such as the Garden City were responses to the externalities of the Industrial Revolution. It is a cruel irony that at the turn of the 20th century the problem faced by cities was overcrowding, while at the turn of the 21st century there is a war against the sprawling pattern of urban development that was meant to 'liberate' people from the inner city. "With the intent of creating a new and better world, modernism instead provided a blueprint for placelessness" (Natrasony & Alexander, 2004, p. 3). The solutions of the 1920s resulted in the creation of cities which, in the long run, only put a restriction on man's desire as a collective. The desire of a few were still fulfilled, however, cities are meant to be inclusive and not cater to the few that can afford to live in segregated neighbourhoods, kilometres away from the cities centres of employment, education, and leisure. It was the thinking of planners in the modernist era that further perpetuated this method of planning that isolated the needs of people and the effects that



planning may have on their everyday lives (Mumford & Osborn, 1971). Planners of the modernist era adopted a way of thinking that generalised everything and applied universal solutions to issues that were context specific (Natrasony & Alexander, 2004). The universal solution to city building is an attitude that Le Corbusier introduced to planning as he stated, "I propose one single building for all nations and climates" (cited in Natrasony & Alexander, 2004, p. 11). This is something that is still being done today, as planners attempt to adopt models of planning from other successful contexts and apply them to cities of a different context, in the hopes of achieving similar outcomes. It is in this that there is a failure to understand that cities cannot be defined in the same way, as stressed by Sassen (2005) in her discussion of cityness. Context is a crucial matter in understanding the function of a city, what makes it, and what solutions will be best suited for that context. This does not mean that lessons cannot be learnt from different contexts, however, solutions cannot be directly adopted from one case and applied to another.

The art and science of city making has become the blank canvas for the egotistical imaginations of planners to be imposed on. Cities have become spaces and not places, and this has resulted in meaningless cities that people have no attachment and belongingness (Jacobs, 1961). Spaces attract more than people and money, as they have evolved into becoming a magnet that attracts a large scope of positive and negative components such as poverty, crime, pollution, degradation, desperation, exploitation, power, corruption, and imagination. If cities are to remain the driving force behind the development of the inhabitants, cultures, and city life, then the issues of the city need to be addressed, otherwise the city will continue to grow along a meaningless and destructive path (Sassen, 2005).

However, how is a city rendered meaningless? What criteria is this measured against? Could the meaning of the city be shaped by the western interpretation and notions of what cities are and what they should be and look like? Sassen (2005) questions what gives a city its meaning in her discussion of cityness. Cities are given meaning by the inhabitants, this meaning alters the way cities are perceived and represented (LG, 2010). The city is just a body of bricks, concrete, and steel, but the manner in which people perceive this body of material is what gives it meaning (LG, 2010). This makes it increasingly difficult to give a single definition of what a city is, as cities cannot be addressed as a whole, even though it functions as one (LG, 2010). Politically the city has been defined through what Shields (1996) calls treacherous selective vision (LG, 2010). When trying to attach meaning to what the city is, it is often a selective use of words, images, and maps that prioritise a select few, as certain spaces and discourses are chosen over others. Rendering the city through a specific lens that communicates a specific image of what the city is and what it means (LG, 2010). This lens is often shaped and modelled through Western ideas of what the city is made up of and what it should be (Sassen, 2005). However, "cityness suggests the possibility that there are kinds of urbanity that do not fit with this very large body of urbanism developed in the West" (Sassen, 2005, p. 1). Notions such as the need of public space in cities may not be interpreted the same way as it is in the West (Sassen, 2005). Chinas government, for



example, says they do not need public space, according to what it is defined as in the Western world (Sassen, 2005). This makes it difficult to read cities like those in China, due to the fact that public space has a different meaning in different contexts, outside of the notion of public space that has been modelled after Western discourses (LG, 2010). There needs to be recognition of alternative kinds of cities and urbanity, as meanings differ and vary. The only common denominator that remains constant is people. Cities are made for people and thus cities are the people. They are given meaning by the people and shaped by people for their use and their desires. Thus if people are the common factor in the equation of the city, then it is crucial to give people a fair opportunity to participate in the city and experience it to the fullest in the best way they see fit.

2.1.1 The right to the city

"The right to the city' is understood as the right that everyone should have to participate in all the activities and opportunities offered by the city" (Morales, 2010, p. 27). No matter who you are, how much you earn, or where you come from, the city is a space that speaks a universal language that should be understood and written by all. Urban sociologist, Park (1967), states that the city is a world that has been created by inhabitants as "man's most consistent and on the whole, his most successful attempt to remake the world he lives in more after his heart's desire" (Park, 1967, p. 3). This means that the right to the city goes far beyond the right of an individual to just have access to resources in the city. The right to the city is the right to be able to change the city according to one's desires. Jane Jacobs questions what makes the city interesting, and simply answers, the people, everyone getting involved in making the city (Jacobs, 1961). "Cities have the capacity of providing something for everybody, only because, and only when, they are created by everybody" (Jacobs, 1961, p. 250). "It is, a collective rather than an individual right, since changing the city inevitably depends upon the exercise of a collective power over the processes of urbanization" (Harvey, 2012, p. 4).

However, the contemporary city does not live by the notion of a collective power building the urban fabric, as we live in an increasingly divided and fragmented city that is prone to conflict (Harvey, 2012). Urban governance plays an important role in these conflict prone environments, as those in power exercise their rule to mitigate and address these conflicts (Chipkin & Meny-Gibert, 2011). Those in power may be civil society, the government, the private sector, or a combination of the three, as it should be. Whoever holds this power has the power to control, influence, and determine the outcomes of the city. However, power relations are often biased in nature and tend to distort urban governance. It becomes a major issue when urban governance is used in the legitimisation of the gain, use, and abuse of power, in the name of bringing about order (Chipkin & Meny-Gibert, 2011). The inevitable outcome is conflict, added to an already conflict fuelled system. Thus, "the exercise of a collective power over the processes of urbanization" is not what is happening (Harvey, 2012, p. 4). With the complexity of the city and the



diversity of dynamics, Harvey (2008) explains that the city has been a space for investing surplus capital, and thus promoting the process of capitalisation. This means that the city has become the breeding grounds of marginalisation, as those who cannot afford the city life are forced out of the city to its edges, where they sojourn almost being invisible (Bawa, 2008). For the development of cities to be successful and accommodate everyone, there are four important components that need to be understood and taken into consideration when investing in the urbanisation of cities (Broekmans, 2013):

- 1) What do people want- what do they like and what do they want to achieve in the city
- 2) Place- the special abilities of the place, the possibilities, the history, vibrancy, culture
- 3) Possibilities- providing opportunities and possibilities for all people in these spaces
- 4) Public value- Peoples desires, the place, and possibilities all put together create a greater public value, a value that makes a city for its people and not just a showcase of architecture and infrastructure for those who have wealth and power (Broekmans, 2013).

The city is not just about building a space, as it starts with the people. The turn of modernism resulted in the creation of planners who “were seen as possessing professional expertise and objectivity. The central concern of planning came to be understood as the production of alternative courses of action for top-level decision-makers with power. Such thinking still underlies much of what occurs in planning education and practice. Quantitative modelling and analysis, combined with the data-processing power of computers, has created an illusion of independence from the thing being planned. The disciplinary fragmentation of professional education and practice – amongst planners, architects, and engineers – was transferred and codified in the physical form of our cities and has resulted, along with other influences, in our communities’ loss of wholeness” (Natrasony & Alexander, 2004, pp. 5-6). Planners felt citizens to be too “intellectually underdeveloped” to be included in the planning process as planning was something that was too significant to be left to the device of citizens (Natrasony & Alexander, 2004). The image of the planner was, and still is that of the professional who is all knowing and above all else.

In understanding what people want and what the effects of planned spaces are on those using them is the beginning of creating a successful city. A city that is not only built on what the planner thinks is needed and what those with power dictate to be done in their favour (Broekmans, 2013). This is what creates the liveliness and richness of a city, adding to its public value and diversity. These are spontaneous cities (Broekmans, 2013). Cities that are created by people, giving everyone the opportunity to be part of the city making process, including the student who travels to school daily, or the lady selling sweets at the street corner (Broekmans, 2013). Cities may have come into existence due to the presence of life, but now cities exist for the sake of allowing people to live well (Kotkin, 2013).



As power has been restored to the rich elites of society since the turn of neoliberalism, the just and spontaneous city, discussed above, that gives everyone the opportunity to be part of the city making process, has been diminished (Harvey, 2012). In Mexico alone there has been a rise of 16 billionaires in 2015 (Forbes, 2015). However the incomes of the poor have not improved or been positively affected by this, as they have seen their incomes either diminish or stay stagnant (Forbes, 2015 & Harvey, 2012). This is reflected in space, as the spatial form of cities have become more fragmented, segregated, and fortified with gated communities and the privatization of spaces that are public, due to the polarised distribution of power and wealth (Harvey, 2012). The cities of the developing world are more affected by this, with the formation of many “microstates” with wealthy neighbourhoods provided with all kinds of services, such as exclusive schools, golf courses, tennis courts, and private police patrolling the area around the clock (Harvey, 2012). In the same city exists illegal settlements where water is scarcely available, a few sanitation systems exist, electricity is pirated by a privileged few, the roads become mud streams whenever it rains, and where house-sharing is the norm (Harvey, 2012). An example of this would be Sandton and Alexandra, in Johannesburg, living in stark contradiction, as “each fragment appears to live and function autonomously, sticking firmly to what it has been able to grab in the daily fight for survival” (Harvey, 2012, p. 15).

It is in the conditions discussed above that an urban identity is lost, as citizens do not feel a sense of belonging, their ability to make the city what they want is threatened, leaving people feeling excluded from their right to the city (Broekmans, 2013 & Harvey, 2012). It is often those who are seen as being unfit to contribute to cities that are excluded, those who cannot perform or increase the value of the city. These people have been left out, the homeless, unemployed of which some students fall under, the disabled, the young, and the old. Those with no power are simply swept under the rug and left to their own defences, creating cities that exclude and are exclusive.

2.1.2 Social exclusion and accessibility

There is a growing concern over the extent to which an individual can fully participate in society (Scott & Horner, 2008). Social exclusion is a concept that captures the lack of an individual's ability to participate in society, as there are certain groups that fall prey to social exclusion, and these groups include those who are vulnerable and dependent on others (Scott & Horner, 2004). There are many factors that perpetuate social exclusion, some of these factors are political, social, economic, residential, mobility, spatial, and personal factors (Scott & Horner, 2004). Other factors include the structure of the city (Scott & Horner, 2008). However, transportation, whether public or private, plays a major role in the concept of social exclusion, as it provides people with access to desired goods and services. The ease or difficulty, in which opportunities are reached, perpetuates social exclusion. “These factors interact with one another to determine a given individual's level



of access to opportunities, but at a basic level, it is the city's design or form, how its activities are organized spatially and the connection of these activities through transportation, that conditions personal accessibility and exclusion (Scott & Horner, 2008, p. 90).

The concept of opportunities is one that is often mentioned when accessibility and space are discussed (Scott & Horner, 2008). For people's needs and desires to be fulfilled there needs to be an understanding that opportunities are created and distributed in space. When these opportunities are able to be reached through accessibility, then one's desires can be fulfilled (Scott & Horner, 2008). The location of these opportunities in the spaces of the city is determined by those who provide the opportunities. The entrepreneurs, the private or public sectors, business owners, and the government, are the entities that decide the best locations which are chosen according to practical reasoning such as profit maximisation. These entities do not always consider the welfare of society or issues of equity (Scott & Horner, 2008). This has resulted in urban landscapes that disadvantage certain groups or individuals as this may hinder their access to the locations of needed activities (Scott & Horner, 2008). This is known as spatial mismatch. Spatial mismatching is the process of incorrectly locating low income households far away from opportunities and the location of most activities (John , 2004). This is similar with the group of study, students. Students who are able to afford to live on campus or close to university are the students who can afford to rent out a place close by, but students who live far away from school rely on public transport or private cars. This has an effect on the lives of some students. Commuting cost are often the heaviest burden, as a large sum of one's income is used for the purpose of commuting from work or university and back home. Commuting costs have become an obstacle for people to access the opportunities they need to (John , 2004). The access to a good public transport system is no longer just based on geographic reach, as the cost to ride has become a major factor (White, 2015). Low cost, efficient public transport becomes very important, as this is the only way to give people a fair chance at competing or participating in the city. This means that public transport systems have to work for people and not work against them, as the lack of good public transport makes it very difficult to deal with inequality in cities (White, 2015). "Access to just about everything associated with upward mobility and economic progress—jobs, quality food, and goods (at reasonable prices), healthcare, and schooling— relies on the ability to get around in an efficient way, and for an affordable price" (White, 2015, p. 2).

Social exclusion can be induced by a number of different factors. This section will define the different types of exclusion brought about by mobility, and how exclusion can cause the lack of mobility. The factors to be discussed below influence an individual's mobility, thus determining their access.

- Physical exclusion- The nature of public transport systems and the built environment are factors that can bring about physical barriers to the access of certain groups. Groups of people who experience psychological and physical difficulties, young children, or people who do not speak English (Sullivan, et al., 2000).



- Geographical exclusion- areas that are located in the peripheries of the city and lack a provision of transport, such as in the mismatch theory, brings about inaccessibility and urban social exclusion. This leaves people unable to do all they need to in the city and participate, as they should (Sullivan, et al., 2000).
- Exclusion from facilities- people who lack the adequate access to public transport and face income constraints often lack good access to educational, health, shopping, leisure, and financial facilities. Land use trends make it difficult to access facilities, as opportunities and activities are being located further and further away from people, making such places difficult to access without a private car (Sullivan, et al., 2000).
- Economic exclusion- The constraints of income and transport networks can put a limit on peoples' access to economic opportunities, as a person's geographical reach is limited. For a person who is not working, it is also very difficult to incur travelling cost when a person does not have an income (Sullivan, et al., 2000).
- Time-based exclusion- The time spent commuting has an effect on the productivity of people. This is affected even more by sprawl and the increase in private car use, as cars cause congestion when trying to leave the centres of employment to residential areas outside these centres (Sullivan, et al., 2000). Long hours spent travelling affects a person's productivity, as by the time one gets to work or school they are already tired and drained. This is the same when going home, students are unable to focusing on homework as they spend so much time on the road travelling and are exhausted after a long day of lectures. This affects the economy as a whole as people are unable to perform at their optimal level.
- Fear-based exclusion- space can ignite different feelings for different people. Fear is one such feeling that certain groups experience in certain spaces and transport modes (Sullivan, et al., 2000). This level of fear may differ amongst different social groups, genders, races and ages, and may be caused by different things. Perception is often a strong driver behind fear.
- Spatial exclusion- the security measures and management strategies used in spaces and public transport may exclude certain people from using them. The manner in which spaces are designed and managed increases the accessibility to these spaces and the feeling of fear is reduced and replaced by comfort. The more safe and welcomed people feel when use public transport, a sense of ownership is developed and thus fear is slowly eliminated and comfort takes over (Sullivan, et al., 2000).

The nature, availability, and accessibility of public transport along with the nature of the city can solve some of the issues that bring about the different types of social exclusion. This makes these issues important to transport policy makers, as there is a need to bring about an understanding of the value that public transport has in creating socially inclusive cities, that allow everyone to participate in them, unhindered by any form of exclusion. There needs to be a stronger link



established between public transport, spaces of activity, the socially excluded, and where people live. It is in the conflicts faced by cities that the way people access the city becomes important. By accessing the city this means, “establishing physical presence in the city, consolidating presence, and developing belongingness” (Bawa, 2008). An efficient public transport system promotes the right to the city for all and lessens the development of exclusionary cities (Morales, 2010). However, it should also be noted that a combination of changes are required to eradicate social exclusion and increase one’s right to the city, this does not solely rest in the hands of public transport and the spatial matters of the city, but also social, political and economic change.

2.2 Public transport

2.2.1 Transportation

The right to the city is understood as the right that everyone has to occupy any public space of their choice and engage with the city, a right for citizens to be involved in the city making and planning process, and a right to be included in all urban policies that enable the participation of individuals in all areas of urban life. Within this definition, the access to good quality public transport is thus considered a right to all citizens of the city. Authors have focused on different aspects of public transport, ranging from studies that are based on policy, to studies focusing on public transport and the economy of cities, as discussed by Harvey (2006) and Feldman (1977). Various other authors have focused on equity in public transport in terms of the impact this may have on certain groups of people, mainly those who are marginalised or dependent on public transportation to be included in the city and its functions. This section of the literature review will understand the role that public transport plays in the city and the impact this may have on peoples’ right to the city.

Transportation is a term that has been used for many generations, as it originated in ancient cities as a form of mobility and trade. The term has evolved through time, as seen in Figure 2 and 3, it has been shaped by the history of cities and various other historical events. As to understand the current position and trends of public transport in cities and what this means, it is important to understand the historical evolution of transit in the spaces of the city, as seen on the next page.

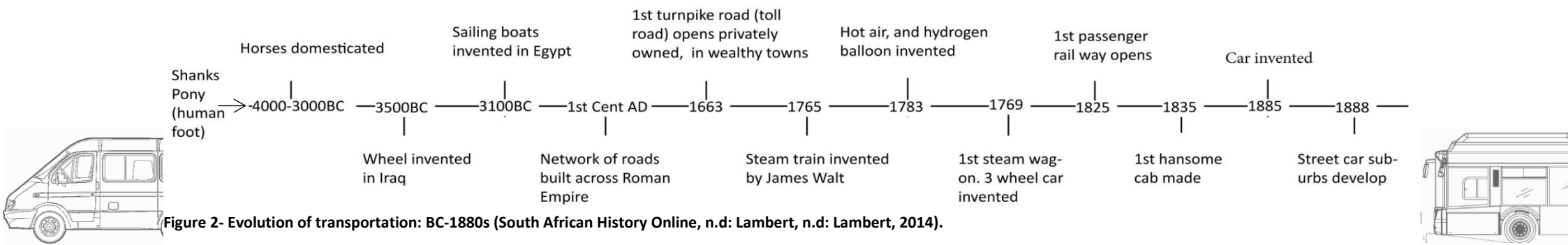


Figure 2- Evolution of transportation: BC-1880s (South African History Online, n.d: Lambert, n.d: Lambert, 2014).

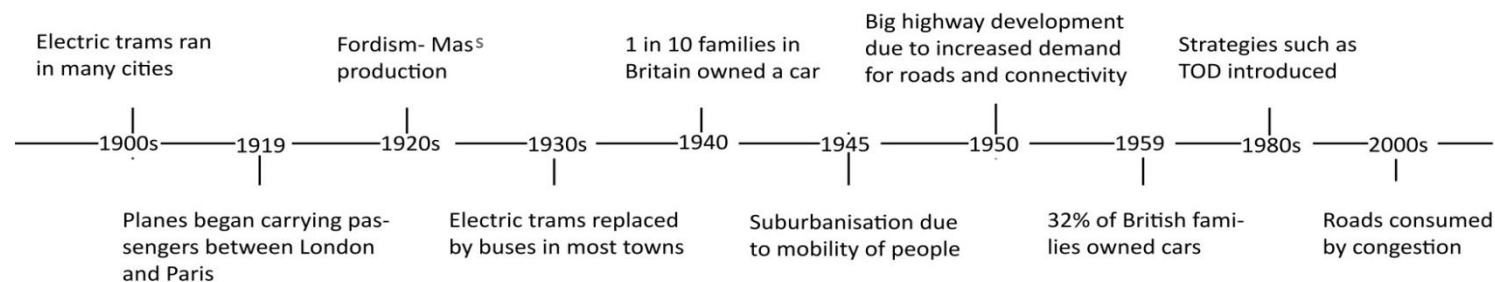


Figure 3- Evolution of transportation: 1990s-2000s (South African History Online, n.d: Lambert, n.d: Lambert, 2014).

The forms of transport in contemporary cities have evolved and advanced. There are a number of different modes of transportation operating in cities and this has sparked some concerns around the externalities this may produce. Issue of congestion have been a big issue, as this has had an effect on the built environment, due to vehicles taking up more and more space and putting pressure on infrastructure. Vehicles are also having an effect on the environment and the health of those living in cities. The dominance of cars resulted in the production of 900 million metric tons of carbon dioxide between 1998-1999, 87.4 million barrels of fuel were used per day in 2010, whilst car ownership has also facilitated the expansion of cities outwards into the suburbs (Harrington & McConnell, 2003). The dependence on vehicles has had an effect on urban planning in cities and vice versa. This has been due to the dependence on vehicles, leading to mono-functional sprawl, which are cities that consume a vast amount of land in an inefficient way. This can be seen in cities such as South Africa, Australia, and the United States of America (Harrington & McConnell, 2003).

The global transport problem is on the rise in cities. As populations continue to grow so does the demand for the movement of goods and people, and this movement is largely facilitated by privately owned vehicles (Harrington & McConnell, 2003). Solutions such as reducing the use of private owned cars and opting for walking, cycling, or using public transport have been sought to reduce the negative impacts that the evolution and use of transport has brought about (South African History Online, n.d.). The use of public transport has been an area of focus for many cities in the reduction of congestion and pressure on infrastructure, as trains, buses and trams carry a large amount of passengers at once, reducing the negative externalities of mobility as seen in Figure 4. "Transport has changed and it will change more in the future. Perhaps we will all get to travel into space! But walking and cycling might be the most popular ways to travel in the future as we all try to stay fit and healthy and look after our planet" (South African History Online, n.d., p. 4).



Private vehicles

- The most harmful to the environment
- Carries a few passengers, takes up a lot of space

Here are 200 people in 177 cars



Public transport

- Less harmful to the environment
- Carries a lot of people in one trip

on 3 buses



Cycling and walking

- Free and uses the least space
- No harm to the environment

without cars



Figure 4- Images showing how much space different modes of transportation take in the city (Washington Post, 2015).

This series of images indicates the wasteful nature of private vehicles. More and more space is being consumed by private vehicles whilst the cheaper or free, space saving and environmentally friendly options take up the least space. The colour gradient on top indicates the worst mode of transport, in red, to the best, in yellow. The culture of private car use has been encouraged by cities and this has deteriorated the natural environment, whilst cycling and public transport are becoming key players in addressing the issues caused by private vehicle use.

on 1 light rail train



on bikes



Images of downtown
Seattle's 2nd Avenue

From the International
Sustainability Institute's
Commuter Toolkit poster



How did cities find themselves in the predicament caused by vehicles? The height of modernism introduced new ways of thinking around everything in the city. Principles of modernism have shaped the city building process since the 20th century (Natrasony & Alexander, 2004). Calthorpe and Fulton (2001) and Sandercock (1998) discuss the influence that the rise of the modernism has had on urban planning and the emergence of Fordism. The development pattern of low density urban sprawl has been adopted by many cities, as the trend of private, single family dwellings has consumed the urban landscape (Natrasony & Alexander, 2004). This has resulted in the reliance on private vehicles to commute from residential areas to centres of economic activity, causing an unsustainable separation of land uses (Natrasony & Alexander, 2004).

In 1926 a Supreme Court decision was passed in the United States of America that aimed at ensuring property values were not affected by noxious land uses and activity from neighbours, resulting in zoning becoming a key tool in the planning of American cities and urban spaces (Hall, 1988). This brought about an urban landscape of segregated land uses that divided the different aspects of human life in the city, as different areas were dedicated to a specific purpose with no conflicting land uses. The use of roads also became specialised, as “roads use to be multifunctional – for pedestrians, vehicles, places for children to play, and community socialization, however for the modernists, frequent intersections created obstacles to the speedy flow of traffic, thus, streets became conduits for cars and not people” (Natrasony & Alexander, 2004, p. 6). Radburn was a clear example of this new concept of planning as it was the first motor age town. In the 50s and 60s policies on transport were more aimed at bringing about an increase in the amount of vehicles on the road, and this left the design of communities and public transport out of consideration.

Calthorpe and Fulton (2001) state that the process of design is one that includes and amalgamates numerous disciplines, which was not the case (Calthorpe & William, 2001). This questions whether cities have been designed for people or for cars, something Jacobs (1961) discusses in “The Life and Death of Great American Cities.” Cities have become a large parking lot for cars and it is in recognising this that there is a need for transport planning and urban planning, as two spatial tools, to be used in conjunction and not separately. The aim of having one vision is required to be established between these two fields in the discipline of planning. Transport plays a major role in developing and building not only the city, but also the people who live in cities. Transportation is a tool used to shape and connect parts of the built environment, thus making it very important for there to be functional integration between the built environment and modes of mobility to enable people and goods to move about safely.



2.2.2 Why do we need public transport?

As cities have become more car dominant the cost of living has also increased. Owning a car is very expensive, and not owning one has become just as expensive in countries with poor public transport systems. The association of a city's wealth with the number of car owners is something that has become weak (Newman & Kenworthy, 1999). Europe is the wealthiest continent with some of the best public transport systems, and uses less private cars than America (Newman, n.d.). A lot of cities with wealth have invested money into good public transport systems and infrastructure (Newman, n.d.). The manner in which cities have been developed has created an environment of compromise for the poor population of the city. Land is often cheaper on the outskirts of the city, and the poor often forfeit their proximity to the economic centres of the city to gain access to cheaper housing located further away. Families in this position spend up to 40% of their household income on public transport in certain parts of the world (Newman, n.d.). However, this may also occur for rich households, as the sprawl created in cities has been the result of better-off families living in the outskirts of the city where there is larger land to develop their mansions, and thus depend on cars to drive into the city centre where some of the economic and financial activities still remain, putting strain on road infrastructure at peak hours. This refers back to the importance of public transport in its ability to relieve the strain of mobility in the city, experienced both by the poor and rich. An inclusive public transport system that accommodates all races, sexes, classes, and age groups. However, is the idea of an all-inclusive public transport system utopian?

Perception is an important aspect of human behaviour, it may even be one of the most important aspects (Hocane, 2012). Our perception is determined by how we see things (Hocane, 2012). The more positively and opened minded one is to the perception of a circumstance the more we are able to truly understand the manner in which things really work behind the facade. The perception of public transport has been a hindrance in the creation of inclusive transport systems that encourage all users to use public transport. Private car users are often discouraged to make use of public transport due to their perception of the quality of public transportation and the travelling time of these modes (Kenyon & Lyons, 2003). The perceptions held about public transport by private car users are often shaped by their lack of information or their impressions from what they have seen (Rietveld & van Exel, 2010). In less developed countries the perception of public transport is based on the lack of maintenance and the use of un-road worthy vehicles that often experience high accident rates. This has brought about the perception of public transport to be unsafe, low in quality, uncomfortable, less reliable and a mode that is for those who cannot afford to buy a car (Govender & Vilakazi, 2014). The quality of service has always been a challenge for public transport organisations, as it is difficult to measure a quality service (Govender & Vilakazi, 2014). This has also been difficult, as commuters may not perceive quality the same way, as it is a broad multidimensional concept that is hard to assess in the view of commuters (Govender & Vilakazi, 2014). The subjective nature of service brings about some challenges in establishing what quality service is regardless of all the instruments



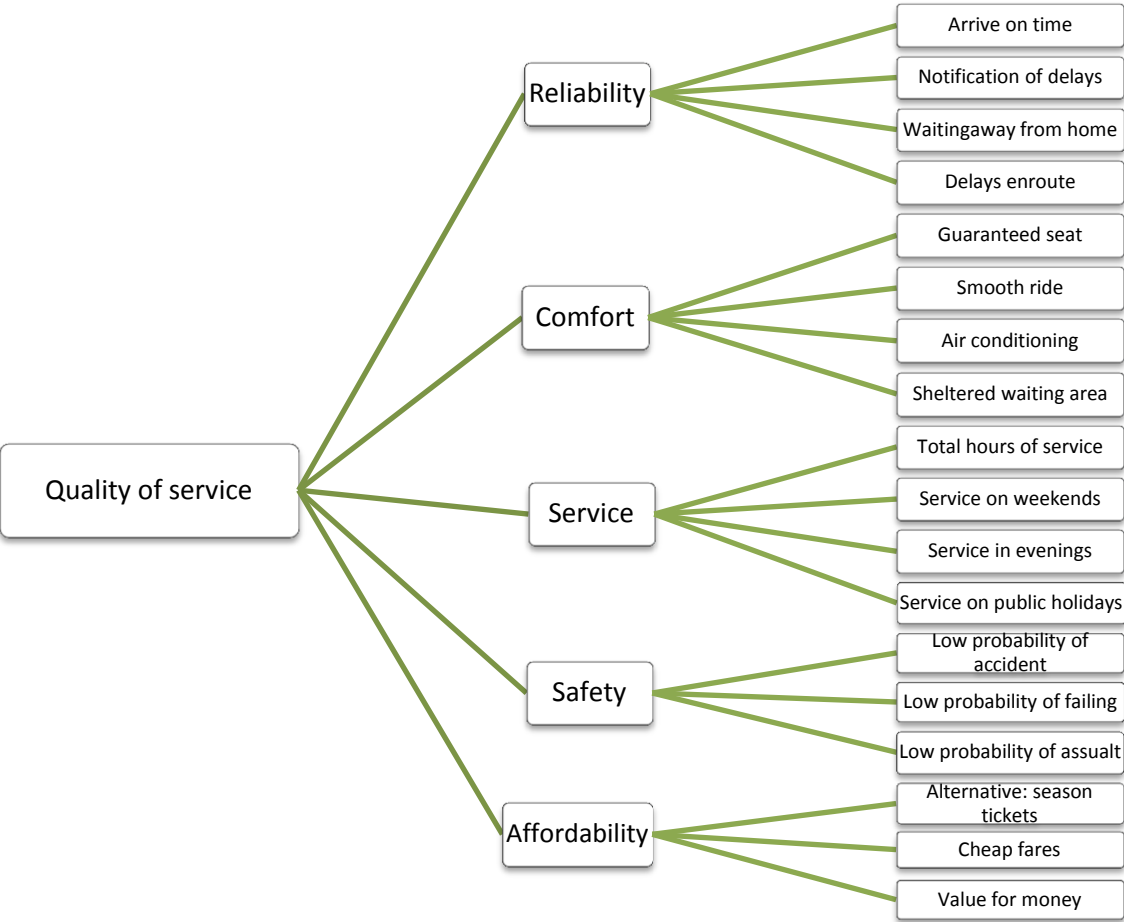


Figure 5- Quality service attributes, RCSSA (McKnight, et al., 1986)

private car use look less attractive (Kenyon & Lyons, 2003). It is through a temporary behavioural change that a shift in the perception and the attitude people have towards public transport may be changed (Rietveld & van Exel, 2010). This temporary behavioural change can be brought about by any circumstances, such as increasing the awareness of other travel modes, changing the image of public transport, and giving people the chance to encounter a positive experience with public transport (Rietveld & van Exel, 2010). Changing the perceptions towards public transport is an important goal, as the larger cities grow the more pressure and demand is put on the natural environment and the infrastructure of cities (Murray, 2001). Public transport is the most obvious solution to these issues as it

that have been developed to measure this, as there has been no general consensus on how to measure this concept (Govender & Vilakazi, 2014). McKnight *et al* (1986) suggest that the quality of service should be measured by RCSSA-reliability, comfort, service, safety, and affordability (McKnight, et al., 1986). These are the five key elements that determine the quality of service in public transport as seen in Figure 5. These attributes have been used in the criteria for efficient public transport, which will be further discussed below, and evaluated in the questionnaire to be conducted on students from the two universities of study.

The idea of having an inclusive public transport system used by all races, sexes, ages, and social classes is a utopian idea, as it may be difficult to change the perceptions that the public have of public transport. However, Kenyon and Lyons (2003), feel that there is a possibility of changing the attitudes towards public transport by making it look more attractive and increasing the awareness of public transport, whilst making



decreases congestion and reduces the impact on the environment, creating more sustainable cities (Murray, 2001). Public transport is the key component in managing and planning urban regions. This is due to the relationship between transportation, trip demand, the urban form, and energy use as this is vital in addressing the issues of urban growth.

For cities to become sustainable urban environments that are inclusive and increase peoples' right to the city, public transport is a key determining factor. It mobilises people and enables them to have access to anything they may need. This needs to be done in a sustainable manner that will not compromise the ability of "future generations to meet their needs" (Kates, et al., 2005, p. 10). Integrating the environment, economy, and society in a balanced manner is a sustainable practice that can be obtained through mobility and access created by an efficient public transport system.

2.2.3 Mobility

Mobility is linked to one's ability to move. Dimitriou (2006) states that the more people are on the move, the more benefits are acquired by those who are mobile and to the civil society/ economy, as there is a relationship between economic growth and the motorisation rate (Morales, 2010). However, not everyone needs to move long distances and thus, there is no need for a demand for transportation in parts of well-designed cities as the things that people need and want may not be located too far from their access (Morales, 2010). This pertains to the sustainability of the city and how cities are designed for people or cars. Johannesburg is a particular case of a city that is built for private car use, thus, it disables the mobility of people through the city. This brings us back to social exclusion as only certain members, those defined by their income and ability to afford mobility, are able to participate in the city.

2.2.4 Access

Access is "the ability to get to essential services: education, employment, health, and to food shops, as well as to sporting, leisure and cultural activities" (Stanley & Lucas, 2008, p. 36). Accessibility is a concept that explains how the lack of accessibility to a transportation mode prevents people from being mobile, further preventing them from engaging in activities and opportunities, which brings about social exclusion (Morales, 2010). When attempting to mitigate the negative social impacts of the lack of access, issues pertaining to the urban form and demographics of a location need to be considered (TCRP, 2009). "The quality of life and livelihood of a street depends on accessibility to a wide range of people from the surrounding neighbourhoods and regions. This access must not, however, be intrusive or detract from the quality of the environment" (Jefferson, 1996, p. 179). Access is essential to the functioning of the street and the life present in this space, however, there is often a conflict between users (Jefferson, 1996). This conflict is experienced between vehicles and pedestrians, in the attempt to dominate



the street. The street, public domain, is the scene of conflict because it often lacks the space to cater to the needs of all the types of movement that it is meant to facilitate (Jefferson, 1996). "The question is: How can a street serve all these functions without conflict and interference?" (Jefferson, 1996, p. 173). Public transport is the answer often turned to, as it provides a high capacity service that eases the congestion of roads, as seen and discussed in Figure 4 above, whilst offering access to the city in order to keep its streets vital.

As much as creating access to the city is important, it is also crucial to look at access in terms of public transport. Public transport is a good tool to improve people's access to parts of the city and its activity. However, access to public transport is even more important, because if there is a lack of access to public transport then it is impossible for some people to access amenities in the city, leaving them excluded and their right to the city is infringed upon. The apartheid city of South Africa did just that, it limited access to public transport in the black residential areas of the country and this limited their access to the city centre where all the economic, financial, and social activities took place (Pirie, 1986). The simple removal of access to public transport paralysed and excluded black people from participating in the city. This shows how access to public transport is a critical factor (Murray, 2001). Efficient public transport systems consider all the access needs of people and facilitate mobility in the most efficient way possible. The next section of this chapter explores the measures of efficiency that enhances access and mobility.

2.2.5 Efficiency

What is efficient public transportation? In understanding the meaning of efficiency and what it entails, one is able to list a set of attributes that can be analysed to measure the efficiency of a public transport system. Some of these attributes have been discussed in Figure 5- Quality service attributes, and will be elaborated upon in this section. This will serve the purpose of criteria to assess what efficiency, specifically pertaining to public transport, is in the questionnaire to be conducted on the students in Johannesburg. Efficiency can be assessed and understood through assessing the following attributes:

- 2.2.5.1 Time- this refers to origin and destination based access to public transport. Origin based access refers to the distance between a person's residence and the nearest public transport stop, whilst destination based access refers to the distance between the location of travel, which may be a mall or school, and a public transport stop (Murray, 2001). A passenger should not be made to wait longer than 10 minutes to board any mode of public transport (Jefferson, 1996). At these waiting stations there should be adequate amenities provided to make this wait comfortable. These amenities include seating, shelter, adequate lighting at night, information on the routes that the transport will be taking, a safe zone around boarding points for pedestrians and a timetable if it runs on one (Jefferson, 1996). A public transport system needs to also ensure that it is efficient in getting people from where they currently are to their destinations of



choice in a reasonable amount of time (Murray, 2001). Some people shy away from using public transport because of the perceptions attached to the lengthy, uncomfortable travelling times. This encourages people to use their private cars as they feel they can get to where they need to go faster than some public transport modes. Passengers should not have to walk more than 10-15 minutes to access public transport, as public transport stops should be located at the maximum of a 400 m distance (Murray, 2001).

- 2.2.5.2 Intermodal connections- Passengers deserve the right to be given a choice when in need of public transport. Through intermodal connections, passengers can utilise a variety of public transport modes to get to their destinations the best way they can (Jefferson, 1996). There needs to be a versatility and ease of integration between the different modes of public transport as to create a system that works efficiently (Jefferson, 1996).
- 2.2.5.3 Comfort- Comfort is associated with the well-being of passengers making use of public transport. Johannsson (1989) defines the concept of comfort to be “the level of a persons’ experienced well-being during a trip” (Johannsson, 1989, p. 2). Comfort is a qualitative factor that is difficult to measure objectively (Karlsson & Larsson, 2010). Johannsson (1989) further goes on to divide comfort into three categories: comfort whilst boarding, comfort during the change of transport modes, and lastly a passenger’s comfort levels during the trip. Factors that influence the comfort experienced by passengers in public transport include: overcrowding, walking distance to a stop, long distance travelling times, entrance into transport, cleanliness, noise levels, the temperature on board, smooth driving, space around a person’s seat for luggage and the comfort of seating (Karlsson & Larsson, 2010). When people have the opportunity to choose between the different modes of transport people will often choose the comfortable choice. To make public transport more attractive as previously discussed by Kenyon and Lyons (2003), comfort needs to be improved as to reassure private car users that public transport is just as, if not more, comfortable and a better option to use in one’s daily commuting. Comfort also needs to be extended outside the physical transport, as waiting areas need to be attractive clean and well maintained to encourage people to use these spaces.
- 2.2.5.4 Safety- When considering the safety of passengers it is important to analyse this on board public transport, while waiting for it and walking between public transport and one’s destination (Karlsson & Larsson, 2010). Public transport needs to ensure the safety of its passengers as safety is a major determining factor of the use of public transport. No one will choose to put their life at risk by making use of public transport that is not safe or safe to walk to. Safety is an important issue for female users as they often feel more vulnerable in spaces were safety is compromised (Nteta, 2014). Gender sensitive transportation should seek to cater for the safety and equality of women in the spaces of the city as to bring about inclusion in space (Nteta, 2014).



- 2.2.5.5 Ease of use- The actual design of the transport infrastructure improves the efficiency of public transport, as this affects the manner in which people access public transport, which is very important in creating an inclusive mode of transportation (Karlsson & Larsson, 2010). There needs to be an ease of access for all users, disabled passengers included (Jefferson, 1996). This may be through ramps or electronic lifts provided for special needs passengers to ensure that everyone has the opportunity to use public transport. Public transport should also be made easy to use by working on a pre-payment system to minimise delays and issues with money. This is an issue encountered in Johannesburg, as minibus taxi drivers are often counting money collected from passengers and this distracts them from driving. It should also be easy for all passengers to board and exit public transport straight from the pedestrian zone, as pedestrians should not have to worry about crossing the road and their safety after disembarking from public transport (Jefferson, 1996). The design of the spaces around public transport also affects the ease of its use as sheltered stops are needed, with information boards that can guide a person's using of the public transport (Karlsson & Larsson, 2010).
- 2.2.5.6 Maintenance- As more money is being invested in establishing public transport systems, it is crucial that maintenance takes place to protect this investment and provide an efficient and safe public transport system (Transportation Research Circular, 2006). The challenge is to keep public transport systems well maintained to avoid any issue down the line that will affect the perceptions attached to public transport and, thus, how many people feel it is a reliable mode of transportation. For an efficient public transport system to be established there needs to be constant maintenance and upgrades made that will facilitate the demands on public transport and not breakdown or malfunction in the process. Maintenance includes exterior and interior maintenance of the vehicles, stations, and stops. Maintenance also makes people feel comfortable while using public transport and encourages private vehicle users to use this mode of transportation instead (Litman, 2015).
- 2.2.5.7 Affordability- Public transport should be set at an affordable rate so everyone can use this mode of transportation. When transport fares are too high, the poor are often excluded from accessing public transport and thus excluded from accessing the city, which infringes on the right to the city (Criden, 2008). To avoid this exclusion, public transport should be priced at a low rate for everyone to use and to make it attractive for car owners to use, as this would be a lot more cheap and convenient than a private car (Govender & Vilakazi, 2014).
- 2.2.5.8 Reliability- Public transport should be reliable at all times, as reliability is one of the most important factors of public transport (IVT, n.d.). The reliability of a public transport system has a direct effect on the mode of transportation that people prefer and choose to take. Reliability may be defined as the ability of public transport to be a dependable source of mobility. This may be influenced by punctuality, as public transport needs to arrive at the specified times to make



mobility more efficient (Litman, 2015). With good maintenance public transport also becomes reliable, as there is less of a possibility for break downs along the way (Litman, 2015). People need to be guaranteed that public transport will get them to their destinations on time and in a quick efficient manner (IVT, n.d.). These are some of the factors that build the confidence of commuters and their trust in the mode of public transport being used.

- 2.2.5.9 Operating times- As the city should be a 24 hour destination so should there be access to mobility 24 hours a day. Public transport needs to cater to the needs of people at any time of any day. If a person wants to go out for a late night dinner they should not experience issues of mobility because there is no public transport available at that time, or at the time of their return. If public transport stops operating at early hours, people are left stranded and public transport becomes a dictating factor in when they can and cannot participate in the activities of the city (Litman, 2015).
- 2.2.5.10 Service- The quality of the service is determined by a persons' experience whilst using public transport. Factors such as being treated respectfully and politely by drivers or staff, receiving reliable information when requested from staff members and complaints being investigated with correct action taken to increase customer satisfaction (Litman, 2015). Information on public transport routes and times should be easily accessible to passengers during the trip or prior to it , as this will bring some comfort in assuring people know where they are going and are able to plan their trips accordingly.

Switzerland has one of the most efficient public transport systems in the world (Pearson, 2012). Isabella Ignacchiti Drueke, the spokeswoman for the Swiss Travel system, says: "The secret lies in the development of tools of quality management, for which Swiss are distinctive. More concretely, we can say that the maintenance of the infrastructure plays a crucial role," (Pearson, 2012, p. 1). She further goes on to explain how the timetable that their public transport systems run on is very strict and on time, and the intermodal connectivity of transport systems makes it easier to plan a trip for anyone using their system (Pearson, 2012).

Urban growth brings about numerous issues and challenges in the development of cities, especially pertaining to sustainability and increasing access for all. Public transport will continue to play a major role in mitigating the issues faced in urban environments and the people who may be affected by some of these issues. Thus the use of public transport needs to be increased through creating a system that is efficient. This is critical in creating cities that are accessible to every single person who is an inhabitant, as it makes life easy and convenient in the city. A student should not feel that he or she is unable to pursue all the activities they would like to pursue in the city because they do not have the financial means or a private car. Just as a disabled person should not feel restricted to staying at home because it is too much work to get from one point of the city to another. As cities are meant to include everyone in its daily activities, so should it be that everyone has access to these things through efficient public transport. Efficient public transport makes an efficient city, as there is a movement of people which means the economy is kept



active and spaces in the city are filled with people on the move. A city that is stagnant is a city that is dead. It is everyone who contributes to the vitality of the city, from the wealthy man that built the city, down to the student who cannot afford a car and relies on their parent's income. Efficient public transport makes it possible for everyone in the city to contribute to its vitality, making it one of the most important tools of integration between the urban and the people, as seen in Figure 6.

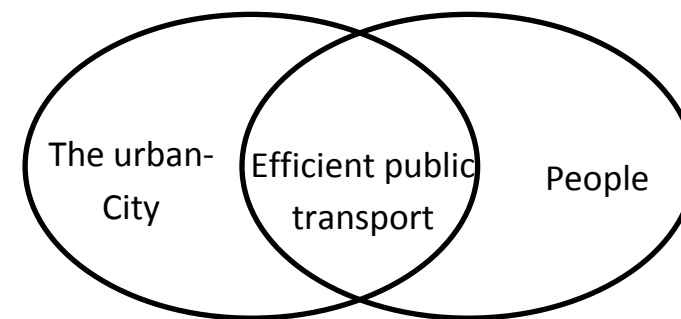


Figure 6- The role of efficient public transport in integrating the city and the people.

2.3 Students

It is important for students to be active and engaged citizens in their communities and to be part of the important issues in their surroundings and play a part in civic engagement. A student's lifestyle determines and impacts on the quality of life that they are able to live in their community and the places around them. It is in a student's university years that a lot of young adults seek to establish a sense of independence from their parents' as to gain self-worth and some identity that has not been solely determined by those who have raised them (Winster Jr, et al., 1999). "They also develop increasingly mature patterns of interpersonal behaviours, coping styles, career orientations, values systems, and lifestyles that will greatly influence and shape their futures" (Winster Jr, et al., 1999, p. 4). University is a stage in a student's life where they also gain knowledge about themselves, learn interpersonal skills, and personal assessment, goal setting, and a variety of other personal life skills (Winster Jr, et al., 1999). This makes it very interesting to study a group in society that is establishing their role as influential citizens of the city, that have the right to exercise their will and establish their footing in the grand scheme of things. How students cope with the start of their independent entrance and transition into society and how society welcomes them into the rest of their lives, is what make this study group interesting to analyse. Thus, this section of the literature review will unpack some of the elements that shape and influence the lifestyle students are able to live in the city and how this impacts on their daily lives and their transition into being independent individuals of society. This literature review will look to understand how support services around students, such as finances and public transportation, help them prepare for graduation, learning, life, and working, and how their experience of the right to the city is established through the varied elements around them. Understanding where students are positioned in society will help us better understand how public transport can influence their lives and better their experience and participation in the city and its activities. Students are used as the main analytical tool of efficient public



transport in this study. It is through this lens that the efficiency of public transport in the city will be unpacked, thus, it is important to understand all the points mentioned in the previous sections of the literature review, as to be fully equipped to answer the research question at hand “How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?”

2.3.1 How do students get around?

“I recently started a new placement miles away from where I live. I don’t mind getting up early but there’s no public transport that will get me there by the start of the early shift, meaning I have to get a taxi or turn up 30 minutes late. I’ve tried to explain this to my mentor but she does not seem to realise how much of a problem it is, she thinks I can claim back from university, which I’m trying to do, but without luck so far. Spending all that money is making me so anxious that I’m really not enjoying the placement when I do get there. I don’t know if anyone would be able to help me but it would be good to hear if anyone else has been in the same situation” (Somerset, 2014, p. 1).

Tracy is one example of the struggle that many students face, as public transport does not accommodate the lifestyle that all students have to live. As a student who is required to complete a placement as part of her nursing degree, Miss Somerset is left between a rock and a hard place as there is no public transport available to the location of her placement at the time of her morning shift (Somerset, 2014). Students in all universities come from different backgrounds and social classes. It is not all of them who have access to a car or have the privilege of owning one, as they may not be able to afford to buy one. The increasing charges in public transport in cities is something that has been a struggle for many students who are not privileged to live close their campus. As more and more students are applying to tertiary institutions, there is an increased pressure on accommodation close to universities (City of Joburg, 2015). This means that students have to find accommodation far away from campus and they are forced to make use of public transport (City of Joburg, 2015). However, transport costs have become a financial burden on students and also a burden on their education as an immense amount



Figure 7- Students’ time spent on activities in the UK (Grove, 2012).



of time is spent traversing between university and home as seen in Figure 7 (City of Joburg, 2015). This is an issue in countries like South Africa, and in America, as seen in the case of Miss Somerset discussed above.

The Mayor of Chicago addressed the issue of rising public transport costs by stating that those who were not happy with the increasing prices could “make that choice to drive a car instead of taking public transit” (Samsa, 2012, p. 1). This statement was not taken well by the public, as some people do not have the luxury of choosing (Samsa, 2012). “These changes in public transit systems are disproportionately affecting senior citizens, students, people of colour, and those who cannot afford to have a car” (Samsa, 2012, p. 1). Public transport has become extremely important in the lives of people, as it facilitates movement between home and work, school and home, but it also assists in the reduction of pollution in the city. For a Mayor to make such a statement is concerning, as cities face issues of global warming and encouraging people to use private cars only perpetuates the issue. Not only is the statement a concern for the natural environment of cities, but it also creates some concern around excluding people from the city. If you cannot afford the increasing public transport prices, and you cannot afford to buy a car, then you cannot be included in the activities of the city.

2.3.2 Student finances

A number of students have high tuition fees in some countries, and increased debt, there is already a financial strain on students as it has been identified that finances and academic demands are the highest stressors amongst university students (MacNeela, et al., n.d.). This is understandable, as students are concerned with a number of charges ranging from tuition fees, buying text books, travelling to school or rent for accommodation, social spending, clothing, printing, food, internet, research etc. The 2014 University Lifestyle Survey by Sodexo's, analyses the student experience and lifestyle of 2 000 fulltime university students from 144 universities in the UK. The first analysis of this survey looked at the drastic increase of student debt in the universities of study (Bedoyere, 2014). Over the past few years, student's debt has increased drastically as “seventeen per cent of students expect to take on over £40,000 worth of debt and 58% expect debt of at least £20,000 (Bedoyere, 2014). The United States is currently in a crisis, as outstanding student loans stood at \$1 trillion in 2012 and is still on a rise (Donnelly, 2012). In South Africa, about 80% of students rely on funding from the National Student Financial Aid Scheme (NSFAS), which pays off the tuition and accommodation for students from disadvantaged homes, on the condition that this money is paid back once a student starts working (Donnelly, 2012). NSFAS was owed an amount of R2.7 billion in 2009 alone, with the scheme only recovering R3.8 billion of the total R23 billion spent by the scheme between 1992 and 2011 (Donnelly, 2012). Universities in South Africa were engaged in a 2 week nationwide protest against the increase of fees above their means, in October 2015 (Wesi, 2015). It is already



a struggle to pay fees in South Africa, as some students come from disadvantaged backgrounds, with the middle class students also feeling the pinch of high tuition fees (Wesi, 2015). The protests have been tagged #feesmustfall as students are demanding that their education be their hope of tomorrow and not a financial death trap in their future (Wesi, 2015).

“The massive financial impact of attending university means that students are carefully weighing up whether to go to university at all and the incentive for attending is changing” (Bedoyere, 2014, p. 1). However this has not drastically changed the attendance of students to university because many students do what they can to ensure that they have the necessary funding to attend university, as this is the best way for them to improve their employability and earnings. Thus, they assume it will be easier to pay back any loans taken out to support themselves during university (Bedoyere, 2014). “Research done by the Southern Africa Labour and Development Research Unit in 2009 indicated that earnings showed a linear improvement from matric to a degree. At the time, a person with an average matric received R1100 a month, but this increased to R3100 a month with an average diploma or certificate and rose to R5400 a month with an average degree. People with a tertiary education were twice as likely to be employed, according to the research” (Donnelly, 2012, p. 3).

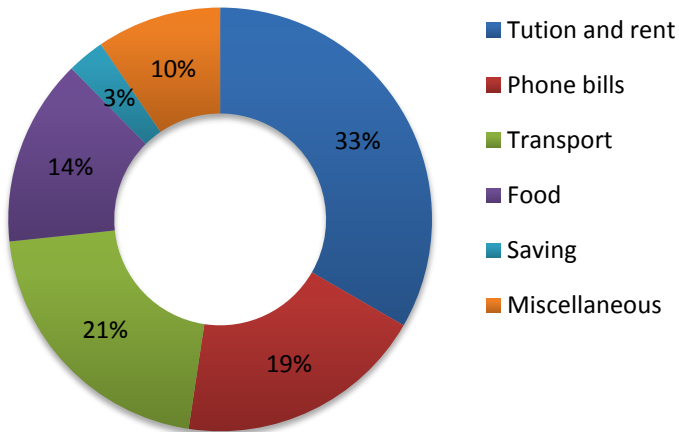


Figure 8- Student spending trends (%) (Casey, 2013)

Figure 8 shows that on average, a student in North America is predicted to use about 35% of her, or his, available funds on tuition and rent, if they live at university (Casey, 2013). 20% is spent on their cell phone bills through purchasing airtime, data bundles or paying off a contract (Casey, 2013). Transportation takes up about 22% of a student’s budget, as they traverse between school and home, or to social areas and for research purposes (Casey, 2013). 15% is spent on food while a mere 3% of the funds available to university students is spent on saving (Casey, 2013). 10% is then kept for miscellaneous needs such as buying school equipment, gym, and clothing, offering at church or getting their hair done (Casey, 2013). However, these numbers may vary in different contexts.

These numbers are a problem, as life in the city should be enjoyable for students, and anyone who lives in the city. Public transportation should be affordable so that it becomes everyone’s first option when there is a need to be mobile. An inclusive city would consider the fact that people have other financial strains, such as tuition, and lower the costs of basic amenities, public transport being one of them. Students are entitled to mobility, access to the city and efficient public transport



systems, just as they are entitled to water or proper sanitation. Public transport is “is a public utility; and the benefits derived from this public utility can only be realized if the system is planned and regulated so that all members of society benefit both the poor and the rich” (Govender & Vilakazi, 2014, p. 260)

2.3.3 Lifestyle

The increase in tuition over the years has resulted in students having to change their lifestyle habits. This has meant that the alcohol intake of students has been forced to decrease, as they are finding it hard to maintain that lifestyle due to the financial obligation to their tuition (Grove, 2012). The diets of students have also changed over the years, as tuition has increased so have students indulge in more unhealthy dishes, cutting out nutritional meals, as these tend to cost more (Grove, 2012). Students have also returned to living with their parents rather than living close to campus, as to ease any added costs to their finances as seen in Table 1 (Grove, 2012).

2.3.4 Forced to work

The 2014 University Lifestyle Survey indicated that more students resulted in finding part-time jobs as to support their lifestyle, as seen in table 1 (Grove, 2012). A quarter of the students indicate that they worked for an average of 13.2 hours per week, whilst 12% of the students polled stated that they worked more than 21 hours or even more a week to sustain their financial needs (Grove, 2012).

2.3.5 Free public transport for students

Students in some parts of the world are increasingly feeling the financial pinch of tuition fees and other expenses they encounter (Learn.org, 2012). In many cities students are offered a range of discounts to ease the financial burdens they may face. Restaurants, clothing stores, supermarkets, clubs, other areas of entertainment and public transport often offer discounts to students for the use of their services. The cost of transportation for students is one area where money can be saved (Learn.org, 2012). Owning a car for a student can be expensive, for its cost does not end when you purchase it. There are costs to be taken into account such as insurance, registration fees, servicing, petrol, parking and licencing (Brown, et al., 2003& Learn.org, 2012). This makes it

Characteristic	Total (%)
Current living situation	
Alone	29.9
Student accommodation	13.2
With roommate	3.8
With parents	8.2
Partner and children	16.2
Partner	26.2
Children and no partner	2.9
Other	4.0
Main form of income	
Student loan	75.3
Work	9.1
Loan and work	2.6
Stipend	0.4
Parents	7.0
Other	5.6

Table 1- Students’ general social status (Bullock, 2004, p. 50)



pricey and near impossible for some students to own a car, unless they are from wealthy homes. Public transport is the most viable and cost friendly option for students everyday activities around the city. Some universities and colleges subsidise the use of public transport for students, making this option even better, as students costs are decreased by this. In London, students get a Student Oyster Photocard which reduces the cost of public transport for students (LSE, 2015). This gives fulltime students who are over the age of 18 a 30% discount to travel with the use of public transport in London (LSE, 2015). There are a number of other offers, such as Contactless Payment or a Young Person Rail Card for people between 16 and 25 which gives discounts on trains (LSE, 2015). Victoria also offers students low prices on public transport. The state of Victoria, in Australia, subsidises students travel through the provision of concession cards for students 17 years and older who are permanent residency or Australian citizens (Victoria State Government, 2014). Students who are located in the rural or regional areas of Victoria can apply for transport assistance that either provides financial assistance or access to bus services (Victoria State Government, 2014). The subsidisation of public transport in developed countries is possible because they have the financial means and organisational systems to take on these transport costs for students. In developing and underdeveloped countries this may be difficult as these countries already face backlogs in the provision of services to their citizens. In the case of South Africa, minibus taxis are the most used form of unofficial public transportation in Johannesburg, to be discussed further in the case study review. The minibus taxi industry is privately owned public transport and is an informal industry in the country meaning that the government has very little influence on their dealings, making it hard, if not impossible, to strike a deal for subsidised student transport.

As public transport is a benefit to students and a major area to cut costs why not make public transport free for all students? However why should university and college students get free access to public transportation over the rest of the population? Most of the reasons have been discussed above. For one, some students have loans taken out to pay their tuition, other academic costs, and the living costs, as seen in Table 1. Thus, there is a large amount of money required for university, leaving students in debt and they cannot afford to incur other cost from areas such as transportation (Debate.org, 2011). Fighting_Falcon is one of the debaters for free transportation for students on Debate.org, and he states that students should have access to free public transport at the expense of tax payers' money because they will pay it back once they finish university (Debate.org, 2011 & Cookson, 2010). He explains that when students complete their university studies they will get jobs and start paying taxes and a certain amount of this will go towards public transport support for the following generation of university students (Debate.org, 2011). The issue with making public transport free for students is that students are not the only group of people with limited funds available to their disposal. Those who are unemployed and low income groups also experience this strain (Debate.org, 2011). Therefore who is to say that they should not also get free access to public transportation? Students already receive discounted access to public transport in a lot of cities, argues Danielle, the debtor against



free public transport (Debate.org, 2011). Daniella goes on to further explain that there are more important things that tax money can be used on, such as health care, clearing the nation's debt or solving social security issues, that money should not be wasted on free transportation for students (Debate.org, 2011). She states that with free transportation comes an increase in its use, which means there will be an increase in the cost to provide this service (Debate.org, 2011 & Brown, et al., 2003). This will bring about increased costs of maintenance which will put a further strain on tax payers (Debate.org, 2011).

The facts that the two debating sides have presented are both valid in their own right, so should public transport be free for students? Firstly, there is nothing for free in the capitalist, profit driven societies we live in (Cookson, 2010). Thus, there is a small possibility of public transport ever being free for any social group in the contemporary cities people live in, especially in less developed countries. Public transportation requires a lot of funds to provide a quality service. There is maintenance, paying the drivers, infrastructure, petrol and other additional cost that need to be considered (Cookson, 2010). So it would not be sensible for public transport to be free, especially when trying to establish efficient public transport systems, as previously discussed, as this requires a large amount of funds to be put into public transport. Students in certain countries are given discounts on public transport and this is a system that works fairly for both sides. A system that relieves some of the financial burden some students may face, whilst they still contribute something towards the upkeep of the transport systems they make use of. Having a free public transport system for students at all universities is a utopian idea that can only be made possible in a few developed countries, but there is very little hope in ever seeing that happen in countries of the south.

The fact there are debates around public transport for students is an indicator of the fact that public transport is a crucial component in the lives of university students. This makes sense, as students, just like any other social group in society need to traverse the city and gain access to the activities in their desired spaces. This refers to the important role that public transport plays for anybody who needs to make use of the city. For students in particular, affordable and efficient public transport systems are needed to suit the lifestyles they live and their financial means. Students need to spend a large amount of their time productive and engaging in academic activities. This means that time cannot be wasted trying to get from home to the library or onto their project site. Therefore, public transport cannot be a hindrance to the daily activities of students and the time they have to spare throughout the day. As citizens in the city it is also crucial that students can get to the places they need to go to and actively be involved in participating and experiencing the city like every urban dweller should be able to. Making public transport an important and what should be, an affordable means of exercising their right to the city through the access public transport provides.



Chapter 3 Case study reviews

As discussed in the previous chapter, public transport has been a topic of debate for many years. However, this discussion has been shaped by the different forces encountered in different contexts. The two case studies to be reviewed in this report are that of Berlin and Johannesburg. Two cities that have very little in common if anything at all, however the different contexts could reveal a few lessons to be learnt in the betterment of public transport. This chapter will review the public transport systems in Johannesburg and Berlin to establish a better understanding of the current context of public transport before engaging in the field work that will produce the findings of this report. As previously discussed, public transport has faced a constant battle with private vehicles all around the world. This has been perpetuated by the stark increase in the rate of car ownership, as the decentralisation of cities continues and people's incomes rise to a point of affording the luxury to purchase a private vehicle. This has affected the number of people that use public transport differently in different countries. Many European cities have managed to maintain their public transport passenger numbers whilst this has been a struggle in African cities (Baron, 1995). This chapter will explore how different cities have managed to deal with public transport, the issues, and pressures this industry faces through studying the history, policy framework and the current trends in each city.

3.1 City Profiles

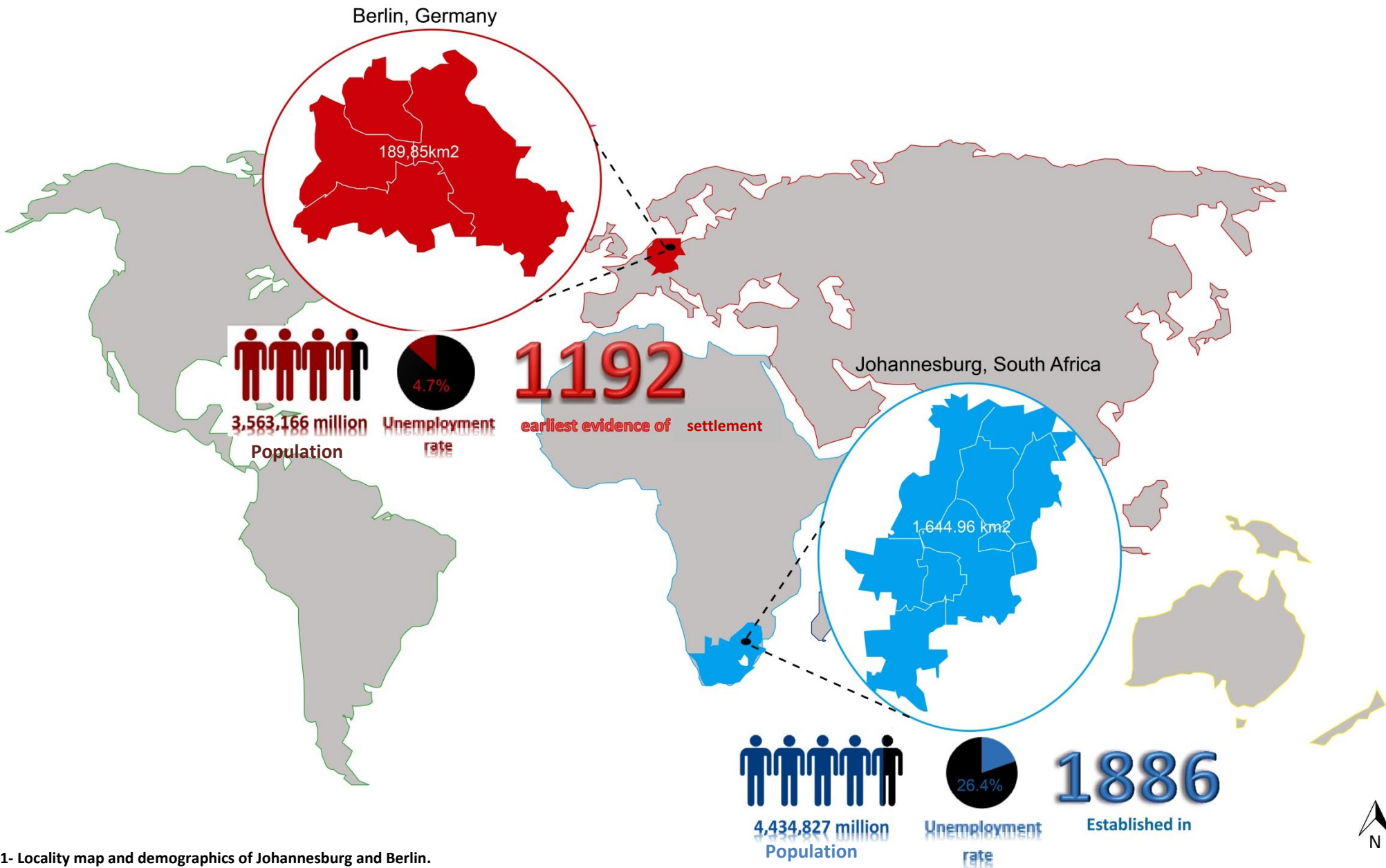
Berlin, Germany

Berlin is the federal state of Germany and also the largest city in the country. The city of Berlin takes on a polycentric shape which has meant that the journeys of citizens are cut shorter (BMVBS, 2012). Berlin is known to be the seventh most popular city to visit in the European Union and the second most densely populated city (Federal State of Berlin, 2014). It also houses over 180 different nationalities making it a city of diversity rich in history. The effect that the World War had on the country is still seen in the spatial form (Federal State of Berlin, 2014).

Johannesburg, South Africa

Johannesburg is the largest city in the country, a young and bustling city in the province of Gauteng, that is known as the financial capital of South Africa, as it houses some of the main drivers in the economy of the country, and Southern Africa (SouthAfrica.info, 2015). Johannesburg is also known to be listed as one of the world's 50 largest urban agglomerations. However, with the history of apartheid, many cities in the country, such as Johannesburg, the spatial form has been left with the imprint of the apartheid era (Pieterse, 2010).





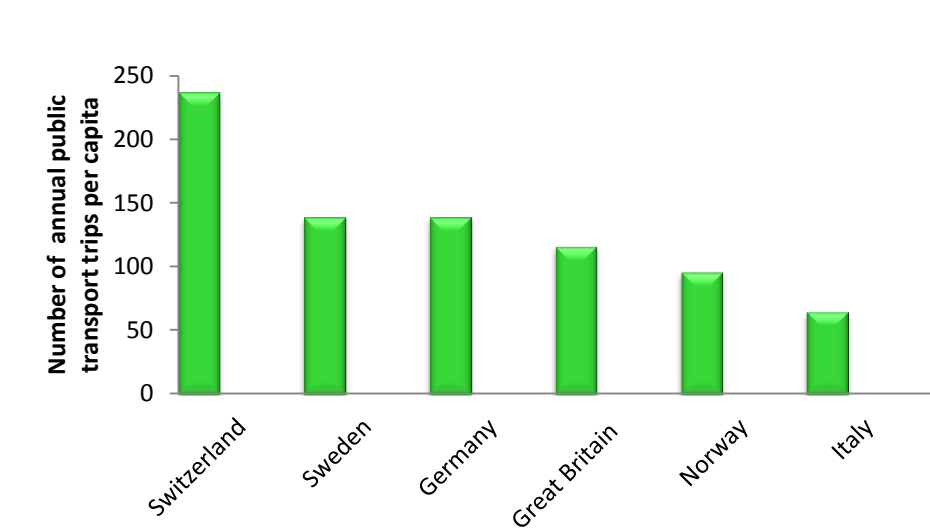
Map 1- Locality map and demographics of Johannesburg and Berlin.



3.2 Berlin, Germany

3.2.1 Historical overview of public transport in Germany

European countries have a high percentage of the population using public transport. This has been due the high densities in European cities, the high amount of tax placed on fuel and the purchase of cars, parking has not been made a priority, and there are a lot of restriction to the use of cars (Newman & Kenworthy, 1999). European cities generally provide better public transport services, which has encouraged the use of this mode of transportation. (Newman & Kenworthy, 1999). Graph 1 indicates the difference in public transport use in the different European countries, with Germany positioned as the third highest in the number of annual public transport trips taken amongst the six surveyed European countries. Germany had a very high use in public transport as Graph 1 indicates that there were 139 trips per capita between 2005 and 2010 (Buehler & Pucher, 2012).



Graph 1- Number of annual public transport trips per capita in Europe between 2005– 2010 (Buehler & Pucher, 2012)

of public transport in Germany, as there were only three modes of transportation that could be used at the time, this was walking, hand drawn wooden carts and making use of a bicycle (Buehler & Pucher, 2012). As most of the transport infrastructure was destroyed during the World War, there was a need to restore the

After the Second World War there has been very little information available on transport systems in Germany. However, Germany has had a rise in the use of public transport over the years. Transport systems were in shambles after the World War II (Baron, 1995). The main railway stations were destroyed, bridges across main rivers were down, ports were full of debris and vessels that had sunk, all airports were left as heaps of rubble , urban transportation was at a standstill, as streets were blocked with debris and destroyed, and a lot of the railway tracks were damaged (Baron, 1995). Between 1945 and 1948 there where major efforts to get transportation running so that basic services in the city could start up again (Baron, 1995). This included the delivery of coal to the southern parts of Germany and providing the industrial North with some agricultural produce (Baron, 1995). From 1950-1956 data shows that there was a rise in the demand



infrastructure, which began in the 1950s (Baron, 1995). Along with the restoration of infrastructure came the introduction of policies such as the federal railway law in 1950 (Baron, 1995). It stated that the national railway company would be an asset of the Federal Republic, meaning the company had to maintain its tracks and infrastructure, cover the operating costs, and provided a pension fund and insurance for their workers (Baron, 1995). The company could also claim reimbursement for non-profitable services and from any loss as a result of reduced tariffs for students or handicapped passengers.

There was also a recovery in the economy of West Germany around the same time, which meant that there was an increase in employment and this meant an increase in the amount of trips to work places (Buehler & Pucher, 2012). At this time car ownership was relatively low, as there were about 80 cars per 1000 people in Germany and for those without cars, trips were by public transport or by walking and cycling (Buehler & Pucher, 2012). When the economy of Germany eventually stabilised, the incomes of people increased and along with this was the increase in car ownership and the decline in the use and need of public transport. (Buehler & Pucher, 2012). This meant that the Federal Railway Law was doomed from the start, as there was an increase in the use of private vehicle ownership and the company suffered from a major loss of profit as the need for their services decreased (Baron, 1995). There was a decline in the trips per capita as numbers dropped by 21% (Yago, 1984).

Car ownership almost tripled by 1968, as there were about 230 cars per 1000 people. Housing also became an issue, as Germany took in about 12 million refugees in 1945. This brought about a large demand for housing that government needed to address (Baron, 1995). In the 1950s, the government granted tax incentives to people who would be willing to build houses in the outskirts of the city, which was land away from the main public transport systems (Baron, 1995). This was done in the hopes that the housing shortage would be addressed (Baron, 1995). However, this resulted in another issue, as there was no access to public transport from the outskirts, causing the first accessibility crisis in Germany (Baron, 1995). To address this issue government subsidised the purchase of private transportation to facilitate movement and access to areas of work and school in the city centre as residents located on the outskirts (Baron, 1995 & Yago, 1984). The government further went onto to subsidise the construction of road networks and arterials in most parts of the city as to facilitate the use of private vehicles all around the city and to the places that public transport could not service (Baron, 1995). The increase in private car usage brought about more pressure on public transport systems as competition increased, which resulted in the decreased use of and demand for public transport (Buehler & Pucher, 2012). The use of public transport was further decreased as the competition from private car use brought about a cut in public transport services and the fares increased (Yago, 1984).



In the 1960s the government appointed experts to try to solve the issue of private cars and public transport butting heads in urban areas (Baron, 1995). The panel of experts came to a conclusion that the different modes of transportation needed to be spatially separated, with the electric rail running underground and road infrastructure to be upgraded to accommodate the increase in car usage (Baron, 1995). This recommendation was expensive but the government devised a plan to finance 60 percent, whilst the rest came from an increase in mineral oil taxes (Baron, 1995). This plan was accepted by the government, however, bus operators and tram lines also demanded that funds be put into their operations, resulting in 55 billion Euros being invested in public transport between 1967 to 1993 (Baron, 1995).

Between 1968 and 1982 there was a change in the use of public transport, as there were two oil price shocks in the 1970s (Buehler & Pucher, 2012). "Public transport demand increased from 6.4 to 7.7 million passengers per year and from 107 to 125 annual trips per capita" (Buehler & Pucher, 2012, p. 546). The expansion and improvement of public transport services during this period also contributed to the increased use of this mode, as the investment that the federal government put into public transport through the subsidies, increased the use of public transport (Baron, 1995). These subsidies were then dropped in the 1980s and this led to another drop in the use of public transport down to 6.5 million, a 15% percent loss in passenger use, prior to the reunification of Germany in 1989 (Buehler & Pucher, 2012).

The use of public transport in 1991 increased, as the number of passengers went from 9.2 million to 11.5 million. This increase in ridership was mostly concentrated in what was formerly known as West Germany (Buehler & Pucher, 2012). The period between 1990 and 2000 saw a 12% decrease in the use of public transport, in the former East Germany, as the use of private vehicles increased by 262 cars per 100 inhabitants (Buehler & Pucher, 2012). The subsidisation of public transport development in suburban areas by the federal government ended in 1993 (Baron, 1995). However, the use and demand for public transport was generally on the rise in the whole of Germany in the 2000s and the price of petrol doubling in 2010 added to this increase, but public transport had also generally improved due to the enhancement in the "services through regional coordination of ticketing and timetables, new vehicles, real-time information at stations and on vehicles, and discounted monthly, semester, and annual tickets" (Buehler & Pucher, 2012, p. 547).

3.2.2 Current trends in public transport

Public transport in Berlin is known to be quick, punctual, and organised, making it easy for residents and tourist to make use of it (TouristBerlin, 2015). Public transport in this city is also integrated, making access to the city easy, quick, and convenient, as public transport is known to be the best way to get around



(TouristBerlin, 2015). The integrated network of public transport is operated by Berlin Transport Authority (BVG) a city-owned company (Gschwender, 2007). BVG works with a variety of public transport bodies to ensure that public transport in Berlin is amongst one of the best in the world, by introducing 24 hour services for some of the modes, with systems covering a wide network in the city, which is all run on a one ticket system (BVG, n.d.). BVG works with S-Bahn GmbH (S-Bahn) and Verkehrsverbund Berlin-Brandenburg (VBB), which are two private companies that provide efficient transport systems to Berlin and its close surroundings (Gschwender, 2007). Public transport services that run in Berlin are all under the planning and coordination of BVG and S-Bahn, along with all marketing, control over service quality and user information tasks (Gschwender, 2007). This is done in line with the city administration's strategic transport plan (Gschwender, 2007).

3.2.3 Public transport modes

An integrated network of buses, ferries, trains, and trams, with multiple interchange stations, gives riders a variety of choices when traversing the city. This integrated network also extends 15 km out of Berlin (Berlin.de, 2015). The transport systems operate in three divisions of the city, Zone A, B, and C (TouristBerlin, 2015).

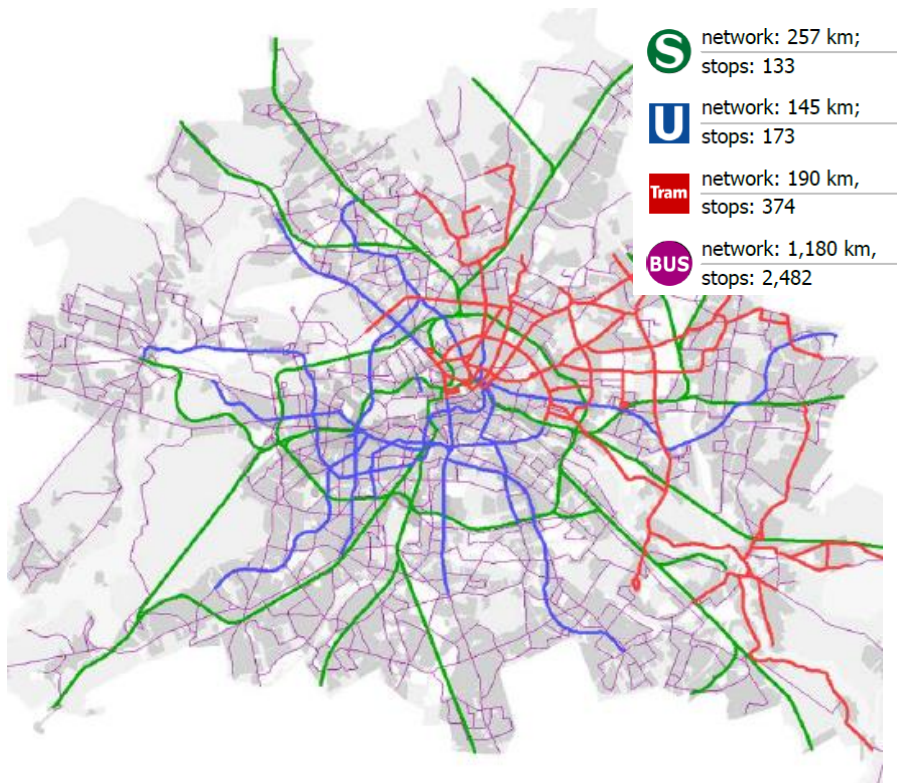
Bus- the bus system covers 149 routes with 2634 bus stops along these routes and 63 night buses with 1508 stops (Business Location Centre, n.d.). The double decker buses have dedicated lanes which improve travel times and improve the flow of traffic, as well as servicing the areas poorly serviced by the train systems (Business Location Centre, n.d.). The bus system in Berlin provides service to 381.6 million passengers a year (Business Location Centre, n.d.).

Trains- the S-Bahn and U-Bahn are the two types of trains that operate in Berlin. Both of these transport systems operate under and over ground (Angloinfo, n.d.). There are 15 S-Bahn lines with 166 station and 9 U-Bahn lines with 173 stations throughout the city and its surroundings (Business Location Centre, n.d.). The U-Bahn, opened in 1902, runs every 2-5 minutes during the peak hours and 5-10 minutes through the day and the weekend (BVG, 2015). It carries well over 400 million passengers every year which is around half of the passengers that make use of public transport in Berlin (BVG, 2015). The S-Bahn mostly operates over ground and services suburbs closer to Brandenburg (Angloinfo, n.d.). The S-Bahn transports over a million people a day (Business Location Centre, n.d.)

Trams- the tram network of Berlin is made up of 22 lines with 377 stops along these routes (Business Location Centre, n.d.). The first tram in Berlin was inducted in 1895 (Gschwender, 2007). Tram lines service the areas that are often poorly serviced by the train systems (Angloinfo, n.d.). Areas outside the Berlin boundary are also serviced by the tram, as it connects the S-Bahn stations in the suburbs to parts of the inner city (Business Location Centre, n.d.). The tram system in Berlin is said to carry 166.7 million passengers a year (Business Location Centre, n.d.).



Tickets- Public transport is run on a ticketing system, as passengers are expected to purchase tickets prior to making use of public transport. The single ticket, which is most used, is valid for 2 hours and can be used as much as needed within that time span, whilst there are other options to purchase different types of tickets that



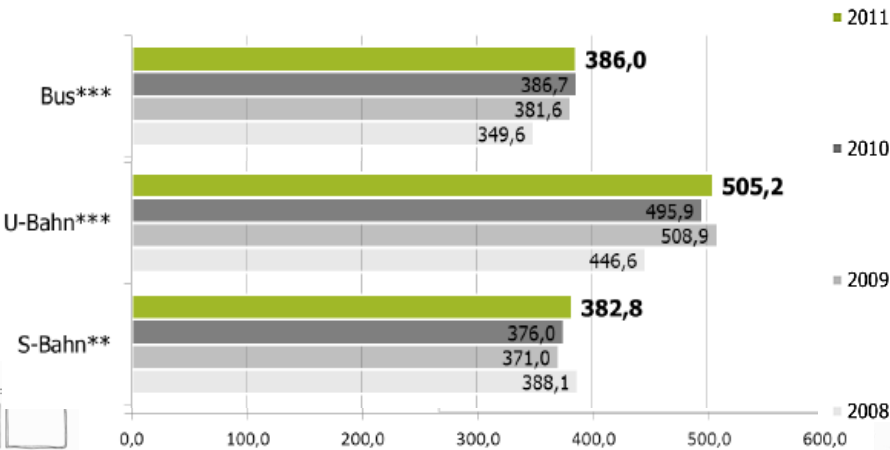
Map 2- Public Transport Network in Berlin (Stein & Runge, 2013).

areas and small metropolitans in Germany also saw a significant increase (Buehler & Pucher, 2012). Public transport in Berlin services a large portion of its population, as mentioned above, but it is the U-Bahn that transports most of these passengers (Stein & Runge, 2013). In 2002 U-Bahn took on 33%

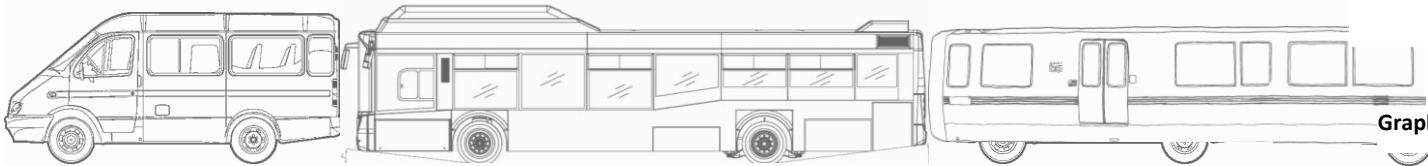
give more room for use (TouristBerlin, 2015). These tickets are also intermodal so they can be used on any public transport mode in Berlin (BVG, n.d.). A single ticket costs 2.60 Euros (TouristBerlin, 2015).

Operating times- The S-Bahn and U-Bahn start operating at 5 am and stop at 1 am during the week, whilst during the holidays and weekends they operate for 24 hours (TouristBerlin, 2015). There are night buses that run parallel to the U-Bahn routes (TouristBerlin, 2015). Trains can be accessed every 5 minutes during the peak hours of the day and every 10-15 minutes the rest of the day (TouristBerlin, 2015). A commuters journey can be planned with one map that shows all the stations and lines for the trains, buses, and tram and where all these are integrated.

Buses and trains are the most used modes of public transport. Over the last decade the use of buses has increased, whilst trains have seen a fluctuation in its use, as in graph 2. This has partly been due to the change in the supply of public transport (Buehler & Pucher, 2012). Public transport in Germany accounts for the highest number of trips taken by citizens in urban areas with high densities. However, the use of public transport in the rural

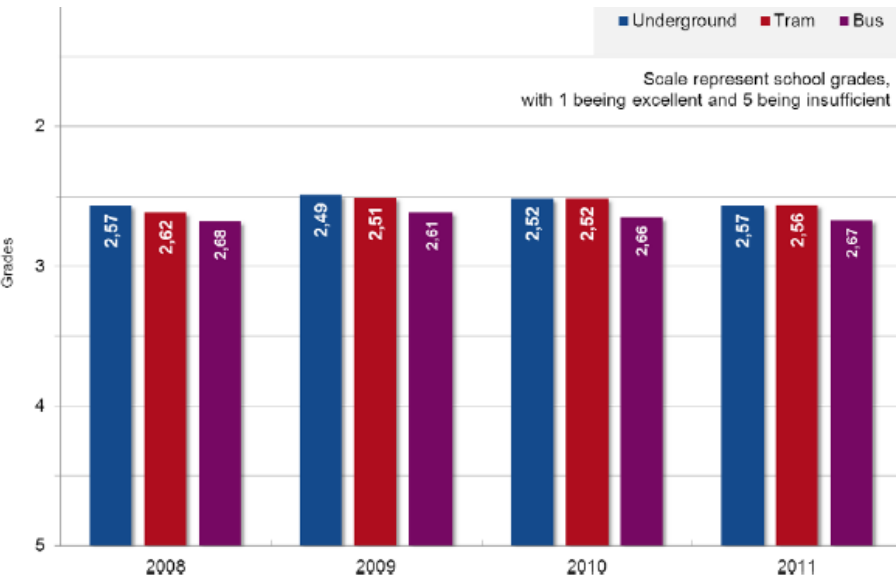


Graph 2- Passenger numbers for bus and trains in Berlin (Stein & Runge, 2013, p. 22).

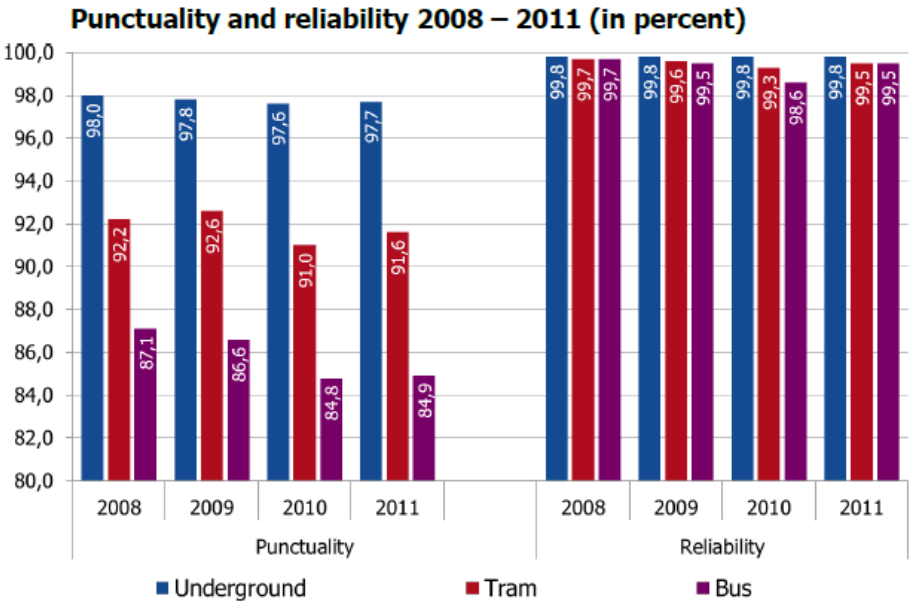


of the passengers who make use of public and brought in 399.2 million Euros from its trips throughout the year (Gschwender, 2007).

Passenger satisfaction with public transport is very high in Berlin and this could be attributed to the investment government has put into public transport (Gschwender, 2007). Graph 3 and 4 are indicators of passengers' satisfaction with public transport, as well as its punctuality and reliability, two elements discussed in the literature review, and to be analysed in the findings. The two graphs show that passengers are content with public transport, as their satisfaction averages at 2.5 on a scale between 1, being excellent, and 5 being insufficient (Stein & Runge, 2013). Whilst passengers felt that the modes were punctual 85% of the time and more and they were reliable 98% of the time (Stein & Runge, 2013). These are numbers that indicate an efficient public transport system (Stein & Runge, 2013). For a public transport that has been running for many years and has investments put into it these numbers make sense, as the public transport system in Berlin is well established and has had time to develop into the high performing public transport system that it has become today.



Graph 3- Passengers satisfaction with public transport (Stein & Runge, 2013, p. 23)



Graph 4- Pubic transport punctuality and Reliability (Stein & Runge, 2013, p. 24)



3.2.3 Policy framework

The public transport agencies in Germany have put work into “increasing productivity, reducing costs, and improving financial efficiency” in public transport (Buehler & Pucher, 2012, p. 557). Public transport authorities utilise policies that have facilitated the increase in the use of public transport across Germany. There is about 88% of the German population that lives with a 1km distance from the access to public transport. There has been an improvement in the service provision of public transport and this has brought about improvements in the reliability, comfort and convenience (Buehler & Pucher, 2012). All public transport schedules and routes are integrated, which makes connections quick and easy for passengers (Buehler & Pucher, 2012). The arrival and departure times of metro rail and light rail are available at train stations, and for buses this is available on-board (Buehler & Pucher, 2012). Dedicated bus lanes which speed up the travelling time, traffic lights prioritise trams and buses and the traffic light is signalled when a bus or tram is approaching and turns green. There are integrated multimodal websites that make planning commuters trips for the day or vacation easier (Buehler & Pucher, 2012). “Most regional public transport authorities in Germany offer integrated daily, weekly, monthly, semester, and annual tickets, which allow passengers to use one ticket for the entire trip, regardless of the number of transfers and public transport modes used during the trip” (Buehler & Pucher, 2012, p. 561).

Public transport, over the last decades has been successful in Germany. This has been shaped by the demographics, population, socio-economic, and land use planning (Buehler & Pucher, 2012). Public transport in Germany attracts a broad cross-section of society and this has brought about a greater diversity of trip purposes (Buehler & Pucher, 2012). The success of German public transport is due to a coordinated package of mutually supportive policies that include, “more and better services, attractive fares and convenient ticketing, full multimodal and regional integration, high taxes and restrictions on car use, and land-use policies that promote compact, mixed-use developments and densities high enough to support public transport” (Buehler & Pucher, 2012, p. 563).

The Integrated Transport Master Plan is the main strategic level document and sets out strategic long term goals for the development of transport systems in Germany (Stein & Runge, 2013). It sets out to achieve the following strategic goals: “ensure equal mobility chances for all, decrease air pollution and noise emission, further increase of public transport use (2008: 27 % modal share), increase efficiency of public transport while safeguarding quality of services, increase public participation and institutional co-operation” (Stein & Runge, 2013, p. 15). This is then further detailed in the 4 to 5 years Local Public Transport Plan of each city (Stein & Runge, 2013). The Local Public Transport Plan is a basic document that sets out operational and tactical plans at a local level (Stein & Runge, 2013). It is



used as the legal instrument for the development of public transport and institutionally binds operators and the city (Stein & Runge, 2013). It scales the goals of the Integrated Transport Master Plan down to the local level where it deals with service quality and transport volumes (Stein & Runge, 2013).

It is this integrated package of complementary policies that explains why public transport in Germany can compete so well with the private car sector, even amongst affluent households, creating a public transport system that is integrated, efficient and used by a wide variety of ages, classes, sexes, and races.



3.3 Johannesburg, South Africa

3.3.1 Historical overview of public transport in South Africa

South Africa has faced a long history of colonisation and apartheid. These were the two eras that built the country and the infrastructure that brought about urbanisation. The effect that these two eras and their planning systems have had on the urban environment of South Africa is one that is still prevalent in the contemporary context of the country. One such legacy, which has plagued movement systems in contemporary cities, is the lack of connectivity and mobility between the “townships” and “suburbs” and between home spaces and economic activity. This has resulted in public transportation being affected and shaped by this era in a negative way. The urban landscape of colonisation and apartheid has made national, provincial, and local government interventions, plans and programmes that much more important.

When Europeans arrived to the country and settled in the Cape of Good Hope in the 1650s, their arrival marked the beginning of urbanisation in the country, as no cities existed as of yet (GeoDiverCity, 2013). However, it was the discovery of gold in the Johannesburg goldfields that brought about the development of the largest metropolis in South Africa, and the fastest growing one too (Chu, 2001). The development of Johannesburg was established on a different system to that of the British colonies along the coast, and this metropolis in the Witwatersrand quickly became the new centre of the country (GeoDiverCity, 2013). Johannesburg today is still the centre of economic and financial activity in South Africa. However, it bears the mark of apartheid planning, thus, mobility systems through the city have been paralysed. This section of the case study review will take an in-depth look at how apartheid and colonisation shaped Johannesburg into the city it is today and what this has meant for transport systems and mobility in the city.

3.3.2 Spatial influence of the apartheid city

The history of the spatial development of human settlements in South Africa can be explained in terms of various phases, from the time of the first European settlers, to colonisation, apartheid and then the post-apartheid city.

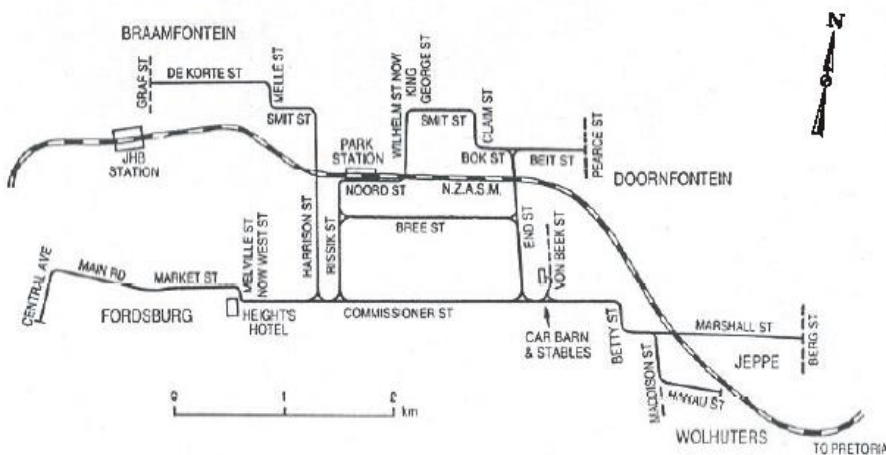
The Colonial City (pre-1910) - The European model of town planning was superimposed on the development of urban areas in the south of Africa. The political areas colonised by the Europeans assimilated the economic, cultural, and development models of Europe (Krige & Donaldson, 2000). However, European settlers ensured segregation from the beginning, as settlements that were established, were done so for their own needs. This started shaping settlement hierarchies, where European settlers stayed in the core of the settlement, whilst the peripheries were left for the indigenous inhabitants (Krige & Donaldson, 2000).



The segregation of race and class was rooted in the origin of European established settlements in South Africa. This was the foundation that apartheid was to be later laid on (Krige & Donaldson, 2000). Due to the discovery of gold in the Witwatersrand, the train systems built in the 1880s British colonies, Cape Town and Durban, had to be extended to the rest of the country to facilitate the movement of the mined goods from the Witwatersrand to the coast so they can be exported to European countries (GeoDiverCity, 2013). The extension of the railway system resulted in a rail network of 200 000 km, built over a period of 100 years. Cities in South Africa had a strong link to the development of the rail network throughout the country (GeoDiverCity, 2013). Cities that were along the railway benefited more and developed to become the larger cities in the country that were more accessible making them more central (GeoDiverCity, 2013). Smaller cities were often found further away from the rail system. Johannesburg is one such example of a city that has been grown by the mobility and accessibility provided by the railway.

There were two railway stations in Johannesburg that facilitated not only the movement of minerals, but also passengers (Beavon, 2001). The Johannesburg Station was located in the northwest of Newtown, and Park Station was located more centrally in the CBD of Johannesburg (Beavon, 2001). The accessibility of Johannesburg promoted a flow of people which resulted in stores and businesses being opened in the CBD along Eloff, President, and Rissik Street, close to the train stations, as to take advantage of the high volumes of people in these areas (Beavon, 2001).

In 1891, the first horse drawn tram system was inaugurated, as another public transport system which facilitated intra-urban mobility, as seen in map 3 (Beavon, 2001).

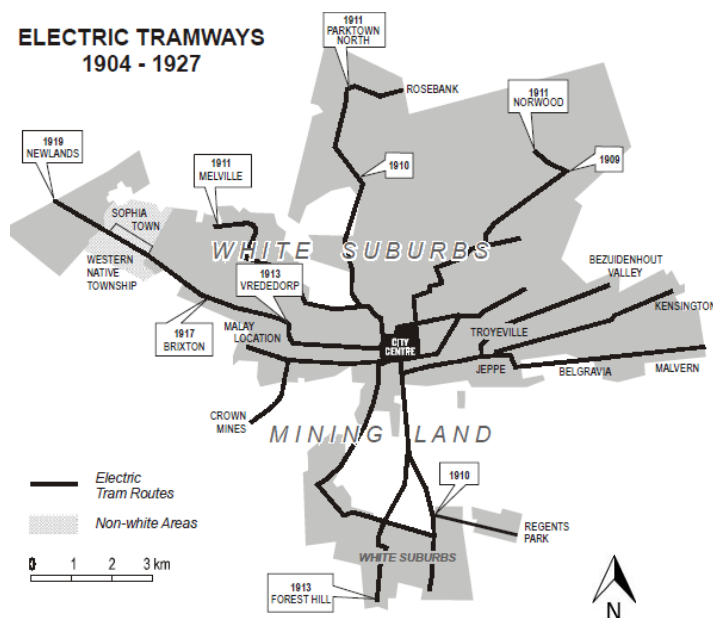


Map 3- A map of the horse drawn tram route (Beavon, 2001).

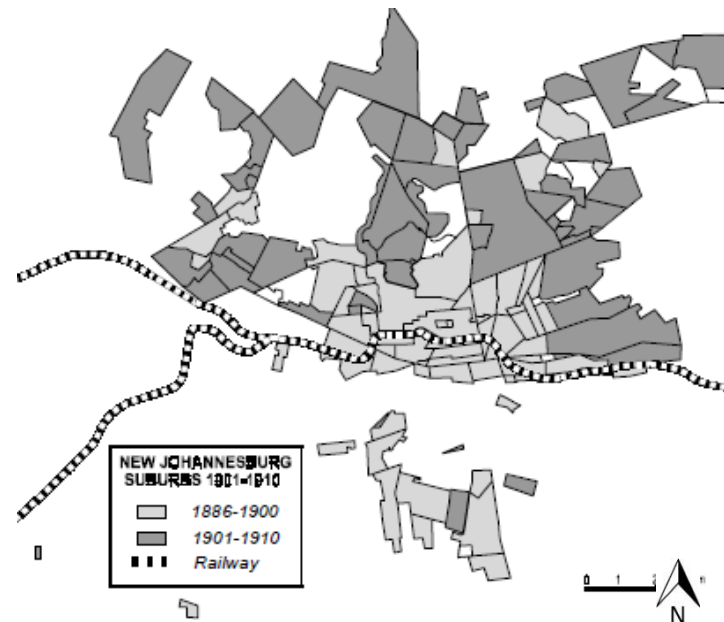
2001). The tram played a significant role in the mobility of people in Johannesburg as it carried up to 2.5 million passengers through the year (Beavon, 2001). However, this public transport system was racially segregated and was only utilised by white passengers (Pirie, 1986). The tram and the rail brought about an influx of people into the CBD and this played a major role in the growth of this business centre, as seen by the tall office buildings and the expansion of retail and businesses (Beavon, 2001).

It was in the mid-1900s that Johannesburg was taken to the next level of its urban development, as public transport and the increase in private car ownership, from 10 500 owners in 1926 to 27 500 in 1933, resulted in the expansion of suburban areas mostly to





Map 4- Electric tram terminals and routes (Beavon, 2001, p. 8)



Map 5- The growth of suburbs towards the north (Beavon, 2001, p. 7)

the northern parts of the city, where the more affluent whites lived, as seen in Map 4 and 5 (Beavon, 2001). The electric tram was introduced in Johannesburg in 1906, with a terminal established in Norwood and Parktown, and then extended to Rosebank (Beavon, 2001). Public transport to and from the townships was in bad condition and a high financial burden on the black workers who had to make use of it to get to work every morning (Pirie, 1986). There was one early morning

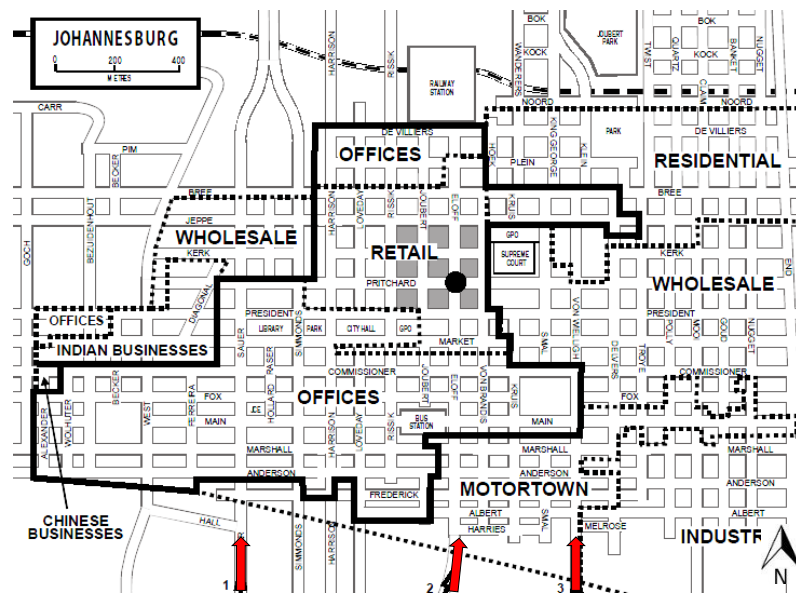
train, that was often overcrowded and chaotic, and one evening train that could not be missed or else one would have to wait till the next day (Pirie, 1986). Complaints were logged about these conditions, especially the high fare prices, this was also recognised by the Johannesburg City Treasurer's Department in 1927, as they were concerned with the provision of public transport to the south western parts of the city that would be compatible with the incomes of those residents (Pirie, 1986).

The Segregation City (1930) –The Land Act of 1913 and 1936 was a policy that legally continued the culture of racial segregation in the pre-apartheid city (Chu, 2001). This law brought about restrictions on the inhabitation of land by race, as black South Africans were restricted to inhabit 13% of the land in the country (Krige & Donaldson, 2000). Several townships were established by the mid-1930s in Soweto, the south west of Johannesburg, whilst the central and northern areas were proclaimed white areas (Chu, 2001). Public transport in the 1930s was a disadvantage in the lives of non-whites, as it offered limited access to work, leisure, and recreational activity. These activities were all found in the city, meaning the living spaces of non-whites were often without churches, sporting facilities, social



centres, and other economic activity, forcing them to travel to the central parts of the city to gain access to these activities (Pirie, 1986). However, their distance from the city, lack of public transport and high fares, meant that they were excluded from taking part in the activities in the city (Pirie, 1986). With trains being the main means of government-provided public transportation for black workers, independent taxi and bus operators emerged as to address some of the issues the black population faced with the lack of mobility (Khosa, 1992). This brought about uncontrolled and unrestricted competition amongst transport systems which led to the passing of the Motor Carrier Transport Act of 1930. It stated that there would be no transportation of passengers and goods without permission in the form of a permit from the Local Road Transportation Board (LRTB) (Sekhonyane & Dugard, 2005). However, the government made it nearly impossible for black applicants to get the permit, as only 10% of the applicants were granted permits on a yearly basis (Sekhonyane & Dugard, 2005). These permits only allowed for small 4 seater vehicles to be used for the purpose of public transport (Sekhonyane & Dugard, 2005).

The 1950s was a very dramatic period, as there was a decline in the mining of gold in Johannesburg. This gave the tertiary sector a chance to boom, as employment in the mining sector began to decrease, transforming the Witwatersrand from a primarily mining area to a metropolis maturing in the tertiary sector, making it the



Map 6- The functional zones of the CBD, and restricted entrances from the south of Johannesburg (Beavon, 2001).

leading service centre in Gauteng and South Africa (Beavon, 2001). The growth of Johannesburg outwards into white suburbs meant that thousands of people were commuting to the centre of Johannesburg on a daily basis, however there was a lack of good access into the CBD (Beavon, 2001). The lack of access from the south was due to the measures that were taken to separate the central and northern parts of the city from the south. There were only three arterial routes that came into the city along Eloff Street, Booysens Road, and Rosettenville Road, as indicated by the numbered arrows in Map 6. The lack of access from the North was due to the four subways that existed in 1936 and three bridges constructed between 1905 and 1911, which facilitated the movement of cars along a two lane route in and out the city (Beavon, 2001).

In 1936 the local authorities started paying more attention to public works. This began with the intent to improve transport links between the centre of Johannesburg and other parts, especially the north (Beavon, 2001). To improve the linkage between the north and the city



centre, bridges were constructed, and railway lines were eventually removed, as to make way for the construction of bridges (Beavon, 2001). This improvement to transport infrastructure in Johannesburg brought about more accessibility, and thus, a boom in business in the CBD. By 1933 the ownership of private vehicles had increased to 27 500, mostly from the northern suburbs (Beavon, 2001). Non-white races still had to travel into the CBD with the use of the rail, which stopped at Park Station and not beyond that point, whilst segregated buses also brought people in from the south straight to the central areas of the city (Beavon, 2001). The Public Utility Company (PUTCO) was formed in 1945 as a monopolised bus company which had the control to increase bus fares (McCarthy & Swilling, 1985). This

resulted in the Alexandra boycotts of 1940, a movement that forced the state to subsidise black public transport costs, as to bring down the fare price (McCarthy & Swilling, 1985).

The Apartheid City (1948) - In 1948 the National Party came into rule, and this marked the beginning of the apartheid era (Chu, 2001). Apartheid planning was the spatial policy used to shape the urban fabric of the country (Krige & Donaldson, 2000). This was done through the introduction of the 1950s Group Areas Act that divided the different areas of the city into four racial groupings according to the following hierarchy, White, Indian, Coloured and Black, Black being the lowest of this hierarchy (Chu, 2001). This brought about a reordering of the segregation city and the apartheid city was further enhanced by spatial elements that were put in place. These included buffer zones that served to increase the lack of accessibility between the racially defined spaces (Chu, 2001). Man-made features such as, the railway line, mining ridges, the industrial area, and roads, were used as buffers, whilst non man-made features like open spaces were used to reinforce these buffers, as seen in Figure 9 (Krige & Donaldson, 2000).

1948 marked the beginning of the elimination of trams to be replaced by buses. The elimination of trams brought about a spike in the use of private vehicles, along with the opportunity to widen some of the roads that went into the CBD to improve the accessibility into the city centre (Beavon, 2001). This caused a problem in the CBD, as the amount of vehicles entering the narrow streets of the city centre with small

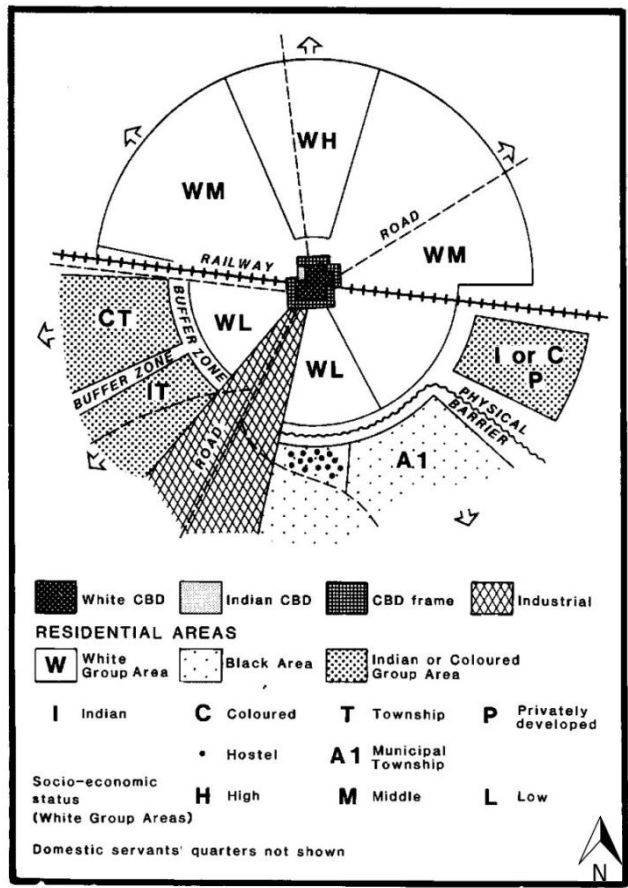


Figure 9- The Apartheid City Model (Chu, 2001)



street blocks and multiple intersections caused congestion. The amount of vehicles on the road, including buses, was 108 600 in 1956 (Beavon, 2001). A traffic plan, inspired by car dominated American cities was drawn up by traffic engineers in the mid-1950s, which led to what is seen now as the increased number of highways (M1 and N2) with off-ramps along these high capacity roads (Beavon, 2001). However, regardless of the increase in accessibility to the city centre, store owners and businesses were already propelled to relocate to the northern suburbs that also housed the wealthy clientele that their businesses targeted in the 1960s. The city became a space that put too many restrictions on parking for private vehicles, and this also pushed shopping and businesses to relocate in the suburbs and other decentralised nodes (Beavon, 2001).

Areas like Sandton housed 63% of the office space in Johannesburg in 1990, leading to the continued decline of the CBD (Beavon, 2001). As black people were moved further away from the city centre, accessibility from townships to areas of employment was not easy. Access to public transport systems in the township was difficult as the amount of stopping points and destinations were limited (Beavon, 2001). Work places were also located too far away to make cycling or walking feasible, thus, the black population was forced to “adopt to inferior, costly and time consuming public transport” (Pirie, 1986, p. 42). This led to an increase in the demand for public transport, and the start of the mini bus taxi industry (as to be referred to as taxis in this report) in the late 1970s to meet the demand for cheaper, more accessible transport (International Labour Organization, 2003). This industry came into existence at the right time, as there was a desperate need for a rapid and inexpensive transport system that had more flexible routes (Beavon, 2001) The 16 seater taxis operated illegally as the granting of permits was still near impossible to obtain and taxi drivers would either be fined or taxis confiscated by the local government if found operating without the required permit (International Labour Organization, 2003). Regardless of this, the industry quickly grew in popularity and by 1991 there were about 7000 legal taxis that operated in the Soweto region alone (Beavon, 2001).

3.3.3 Current trends

Towards a Post-Apartheid City (since 1994) - There was a turn in the policy framework of the country in 1994. Policies and legislation that relate to the spatial planning of South Africa and human settlements have been emerging since the early 1990s, and this has been heightened by the post-1994 government (Krige & Donaldson, 2000). The core of these policies and legislation lie in the eradication of apartheid planning and its spatial impact on cities in South Africa, and moving towards establishing a country that is democratic and equal for every sex, race, and age (Krige & Donaldson, 2000). Since 1994, the City of Johannesburg has continued to decentralise and a growth in the ownership of private vehicles has also continued to rise starkly (Krige & Donaldson, 2000).



3.3.3.1 Public transport modes

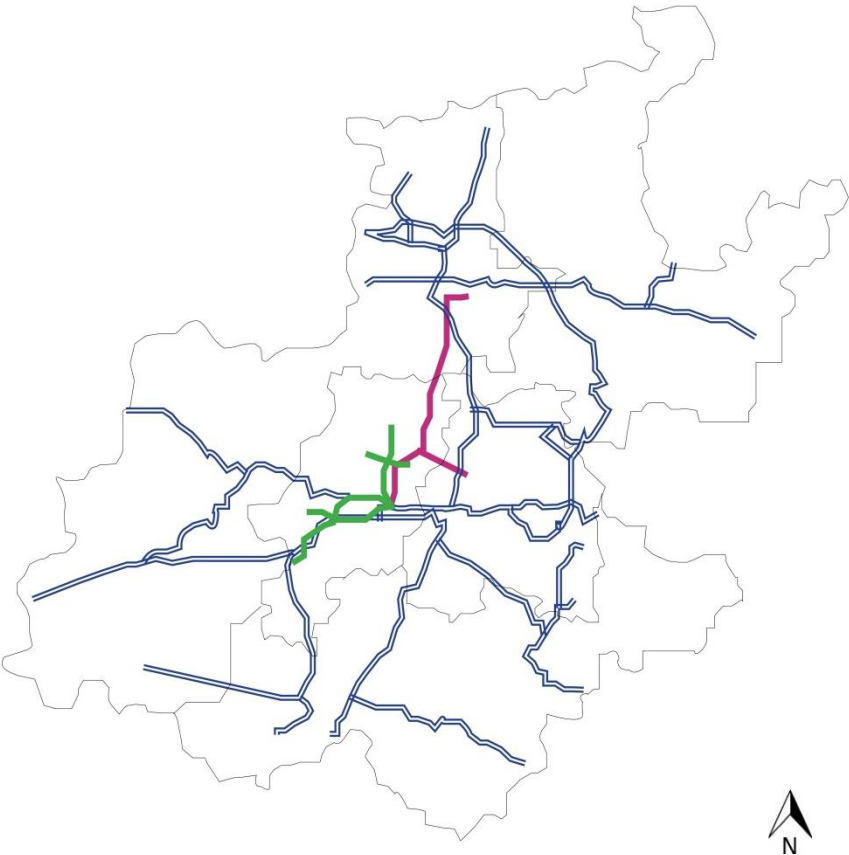
Taxis (minibus taxis) - Taxis are part of the informal public transport system in South Africa but form a large and important part of this industry (SouthAfrica.info, 2015). The 16 seater minibuses do not operate on a timetable with no formal stops and are privately owned but operate for public use (SouthAfrica.info, 2015). Taxis transport a majority of the passengers who make use of public transport, so this mode of public transport plays an important role in providing access to the city (GCRO, 2014). Taxis are the only mode of public transport in South Africa that reaches every part of the city from the poorest parts of the city to the richest (Department of Transport, 2003). Taxis are difficult to make use of for passengers who are not aware of the non-written rules of this mode of transportation. One of the non-written rules is the use of hand signs to indicate where you are going or signalling where you want to get off make it difficult for those who are not aware (Beavon, 2001).

Buses- Metrobus is a City owned company that provides bus services to the area of Johannesburg (SouthAfrica.info, 2015). There are 532 buses that operate on 80 routes and 130 routes that pass schools (SouthAfrica.info, 2015). Of the 532 buses, 6 of these have special needs hydraulic wheelchair lifts (Statistics South Africa & Department of Transport, 2014). PUTCO is another bus service that runs through parts of Johannesburg. Established in 1945, this privately run company has 1600 buses and provides access to passengers with disabilities (PUTCO, 2015). Putco services areas in the north, south, and eastern parts of Gauteng (PUTCO, 2015). The Rea Vaya BRT is the youngest bus system in Johannesburg, as the first phase of this system opened in 2009 (SouthAfrica.info, 2015). The Rea Vaya brings about a link between the city centre of Johannesburg and Soweto with 58 stations and 21 routes (Statistics South Africa & Department of Transport, 2014). This is the first rapid transit system to operate in Africa, and is modelled after the BRT system of Curitiba in Brazil (Kuo & Tshabalala, 2015). BRT buses are available every 10 minutes during peak hours and every 15 minutes throughout the day. On weekends the waiting time is longer as buses come every 30 minutes (ReaVaya, 2015)

Trains- the Metro Rail services parts of Gauteng, extending from the south in Soweto, through the centre of Johannesburg and up to Pretoria in the north of Gauteng (SouthAfrica.info, 2015). This is the cheapest form of public transport in the province, however it is also the least used (Department of Roads and Transport, 2013). As this mode of transportation was built in the apartheid era for the purpose of transporting the segregated races from the South to the city centre of Johannesburg, it does not extend to the newer areas of development like Rosebank, Sandton or Midrand (SouthAfrica.info, 2015). The Gautrain is the newly introduced rapid railway transit system that started running in 2010 (GCRO, 2014). This high end, modern network is a private-public partnership that brings about a link from the central part of Johannesburg to the Airport in the east and to the north of Gauteng in Pretoria. Unlike the Metrorail, the Gautrain has been targeted to the newer areas of development like Sandton, Rosebank and Midrand (GCRO, 2014). The Gautrain also runs a bus service that goes to the areas that its



rail does not reach. These areas are within a 15 km radius of the stations (GCRO, 2014). It costs between R23 and R61 to use the train, whilst the bus service costs R7. The Gautrain operates from 04:30 am to 21:30pm (Gautrain, 2015).



Map 7- Map of public transport in Gauteng.



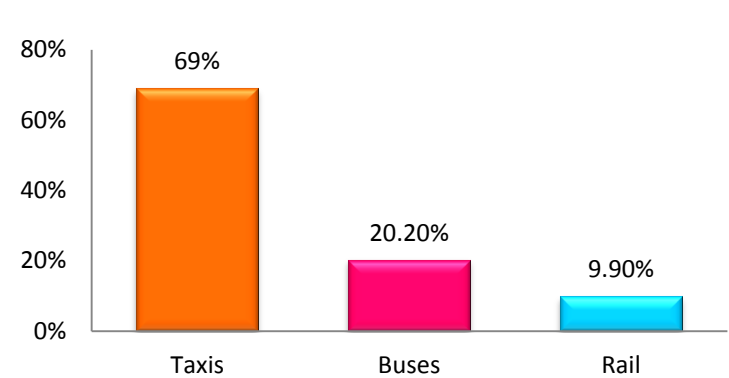
Operating times- the earliest Metro bus is at 05:30 and the latest bus is at 18:30, these times differ within different pick-up zones (SouthAfrica.info, 2015). The BRT operates from 5 am to 9 pm during weekdays (ReaVaya, 2015). Taxis do not really operate on a timetable so it is hard to give exact operating times, but these times are often influenced by commuters' working hours. The earliest people go to work is at around 04:30-05:00 am and the latest they leave work is at around 19:00-20:00 pm (GCRO, 2014). This means that taxis operate around these times (SouthAfrica.info, 2015). The Gautrain and Rea Vaya operate the latest out of all public transport systems in Johannesburg, and there is no night transport provided by any of the modes discussed above (GCRO, 2014). This leaves people stranded if they do not have any other means of accessing the city late at night.

The taxi has become the most used form of public transport today, regardless of the negative views and perceptions attached to this industry. The negativity attached to this industry came from the taxi wars that began in 1990 (International Labour Organization, 2003). Different taxi associations began fighting over having designated

routes and this resulted in the deaths of many people including drivers, owners, innocent bystanders and passengers (International Labour Organization, 2003). Due to the limited permits that were given during the apartheid era, taxi owners began operating illegally by bribing government officials to continue operating



(International Labour Organization, 2003). The same is still occurring today as most taxi owners are not registered tax payers and thus fall in the informal economy (International Labour Organization, 2003). The taxi industry has also compromised the benefits and experience of commuting, as taxis often overload passengers in the taxis and drive recklessly to maximise profits and get as many people to their destination in the shortest time (Simpson, et al., 2011). This has resulted in increased accident rates, intolerant drives and fuelled taxi wars (Khosa, 1992). However, regardless of this, it should be noted that this industry has increased the amount of access to different parts of the city for non-whites, especially the black population, making the city of Johannesburg more accessible than it has ever been (Beavon, 2001). The period after 1994 was one that the government dedicated to restructuring the taxi industry, through programmes like the recapitalisation programme, which looked to remodel the industry by removing the 16 seater mini buses and replace them with 18 to 35 seaters, as well as introducing a card system (Sekhonyane & Dugard, 2005). However the taxi industry has grown into the largest public transport provider, as it transports 69% of the commuters who use public transport in the country, as seen in Graph 5 (Statistics South Africa & Department of Transport, 2014).



Graph 5- Household use of public transportation in Gauteng (Statistics South Africa & Department of Transport, 2014)

The bus sector today has grown and transports the second largest amount of passengers in the country, as it facilitates the movement of about 20.2% of the commuting passengers, as seen in Graph 5 (Simpson, et al., 2011). However, this industry is struggling, as it is plagued with many issues such as the allocation of subsidies (Walters, 2010). This issue, amongst others, was meant to be addressed by the White Paper on National Transport, which was passed in 1996, as it was established to be a guideline for the restructuring of the bus industry (Walters, 2010). The issues faced by the bus industry have also been exasperated by the issues in the public transport industry in South Africa. These issues include, “the dominance of the minibus taxi industry, urban sprawl, automobile dependence, and poor land use planning” (Simpson, et al., 2011, p. 23). This indicates that a subsidisation from government may not be enough to fix the ills of the public transport industry.

Developed countries often have a well-established rail infrastructure system and this is not the case for South Africa as it is still far from achieving this, as this mode of public transport the least amount of commuters, 9.9% of the passengers, regardless of it being cheaper than buses or taxis (Walters, 2010). The Department of Transport estimated that 585 000 passengers were carried by rail in 2003, regardless of the fact that it received 65% of the subsidies from the government’s budget

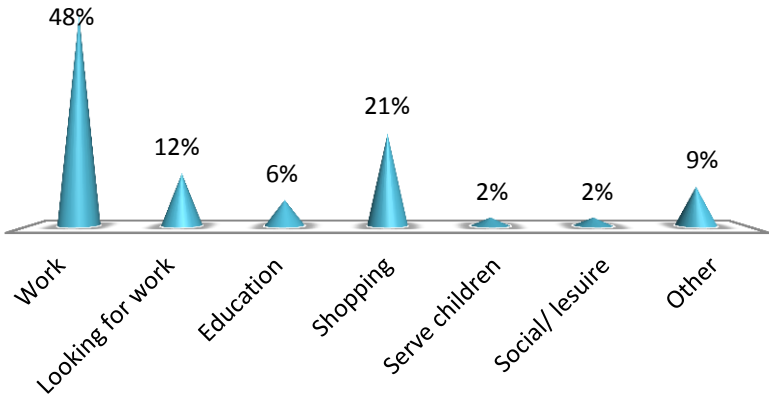


(Department of Transport, 2003). The problem with the rail system in the country is purely based on the fact that there is a lack of intermodal integration, as passengers are forced to walk long distances to access trains and buses, approximately 30 minutes, whereas the walk to catch a taxi is estimated at 15 minutes (Statistics South Africa & Department of Transport, 2014).

The public transport industry in South Africa faces a multitude of issues and challenges and this is crippling the industry. Such issues include “challenges of urban sprawl, automobile dependence, and high commuting costs are compounded by an un-integrated public transportation system which is unable to meet the transportation needs of the population” (Simpson, et al., 2011, p. 24). The lack of intermodal integration has been to the demise of the public transport industry, as the different public transport systems play a different role and would benefit more from the integration of these differences (Walters, 2010). However, integration is also sought after between transport planning and land use planning to assist in reducing issues of sprawl in the country (Simpson, et al., 2011). This along with institutional integration, as South Africa has struggled to integrate the institutions in the different spheres of government, this has resulted in industries such as public transport un-unified in its goals and objectives (Simpson, et al., 2011). Apart from issues of integration, the public transport industry also faces issues of maintenance and funding, as the road infrastructure backlog of 2010 was estimated to be sitting a R72 billion (Simpson, et al., 2011). Bus and rail subsidies face a backlog of R204 257,82 million, an indication that the government is under financial pressure and is in need of help from external sources such as the private sector (Turok, et al., 2011). The National Household Travel Survey conducted research on the dissatisfaction passengers had with taxis, buses, and trains. The most complaints received were of the “lack of taxis at specific times, no buses at specific times/late at night, taxis are too far, congestion in Gauteng and crime (Statistics South Africa & Department of Transport, 2014, p. 7).

3.3.3.2 Movement patterns in the Gauteng city region

The main employment centres in Johannesburg are in the CBD, which is the largest employment centre, Sandton, which follows closely after, Soweto and then Randburg (Simpson, et al., 2011). The most frequent trips that citizens in Gauteng make are to the work place, as seen in Graph 6, making it very important to have these employment centres highly accessible to all citizens, as this has a major effect on the province and countries' economy as a whole.



Graph 6- The purpose of trips in Gauteng (Gauteng City Region Observatory, 2014)



According to the Gauteng Mobility Survey, there is high access to public transport in the region, as the survey analyses that an average of 67% of the surveyed population live within a 10 minute walk of access to a public transport system, whilst 26% live within a 30 minute walk and 7% live more than a 30 minute walk away from accessing a mode of public transport (GCRO, 2014). The average distance one should have to walk to access public transport is 400 m, which is approximately a 10-15 minute walk, depending on one's speed (Human Transit, 2011). Thus, according to the survey, Johannesburg and other parts of Gauteng are highly accessible. However, public transport in Gauteng faces many other issues that question the quality and efficiency of public transport. Table 2 and 3 indicate the issues experienced in the three metropolitans surveyed and by mode of transport. The biggest problems faced by public transport users are; it is unreliability, un-roadworthiness and the price being too expensive. This was followed by reckless driving, rude drivers or passengers and the lack of comfort, with crime, night services, long walks to nearest stop and waiting for long being the problems that were least complained about.

		Unreliability	Unroadworthy vehicles	Crime/security	Reckless driving	Rude drivers and/or passengers	Lack of comfort	Expensive	Insufficient service at night	Insufficient service on weekend	Long walk to nearest stop/station	Long wait at stop/station
METRO	Ekurhuleni	13%	14%	3%	12%	11%	6%	15%	1%	1%	3%	4%
	Johannesburg	13%	11%	3%	12%	14%	9%	14%	2%	1%	2%	4%
	Tshwane	16%	9%	3%	14%	12%	9%	16%	2%	1%	3%	4%

Table 2- Problems with public transport by municipality (GCRO, 2014, p. 29)

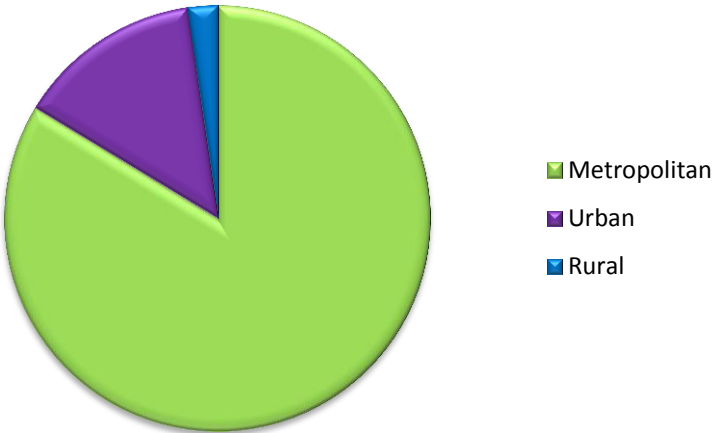
	Unreliability	Unroadworthy vehicles	Crime/security	Reckless driving	Rude drivers and/or passengers	Lack of comfort	Expensive	Insufficient service at night	Insufficient service on weekend	Long walk to nearest stop/station	Long wait at stop/station
Walk	11%	15%	2%	11%	8%	8%	16%	1%	1%	3%	4%
Car	17%	12%	4%	14%	12%	9%	8%	2%	1%	2%	5%
Taxi	10%	13%	3%	13%	13%	8%	17%	2%	1%	2%	5%
Train	18%	9%	6%	8%	8%	11%	11%	4%	1%	3%	8%
Bus	20%	9%	3%	11%	10%	7%	12%	2%	2%	3%	4%
Other	15%	16%	8%	10%	6%	10%	6%	2%	2%	3%	6%

Table 3- Biggest problem with public transport reported by users according to the mode of transport they used (GCRO, 2014, p. 30)

3.3.3.3 Student transportation

Of the 6% of the population that travels for educational purposes, 3272 students were surveyed in Gauteng for the National Household Travel Survey and 10.9% were in higher educational institutions such as the university of study, the University of the Witwatersrand (Statistics South Africa & Department of Transport,



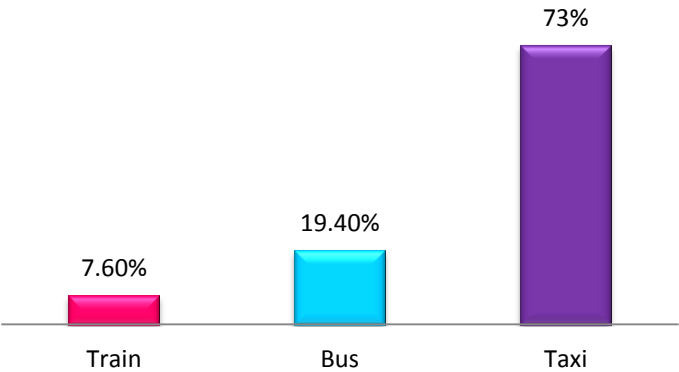


Graph 7- Geographic location of students in Gauteng (Statistics South Africa & Department of Transport, 2014)

from these different income quintiles use to travel. The survey revealed that students from lower income households relied mostly on walking to school or making use of taxis, with only 3.7% of them having access to a private car for any travel (Statistics South Africa & Department of Transport, 2014). These numbers changed for students in the higher income quintiles, as 51% of these students travelled by private car and 19,1% of them made use of taxis, as compared to the 9.3% of lower income households that use taxis (Statistics South Africa & Department of Transport, 2014). These numbers show the financial position of most students, as students from lower income homes cannot afford to take public transport and rather walk to school, as they have no other choice. Students from wealthier homes were able to afford to use private cars and public transport. This is an indicator of an issue in the public transport systems of the country and how the city is only for a select few because students from disadvantaged backgrounds are restricted from having a chance to better their family's circumstance in the city, thus, the cycle of poverty is continued. Access to mobility for everyone is the most important means of gaining a chance to access opportunities, employment and an education, so if the public transport systems of

2014). Of this number, 52.6% of higher education institution students attended class 5 days a week. 28% of these students had to travel more than 60 minutes to get to university (Statistics South Africa & Department of Transport, 2014). Of the total number of students in all types of educational institutions, the largest number of students were located in the metropolitan areas of Gauteng, as seen in Graph 7 (Statistics South Africa & Department of Transport, 2014). From these findings one could deduce that students would have easy access to higher education institutions, as most universities and colleges are located in the metropolitan areas of the Gauteng, Wits being one such university.

Most students, 31%, come from households that fall within the highest income quintile whilst 12.5% came from the lowest income quintile (Statistics South Africa & Department of Transport, 2014). The survey then goes on to study what modes of transportation student



Graph 8- Students use of public transport in Gauteng (Statistics South Africa & Department of Transport, 2014)



a city cannot facilitate the movement of its lower income citizens, they will continue to remain in the same circumstance and pass it on from generation to generation. In the Gauteng region most students made use of taxis to get to and from school and trains were used the least, as seen in Graph 8. The Metro Rail is the cheapest form of public transport, however, it is the least used. It presents a great opportunity to lower travelling cost for students, however, it is inaccessible, unreliable, and unmaintained.

3.3.4 Policy framework

From 1994 South Africa's policy framework had to accommodate all users in the new democratic country. This has been done through the introduction of a body of policies within the last 21 years of democracy. This introduction of policies began with the White Paper on National Transport Policies in 1996, the key transportation policy that guides all transport related development, planning and legislation (Luke & Heyns, 2013). The overall goal of this policy is to bring about a "smooth and efficient interaction that allows society and the economy to assume their preferred form" (cited in Luke & Heyns, 2013, p. 2). The White Paper is divided into two sections, the first being infrastructure and the second being operations and control. Public transport falls under the second part of this policy document, within land passenger transport (Luke & Heyns, 2013).

The Department of Transport has set out a specific mission for this section of the White Paper and states that its aim is to promote "a safe, reliable, effective, efficient, co-ordinated, integrated, and environmentally friendly land passenger transport system in South African urban and rural areas, and the southern African region, managed in an accountable manner to ensure that people experience improving levels of mobility and accessibility" (cited in Luke & Heyns, 2013, p. 2). The objectives of this policy were set out to link transport and settlement development, this was previously done separately and has caused many spatial problems in South Africa (CSIR Building and Construction Technology, 2001). This would bring about the promotion of people to use public transport more than the use of private transport to achieve a ratio of 80:20 usage in public and private cars (van Ryneveld, 2008 & CSIR Building and Construction Technology, 2001). The second objective was set out to make public transport affordable for commuters so they spend no more than 10% of their income on transport fares (van Ryneveld, 2008). Other objectives included the efficient provision of public transport as to optimise the use of resources allocated to this industry. This would reduce the travelling time of passengers, encouraging the interaction between spatial development principals and transport policies to acquire further support, improving the accessibility of public transport as to reduce passengers walking distance to about 15 minutes and the functions of public transport should be decentralised down to local government (CSIR Building and Construction Technology, 2001 & Luke & Heyns, 2013).



The White Paper on national transport has been tasked with the objective to link transport and settlement development, something that was previously done separately and has caused many spatial problems in South Africa (CSIR, 2005). The White Paper seeks to provide efficient public transport that discourages the use of private cars, improving the access to public transport and planning settlements that do not require the use of vehicles (CSIR, 2005). This has yet to be seen as settlements are still being built far away from economic centres, public transport is not efficient, it does not accommodate a variety of users from different classes, there is an immense amount of segregation, and access is not available to everyone. The White Paper has laid the foundation for all the right things to be done, but this is not what is actually happening.

Moving South Africa (MSA) was introduced in 1998 by the National Department of Transport with the aim of developing a long term strategy and support in the realisation of the vision, as set out in the White Paper (CSIR Building and Construction Technology, 2001). The vision of MSA for public transport is to provide a public transport system that meets the needs of users who are currently marginalised in the country, this includes scholars, tourists, users with disabilities, and long distance passengers (van Ryneveld, 2008). To achieve the vision of the MSA there must be a provision of a transport system that is effective, sustainable, planned, and regulated at the local level (Luke & Heyns, 2013). The objectives of the MSA largely focus on public transport as seen in Figure 10.

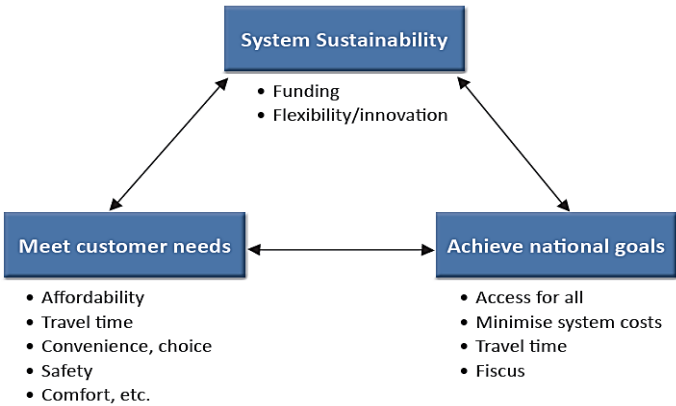


Figure 10- MSA public transport objectives (Luke & Heyns, 2013, p. 3)

The National Development Plan (NDP) of 2012 was aimed “at addressing and eradicating poverty and reducing the inequality in South Africa” (Luke & Heyns, 2013, p. 3). The NDP is a long term strategy that looks at the factors that affect the society and the economy of South Africa. Investing in the infrastructure and improvements in public transport are key priorities in the 2030 objectives of the NDP (Luke & Heyns, 2013). The following objectives are meant to address poverty: investing in public transport to facilitate mobility for low income households, creating a safe, affordable, and reliable transport system that bridges the gap between economic opportunities, social spaces, and services that were previously not accessible to everyone (Luke & Heyns, 2013). Some of the planning and public transport priorities include attracting investments from the private sector to increase public transport investment, improving all issues that are being experienced by the BRT, decentralising the management of transport to the local level, brings about incentives for the use of public transport by subsidising transport for lower income passengers and increasing the cost of owning a private car to motivate people to use more public transport, improving road infrastructure and lastly, renewing and maintaining train fleets to maximise on its low cost for commuters (Luke & Heyns, 2013).



The end of apartheid left townships and black areas without thriving local economies, and South Africa was dominated by a low skilled workforce. This is why the policies and legislations that have been enacted and discussed above have played a major role in shaping and influencing the development of transport systems. This has been to promote socio-economic development in Gauteng through creating a system that is integrated and environmentally sustainable, but also providing efficient services. What is being said in policy documents sounds promising however, “a gap is appearing between what the policy says should be happening and what is actually happening. This gap is most likely a result of a lack of government capacity to meet the policy objectives” (Trusler, 2003, p. 504). In 2002, former president Thabo Mbeki argued that the challenges that were faced by government would not be solved by changing the policies, but to rather make sure that these policies were implemented (Khosa, 2003). In this statement there are two important points of analysis. The one being that government policies from 1994 are appropriate. The second point is that the issue with the slow delivery of services and the gap between policies and their implementation is due to the manner in which these policies are implemented. There are different ways to look at this debate, as some feel that the implementation problems the country faces are due to the lack of managerial skills and the lack of human resources and capacity (Khosa, 2003). Other views point in the direction of the public policy making process as being the actual problem (Khosa, 2003). There exists a complicated and sometimes even contradictory relationship between the policy making process and the implementation of these policies. The problem lies in “the articulation of policy making and implementation that often results in a crises in policy implementation” whilst there is also a need for policies to be slightly more realistic (Khosa, 2003, p. 5).

The success of German public transport is due to a coordinated package of mutually supportive policies that include, “more and better services, attractive fares and convenient ticketing, full multimodal and regional integration, high taxes and restrictions on car use, and land-use policies that promote compact, mixed-use developments and densities high enough to support public transport” (Buehler & Pucher, 2012, p. 563). Whilst South Africa faces a multitude of issues and challenges that are crippling the industry, these issues include “challenges of urban sprawl, automobile dependence, and high commuting costs are compounded by an un-integrated public transportation system which is unable to meet the transportation needs of the population” (Simpson, et al., 2011, p. 24). These are two contradictory cases that reveal the importance of capacity and having the means to establish a good public transport system that does more than just enable mobility. A combination of policies, financial means, capacity and the built environment are needed to establish and maintain good public transport systems that work for and include everyone. This is shaped by the demographics, population, socio-economic, and land use planning.



Chapter 4 Findings and Analysis

After conducting a series of interviews on students at the University of the Witwatersrand and studying the current and historical trends of public transport in Berlin and Johannesburg, as two comparative cities, this chapter synthesises this information to answer the research question, “How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?” With an understanding of the background of the two cities, the historical events that shaped its current trends, the policy framework that guides it forward and the literature on the city, public transport and students. Chapter 4 makes use of this research to analyse the information and understand what this means in answering the research question.

Ten students were initially interviewed from Wits University, however two of the students were sent the questionnaire via email, and their responses were not adequate enough as it seemed it was done in a rush or haste, because of the lack of in-depth answers. For this reason 2 of the interviews were not used and only the 8 interviews conducted face to face were used. The interviews that were to be conducted on the TU Berlin students were not successful as only one student responded to the questionnaire, the other students were not able to answer the questionnaire, as none of them responded to my emails and the notifications that were posted on Facebook by my 2 student liaisons in Berlin. This issue may be due to the fact that students in Berlin were on holidays in the time of the questionnaires being conducted. Due to these unforeseen circumstances, that are out of my control, the comparative study will be slightly limited, however, where information can be compared from the interviews with information from the literature and case study review, this will be done. The results from the Wits study will be analysed independent of whatever the outcome of the interviews would have been in Berlin. However, the information available on students in Berlin will be used in parts of the analysis. Thus the next section of this chapter will give a brief profile on each of the students interviewed followed by a discussion of the data that was collected and what this data means.

4.1 Interview questions

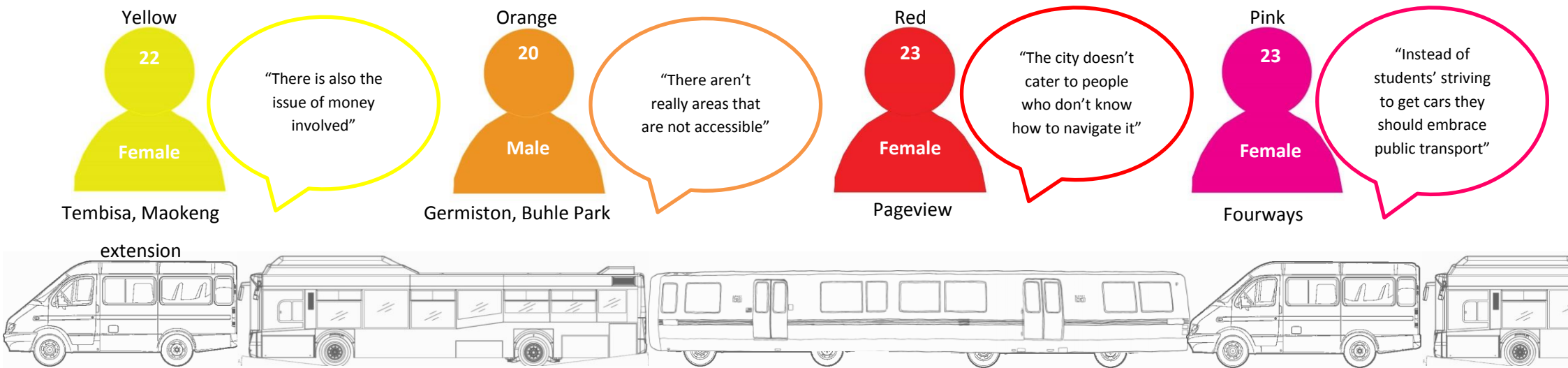
A series of interviews were conducted on students at Wits University, from different degrees, sexes, and ages. The interview questions were divided into three sections: the first being a set of personal questions, that looked to understand their demographics and location within the city they live in, the second set of

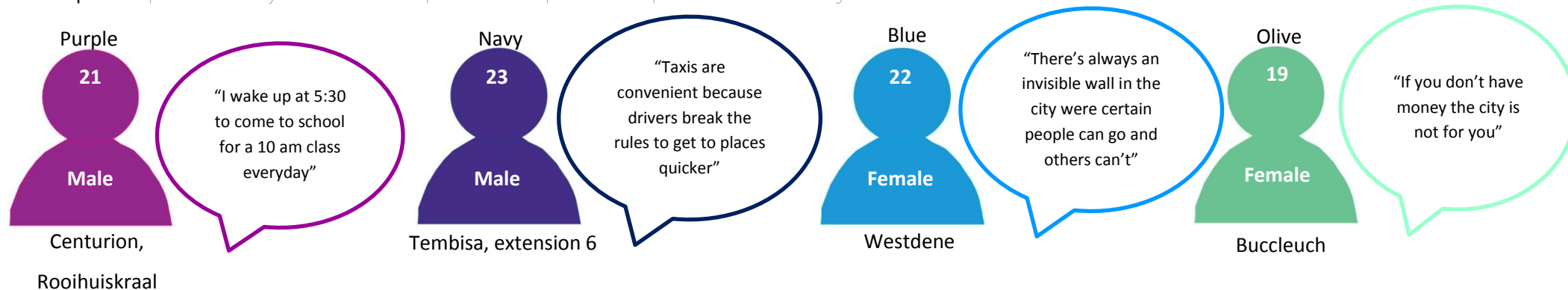


questions was based on the students' lifestyle to understand what type of lifestyle they want to pursue in the city, if this is possible and what restrictions hinder them from doing this. These set of questions help us grasp if students are able to exercise their right to the city by participating and experiencing everything the city has to offer. The last set of questions are based on understanding the mobility of the student, specifically what modes of transport they use and if they feel this is an efficient public transport system according to the questions asked about the elements of efficiency, as set out in the criteria discussed in the literature review. This set of questions tackles the main topic, which is public transport, and if this influences the participation and experience of students in the city. Thus, the interviews will bring about an understanding of the three concepts discussed in the literature review, the city, public transport and students by looking at students' right to the city and if this is facilitated by public transport through the lens of students at Wits. The questionnaire begins to also challenge students to interrogate their positioning in the city, what this means to them, and how this is affected by public transport.

4.2 Interviewee profiles

This section of Chapter 4 will give a brief profile on the students who were interviewed, by looking at their age, sex, cities of origin and one statement that was made during the interview that stood out. This will help the reader familiarise themselves with the interviewees and follow their narrative through the rest of the chapter. The different dynamics of the group also assist in obtaining better outcomes in this report, as the group will be a fair representation of the student body at Wits. Views and opinions also differ amongst sexes and ages, thus, having a variety of students and response to the questions that have been asked in the questionnaire. Of the students that were interviewed 4 were females, aged between 19 and 23, while there were 4 males, aged between 20 and 23.



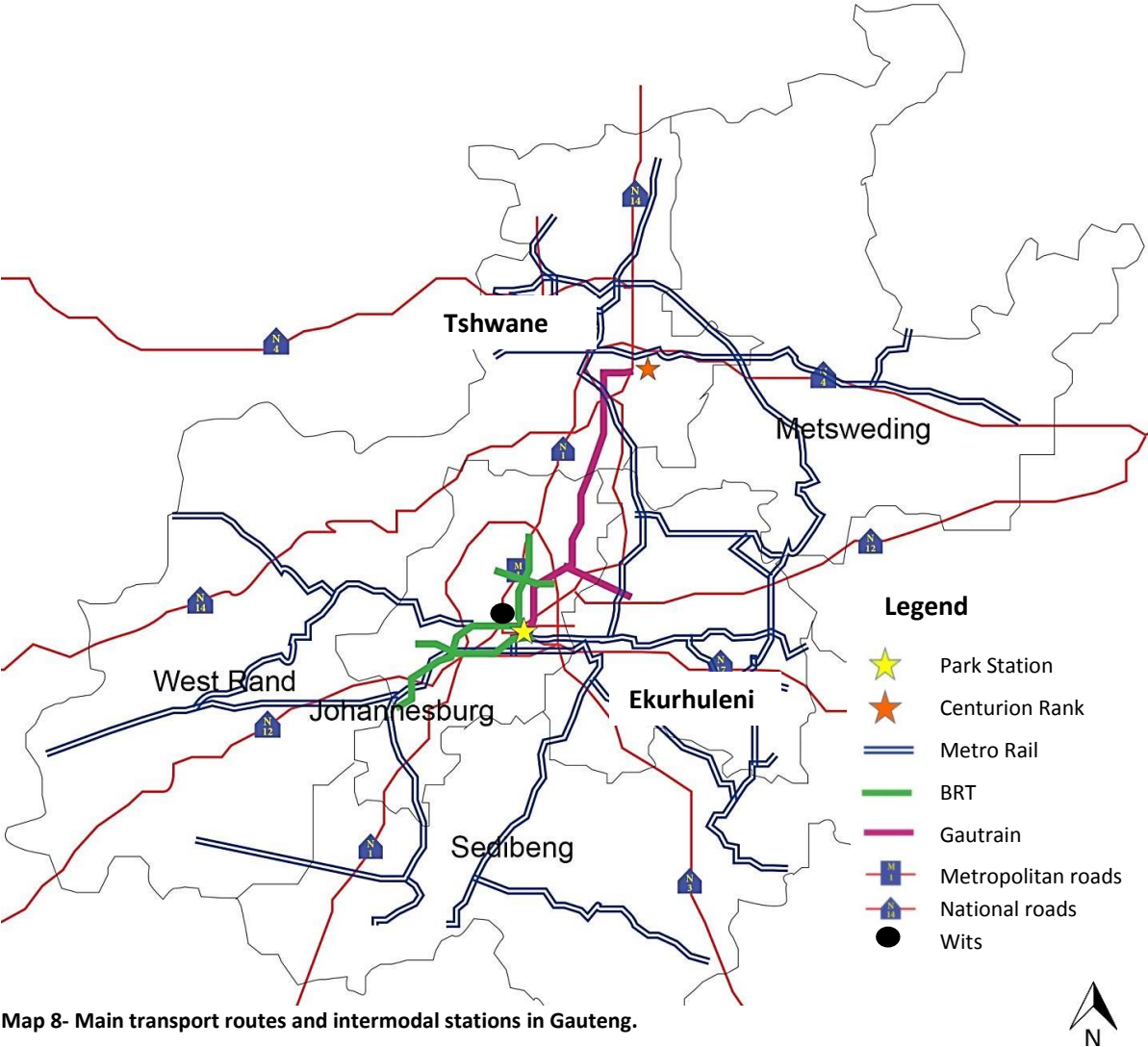


4.3 Location location location

Cities have been developed in a sprawling manner, which has created an environment of compromise for the poor population of the city (Newman & Kenworthy, 1999). Land is often cheaper in the outskirts of the city, and the poor often forfeit their proximity to the economic centres of the city to gain access to cheaper housing located further away. Rich households are also located on the outskirts, as land is larger, however, they have the means to access the city (Newman & Kenworthy, 1999). Families who are forced to rely on public transport spend up to 40% of their household income to gain access to the city (Newman, n.d.). This highlights the importance of public transport in its ability to relieve the strains of mobility experienced both by the poor and rich.

This section begins by locating spatial aspects through the use of maps, and understanding what this means and how this will help answer the research question at hand. The spatial aspects to be mapped out include, transport systems such as main roads, the BRT routes in Johannesburg and the 2 rail routes, Gautrain and Metro Rail. The location of the students is located in relation to Wits University on another map to show the locations of their activity, whether it be social or academic, in relation to their homes. Each person who was interviewed has been colour coded in the interviewee profiles and this is used to correspond with their information on the maps, as to make the maps visually understandable. The locations of the activities is scrutinised in terms of what role public transport plays in bridging the spatial gaps between their home, university and other activities. The first map introduces the transport systems within the whole of Gauteng, however, the space of study in the second and third maps are reduced to a 50 km radius (40-45 minute drive) from Wits University to keep the space of analysis intimate and compact to achieve an in-depth analysis of the spaces close to and around the institution.





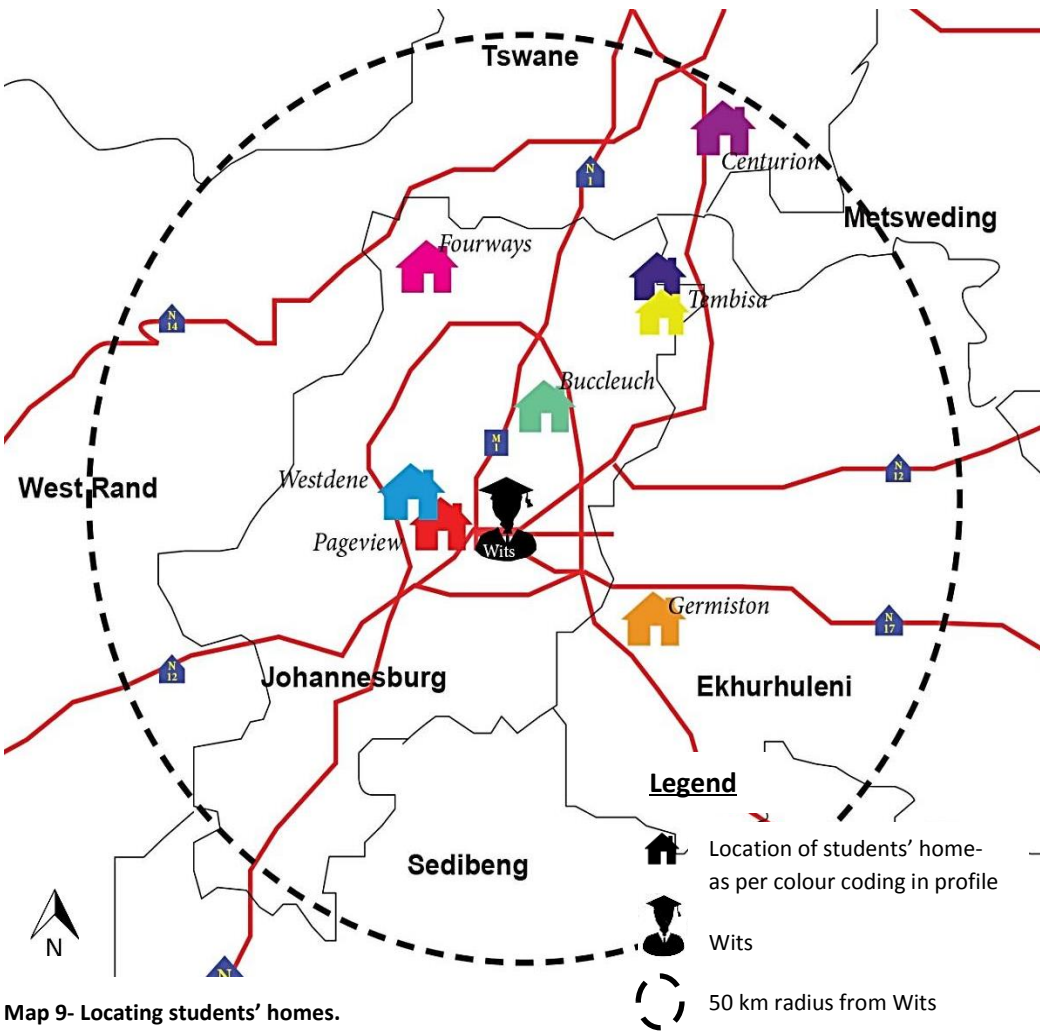
Map 8- Main transport routes and intermodal stations in Gauteng.

Gauteng is well connected to the north, south east, and west of the country, as national roads pass through the province (GCRO, 2014). The CBD and surrounding areas to the north of it are enclosed by a circle of National and Metropolitan roads N1 and M1, making this one of the most accessible places in Gauteng from any direction as seen in Map 8. Wits is also located in this circle, making it is very accessible. Access is vital, as Jefferson (1996) states that “the quality of life and livelihood of an area depends on accessibility to a wide range of people from the surrounding neighbourhoods and regions” (Jefferson, 1996, p. 179). Close to Wits is an intermodal transport facility that accommodates the Metrorail, long distance buses, a Rea Vaya station just outside, along with a Gautrain station outside as well. Noord Street taxi rank is a 5 minute walk away from Park Station. Another intermodal facility is in Centurion indicated by the orange star, at this rank there are taxis and Tshwane buses can be caught by passengers. One of the elements identified in the criteria of an efficient public transport system is having intermodal connections to increase access for passengers, as they deserve the right to be given a choice when in need of public transport. Through intermodal connections passengers

can utilise a variety of public transport modes to get to their destinations the best way they can. There needs to be a versatility and ease of integration between the different modes of public transport (Jefferson, 1996). Gauteng has six municipalities and there is only one appropriate intermodal facility that accommodates a

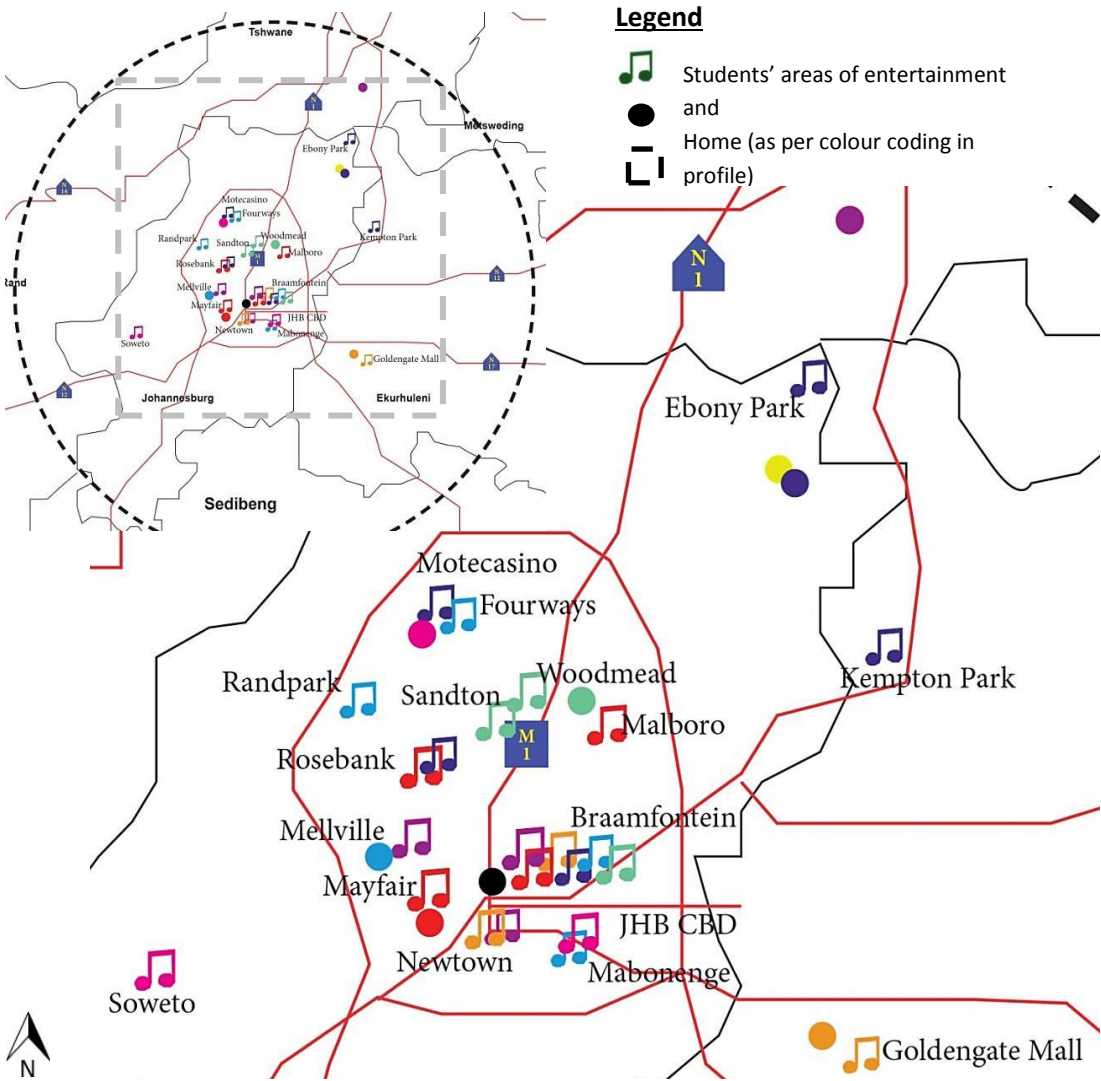


variety of public transport modes. This shows a lack of intermodal connection which hinders maximum accessibility to other parts of the city (GCRO, 2014). However, Wits is very accessible due to the intermodal facilities close by and the access provided for private motor vehicles off the major Metropolitan and National roads connecting to the university as seen in more detail in Map 9.



Ranked one of the top universities in South Africa, Wits has been a popular option for students all over the country (Top Universities , 2015). Students who live close to the university, approximately within the demarcated 50 km radius, a 45 minute trip, can afford to make use of public transport, and are not forced to pay for rent at an accommodation close to the university, that will cost them between R2500-5000 every month (SA Commercial Prop News , 2012). However, there are a number of students who have relocated closer to university and prefer living at university than commuting every day. Other reasons for making use of public transport, regardless of ones close proximity to school, is purely based on the fact that there is a high demand for accommodation in and around Wits, and if a room or apartment is not reserved on time students will be met with disappointing results that leave them with no other option but to spend hours travelling with public transport from a location that is no more than 45 minutes away by private car (SA Commercial Prop News , 2012). The location of the students lays the basis for the analysis of public transport and how effective it is in making the lives of students easier through improving their right to the city. This locates activities – spatially as to understand the relationship between spaces and transport, and how this may mitigate spatial mismatching, as well as how students' movement in these spaces is affected and shaped by public transport (John , 2004).

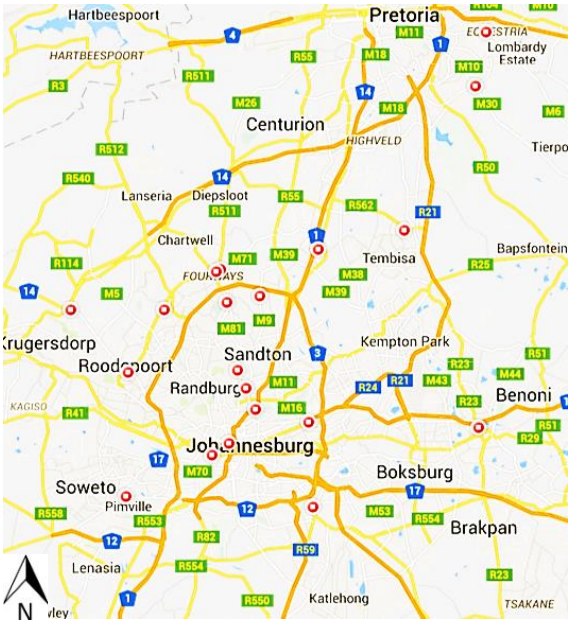




the centre of Johannesburg also house some of the largest taxi ranks and shopping complexes, indicated in red dots in map 11.

4.4 Lifestyle

The students were asked what activities they like to pursue in the city and which parts of the city they go to to find these activities. Some students said they enjoy going to the cinema or out with their friends, others said they go to galleries, clubbing, or shopping. Map 10 indicates which parts of the city this group of students go to to find the activities they have mentioned. An interesting trend was revealed after mapping out the locations students go to for entertainment. Most of the locations are situated within the ring road, from the CBD up to the north of Johannesburg. As discussed in the case study of Johannesburg, economic and financial activities that were previously located in the centre of Johannesburg relocated to the north in the 1960s and have ever since continued to expand from Sandton, to Rosebank, Melrose Arch and up and coming areas like The Waterfall Estate (Beavon, 2001). The north and



Sandton City, Melrose Arch, Hyde Park, Rosebank Mall and the Zone, Woodmead retail park, Fourways Mall and Fourways Crossing, Montecasino and Newtown Junction are some of the malls indicated in Map 11 (Google Maps, 2015). The Noord Street taxi rank is the largest taxi rank in Johannesburg whilst Alexandra, Randburg, Sandton, and Rosebank taxi ranks are some of the main taxi ranks in the city that are also located within the ring road, where most of the activities listed by the students are concentrated (GCRO, 2014).

There needs to be a stronger link established between public transport, spaces of activity, the socially excluded, as determined in the literature review, and other areas where people live. It is in the crises of access and exclusion faced by cities that access to the city becomes important, by access to the city this mean “establishing physical presence in the city, consolidating presence, and developing belongingness” (Bawa, 2008). An efficient transport mode is accessible to everyone, promotes the right to the city, and dose not exclude (Morales, 2010). Students were asked “which parts of the city are more and which parts are less accessible for you?” Their answers are seen in Table 4.

Most of the students said that the most accessible parts of the city are the parts that have access to public transport and are located close by. The areas of the city that they felt were less accessible to them where areas that had no public transport or were too far away. This goes to show the importance of public transport and how accessible it makes places in the city and mitigates physical and geographical exclusion (Sullivan, et al., 2000). Accessibility is a concept that explains how the lack of accessibility to a transportation mode prevents people from being mobile, further preventing them from engaging in activities and opportunities, which brings about social exclusion (Morales, 2010).

Accessible	Less accessible
“CBD”	“West Rand- no transport”
“Soweto”	“Parktown-it’s far”
“Places I can easily access with a taxi like Alberton- there are taxis to this place and a lot of things to do like going to Goldenwalk mall”	“Places where there are no people using public transport, isolated places like office parks or suburbs where people rely on private cars”
“Places closer to taxi ranks- Wits”	“Sandton- because its expensive”
“Areas close to me like Braamfontein and home (Pageview)”	“The outskirts, taxi may not go there”
“Places that are close to me and I don’t have to travel far- Sandton, CBD and the surrounding areas”	“Soweto and Pretoria because they are far and I am not familiar with these areas”
“Anywhere there’s a Rea Vaya bus”	“Places where I don’t have access to public transport”

Table 4- Areas of the city that are more and less accessible to Wits students.



The students listed the areas that were the most accessible to them when they are pursuing activities in the city. This section of analysis indicates three things. The first is that the different elements that make up urban environments need to work in conjunction to create cities that are enjoyable and serve the needs of every person, through the coordination between public transport and economic activities in the city. The nature of public transport along with the form of the city can solve some of the issues that bring about the different types of social exclusion. This makes these issues important to transport policy makers as there is a need to bring about an understanding of the value that public transport has in creating socially inclusive cities, that allow everyone to participate, unhindered by social, political, spatial or economic factors. The second point is the crucial role public transport plays in how students function and participation in the city. The right to the city is understood as the right that everyone has to occupy any public space of their choice and engage with the city, a right for citizens to be involved in the city making and planning process, and a right to be included in all urban policies that enable the participation of individuals in all areas of urban life (Morales, 2010 & White, 2015 & Sullivan, et al., 2000). Within this definition, equity and justice in public transport is thus considered a right to all citizens of the city. Lastly, public transport and the city carry the power to shape each other and the lives of those who live in the city, as they determine where people can and cannot go, what people can and cannot do and, as to be discussed, how long you can stay out doing all of these things. This brings about questions around the power that urban environments have over people (Sullivan, et al., 2000). As cities are meant to be made for people, shaped after the desires of people, students should be able to move around as they please, do what they want, when they want to and at whatever time suites them (Park, 1967) . However, do cities in South Africa allow for this freedom to happen, or is it a restricted freedom?

When opportunities are accessible, then peoples desires can be fulfilled (Scott & Horner, 2008). The location of these opportunities in the spaces of the city is determined by those who provide the opportunities. The entrepreneurs, the private or public sectors, business owners, and the government are the entities that decide the best locations according to practical reasoning such as profit maximisation. These entities do not always consider the welfare of society or issues of equity (Scott & Horner, 2008). This has resulted in urban landscapes that disadvantage certain groups or individuals, as this may hinder their access to the locations of needed activities (Scott & Horner, 2008). This is known as spatial mismatch, an issue that can be solved by public transport. South Africa especially, suffers from issues of spatial mismatch due to apartheid planning systems that segregated activities according to race. This is still seen in the urban fabric of the city, making public transport extremely important in bridging the gap between these segregated spaces for students to access any part of the city.

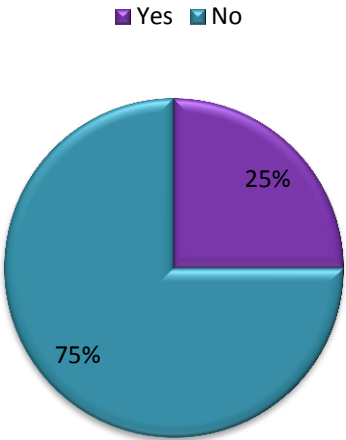


4.5 Does public transport make life easier?

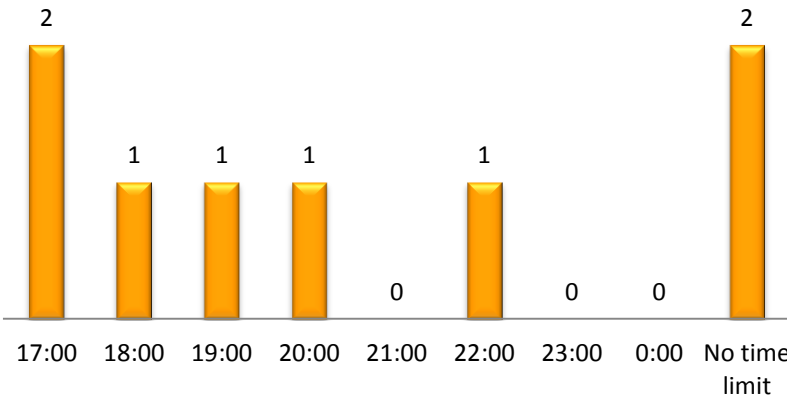
Public transport will continue to play a major role in mitigating the issues faced in urban areas and the people who may be affected by some of these issues. Thus, the use of public transport needs to be increased through creating a system that is efficient. This is critical in creating cities that are accessible to everyone, as it makes life easy and convenient in the city. A student should not feel he or she is unable to do all the activities they would like to pursue in the city because they do not have the financial means or a private car.

The students were asked questions about the city being an inclusionary space for all. Keeping in mind that they had access to the places they wanted to go to because there was public transport available to those places, question 12 reveals something else. Students were asked the following: “ Do you feel that you are able to do all the activities that you would like to do in the city?” 75% of the students answered no, whilst 25% said they were able to do all they needed to in the city as seen in Graph 9. Some of the reasons the students answered no was because of financial constraints, issues of safety at night and the lack of transport at night. This questions how free students are to do as they please when they please, because money becomes an issue, safety in the city and the times at which they can go out. Some students are restricted from doing all they would like in the city because of public transport.

As stated in the criteria for efficient public transport, availability is very important. Public transport should be available 24 hours a day at affordable rates, so everyone who wants to participate in the city at any time can do so and not be restricted by the operating times of public transport. Students were asked how late they can stay out in the city pursuing the activities they mentioned above, and most of the students could not stay out later than 10 pm because of transport issues after this time as seen in Graph 10. The city should be a 24 hour destination, thus, there should be access to mobility 24 hours a day (Litman, 2015). Public transport needs to cater to the needs of people at any time of any day. If a person wants to go out at night they should not experience issues of mobility due to the lack of



Graph 9- Do students' feel they can do everything they need to do in the city?



Graph 10- How late can the students stay out in the city



public transport available at that time, or at the time of one's return. If public transport stops operating at early hours, people are left stranded and public transport becomes one of the dictating factors in when they can participate in the activities of the city (Litman, 2015).

Berlin has 24 hour services offered by U-Bahn and S-Bahn on the weekends, whilst there is a night bus available 24 hours a day (Berlin.de, 2015). From personally experiencing life in both of these cities, Berlin is a 24 hour city, as it is active throughout the day, and most of the night, with women freely walking around, this brings about vitality in the city. I was able to stay out till 3 am in Berlin and felt comfortable enough to make use of public transport as a female on her own in a foreign country. In South Africa one is more restricted as the city does not operate for 24 hours. This is seen in the lack of public transport available after 10 pm, as stated by the students. However, besides this, there are also issues of crime and a lot of students were not able to stay out too late, as they did not feel safe. As a student who lives in Braamfontein, a 2 minute walk away from Wits, I do not feel safe walking around after 7 pm, as it becomes very quiet and almost deserted in certain parts of the city. This restricts me from even going to university in the evenings sometimes, leaving me in the same position as students who live far away from school and are restricted by public transport. This makes Johannesburg a city that is hard to participate in at different times if you do not have a private car or the money to afford a private taxi/cab or an Uber.

The students were asked if they felt that the city is made for everyone to participate in. All students said no. Here are the responses:

"The design accommodates cars and there aren't many walking paths and wheelchair ramps. There aren't many cycling lanes, the one that are there are used for parking by cars and taxis"- Yellow

"It's hard for certain people to adapt to the city life, such as handicapped people. It is also hard when it comes to public transport. Buses accommodate them, but not taxis."- Orange

"Pavements are bad in JHB. Pedestrians aren't catered for"- Red

"There are niches that do not accommodate everyone or give access to everyone. There's always an invisible wall where certain people can go and others can't"- Blue

"If you don't have money the city is not for you. Areas are still socially and racially segregated"- Olive

"Pavements don't accommodate all movement so walking in the city is hard for the blind and financial means- Sandton, Braamfontein areas that are too expensive so they exclude. Areas with WI-FI are exclusive and students' would like to access these spaces but most restaurants you need to buy from to gain access"- Purple

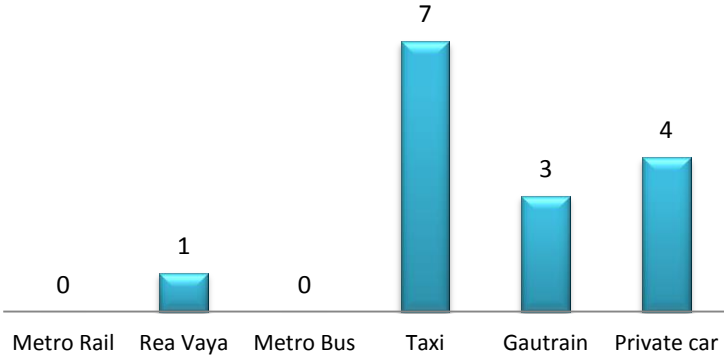
"The city doesn't facilitate people's safety of access to the city"- Pink

"Accessibility has to do with whether you can afford it and if there are places you can ride a bike to. Access is an economic strain and the design is also strenuous for those who can't finance their travels if they need something"- Navy



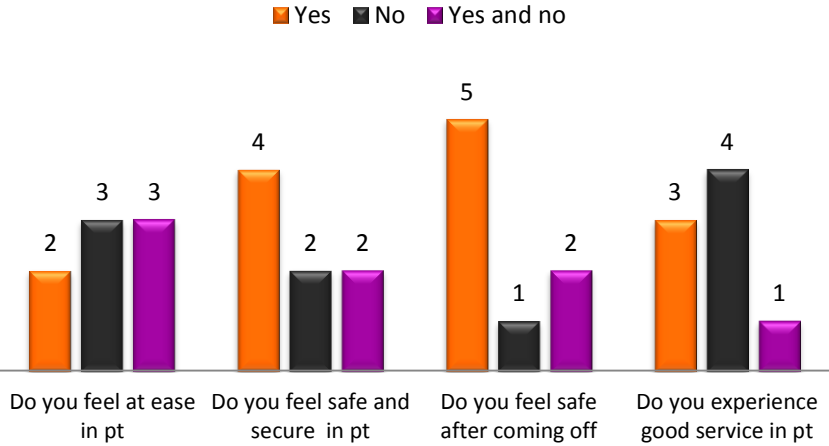
As “the right to the city” is understood as the right that everyone should have to participate in all the activities and opportunities offered by the city”, no one, no matter who you are, how much you earn or where you come from, should be excluded (Morales, 2010). The city is a space that should speak a universal language that must be understood and written by all. Urban sociologist Robert Park (1967) states that the city is a world that has been created by man as “man's most consistent and on the whole, his most successful attempt to remake the world he lives in more after his heart's desire” (Park, 1967, p. 3). Public transport should mirror the desires of people, as students, just like all other citizens, should not feel like they are visitors in a foreign land where they cannot influence and shape the activities of the city. The Bill of Rights in the Constitution of South Africa states under section 22 (1), Everyone has the right to freedom of movement (Constitution Court of South Africa, 1996). When people cannot do all that you wish to do, at the time they wish to do it, because their freedom of movement is restricted, then this right is being infringed on for students. As some students have no income or may come from disadvantaged backgrounds, it is difficult for them to equally participate in a city that is too expensive for them. A lot of universities and colleges subsidise the use of public transport for students, making public transport the first choice for students, as this cost is decreased drastically by the aid provided. This occurs in some Western cities, like Victoria City, London, and Berlin. These cities have public transport policies for students that state that students are charged affordable rates when using public transport, or pay a flat rate for the whole year and can use transport as they please. TU Berlin and other Universities in Germany make use of semester tickets. A semester ticket is valid for use on any public transport system in Berlin for 6 months (FU Berlin, 2015). Students are expected to pay 180 Euros (about R2700) for each ticket. South African law makers have identified that there is a lack of policies for student transport, hence, the National Scholar Transport Policy of 2009 was created. However, this law was created for students below tertiary education, leaving university students to make do with what they have been given (Gauteng Department of Roads and Transport, 2013).

The interviewed students were asked questions on the state of the public transport they use and if they are satisfied with it. Taxis were used the most, followed by private cars, as seen in Graph 11. Taxis are the most used mode of public transport in South Africa, but also the most complained about (GCRO, 2014). Some of the students pointed out that they preferred taxis because they get where they need to go fast. However, the problem rests in the fact that taxi drivers do this in a reckless manner. The perceptions students had of public transport (pt) are seen in Graph 12.



Graph 11- What mode of transport do students' use.





Graph 12- Students' perceptions of public transport.

When considering the safety of passengers it is important to analyse the safety of passengers on public transport, while waiting for it and walking between public transport and one's destination (Karlsson & Larsson, 2010). Public transport needs to ensure the safety of its passengers, as safety is a major determining factor in the use of public transport. Most of the interviewed students didn't feel at ease when using public transport because of the way taxi drivers drove. Safety was less of an issue, in terms of crime, when in public transport because no one could rob you in this enclosed space, but there were issues of some feeling unsafe for their lives while in public transport because of the driving as seen in graph 12. Safety was restored for students after coming off public transport because they made it in one piece and

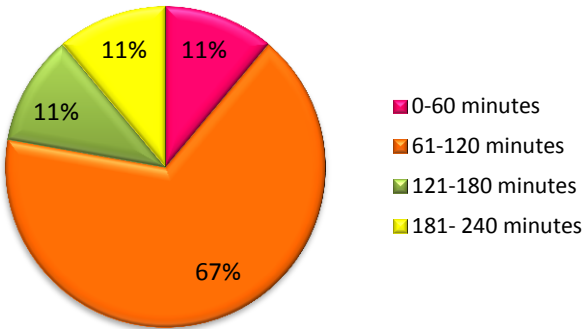
were now in their familiar surroundings like their neighbourhood or areas of interest. However students did feel that their safety was affected by the different times of the day. Safety at night, after coming off public transport, was more compromised because it is dark and visibility is blurred.

When asked if they experience good service while making use of public transport, students referred back to the driver's lack of hospitality and caution when driving. The quality of the service is determined by a person's experience whilst using public transport. Factors such as being treated respectfully and politely by drivers or staff, receiving reliable information when requested and complaints being investigated with correct action taken to increase customer satisfaction (Litman, 2015). Public transport should be made appealing to everyone and not just to those who do not own a private car, thus, they are forced to use it. There is a lot of road rage towards taxi drivers because of their reckless driving, however, it is expected that these angered drivers leave their private cars to get into a taxi that puts the lives of those on the road and in the vehicle at risk just to make a profit. The idea of having an inclusive public transport system used by all races, sexes, ages, and social classes may be a slightly utopian idea, as it may be difficult to change the perceptions that the public have of public transport. However, Kenyon and Lyons (2003) suggest that there is a possibility of changing the attitudes towards public transport by making it look more attractive through providing a quality service (Kenyon & Lyons, 2003).

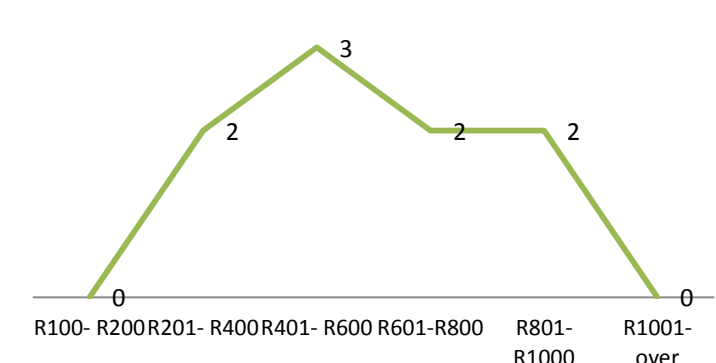


Students mostly spent between 61- 120 minutes travelling to university and back home, as seen in Graph 13, this amount of time is reasonable enough for students who live the furthest away from Wits, as it takes about 45 minutes to drive 50 km. However, the students live close by, about a 20 minute drive to Wits, took over an hour to get home when using public transport. This may be affected by heavy congestion experienced in parts of Johannesburg, as private car use is high (Beavon, 2001). A public transport system needs to ensure that it is efficient in getting people from where they currently are to their destinations of choice in a reasonable amount of time (Murray, 2001). Most of the students paid over R401 for public transport a month to go to university and back home, an amount that the majority found to be unaffordable as seen in Graph 14. In Berlin, students pay R5400 for the year to have unlimited access to public transport to any location, not only limited to school and home. Wits students pay from R3208 to R8000 a year for trips from home to university and back. Compared to Berlin, this is expensive, as it does not include the cost for trips to areas of interest. Public transport should be set at an affordable rate so everyone can use it. When transport fares are too high, the poor are often excluded from accessing public transport, thus, excluding from accessing the city (Criden, 2008). The cost of transportation for students is one area where they can save a lot of money (Learn.org, 2012). For some students owning a car is expensive so other means of transportation become crucial in playing a part in improving their participation and inclusion in the city (Learn.org, 2012).

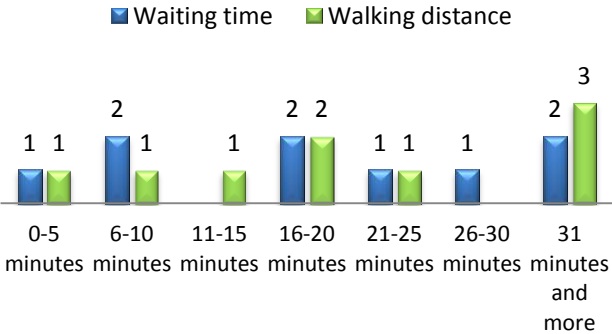
The walking distance and waiting times for public transport were unreasonable in some cases. As seen in Graph 15, some students stated that they would have to walk over 31 minutes to gain access to public transport, these students have to be driven to taxi ranks, or Gautrain stations as the walking distance is too far. A majority of the students have to walk less than 25 minutes, when the appropriate distance to a public transport stop from anywhere should be at 400 m, a 10-15 minute walk (Jefferson, 1996). Most of the students had to wait over 16 minutes for the taxi to leave, whereas the Gautrain and Rea Vaya left immediately.



Graph 13- Time spent travelling each day.



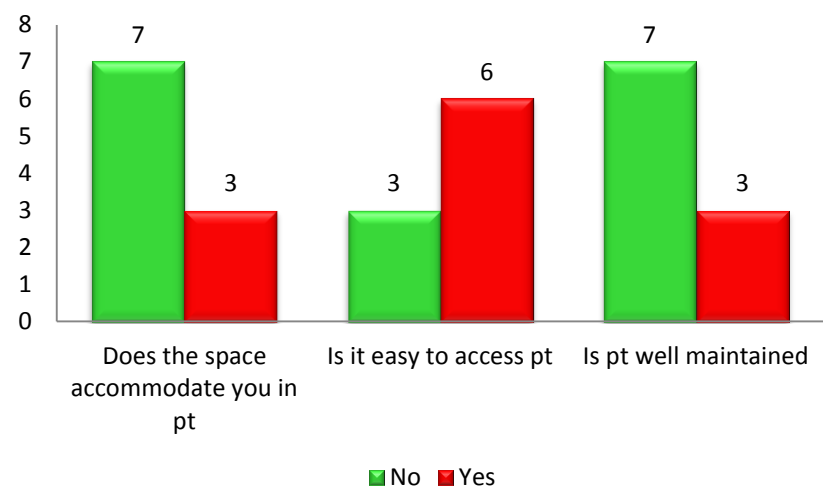
Graph 14- How much students spend on public transport per month.



Graph 15- How long students have to wait for public transport and walking distance to catch public transport.



According to the efficiency criteria a passenger should not be made to wait longer than 10 minutes to board any mode of public transport (Jefferson, 1996). The time spent waiting, walking to or travelling in public transport brings about time-based exclusion as it affects peoples productivity as time is commuting and by the time students get to university they are already tired and drained (Sullivan, et al., 2000). This is the same when going home, students are unable to focus on homework as they spend so much time on the road travelling and are exhausted after a long day of lectures and travelling. This affects the economy, as some people are unable to perform at their optimal level in the city (Sullivan, et al., 2000).



Graph 16- The comfort, ease of use and maintenance of public transport.

Students were asked if the space in their mode(s) of public transport accommodate them, with many bags, a wheel chair, a baby, a bicycle etc. Most students answered no, as they make use of taxis, and taxis are very tight, making it difficult to fit the luggage one is carrying, unless they are sitting in the front row where there is a bit of space, as seen in Graph 16. In taxis some students said it is even difficult for one to fit in comfortably, but one just has to squeeze in. Liz Warden is a 25 year old blogger from California who takes viewers through her experience of a taxi ride for the first time. She states the following: “cramming in the backseat of a public taxi with three bags of groceries, which is clearly only supposed to fit three people, but somehow it is managed, even if only part of your butt cheek is on the seat to fit four, making it home with a loaf of bread that isn’t

squished”, as seen in Figure 12 (Warder, 2014). The students further explained that a person in a wheelchair or someone with a pram cannot be accommodated at all in a taxi. Comfort is associated with the well-being of passengers making use of public transport. Johannsson (1989) defines the concept of comfort to be “the level of a persons’ experienced well-being during a trip” (Johannsson, 1989, p. 2). The comfort of students using taxis is thus taken away. Pink uses the BRT and she stated that there is a designated space for luggage and wheelchairs, however there is also enough space around you if you are carrying an extra bag or two. The Gautrain was the same as there was space for this. In Berlin, public transport accommodates everyone and is made easy to use, as people could have their bicycles, prams, or wheelchairs on any mode of public transport, as seen in Figure 11 and 13. Coming from the airport in Berlin, I used a bus and it had ample space for all my luggage and I felt comfortable. The actual design of the transport improves the efficiency of public transport as this affects the manner in which people access



public transport. This is very important in creating an inclusive mode of transportation (Karlsson & Larsson, 2010). There need to be an ease of access for all users (Jefferson, 1996).



Figure 11- TU-Berlin student with bicycle in the U-Bahn.



Figure 12- Blogger, Liz Warden in taxi (Warder, 2014)

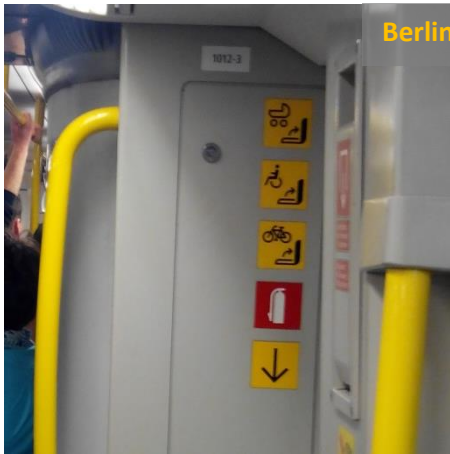


Figure 13- Prams, wheelchairs and Bicycles allowed on U-Bahn.



Figure 14- Rules of Gautrain- no bicycles allowed.

The students who use taxis had no problem with accessing taxis anywhere, as seen in Graph 16, because taxis stop anywhere you may be, as so long as you know the right finger sign to use to stop it. Gautrain and BRT students had problems with access, as there are very limited stations to access these modes of public transport. With maintenance, the issue was mostly with taxis, as this mode of transport was poorly maintained with old vehicles that are not road worthy, making it very unreliable for the students, as seen in Graph 16. The BRT and the Gautrain are newer fleets of transportation so they are still well maintained, so students had no complaints with these modes, as they were reliable. The reliability of a public transport system has a direct effect on the mode of transportation that people prefer and choose to take, if they have the choice. Reliability may be defined as the ability of public transport to be a dependable source of mobility. As more money is being invested in establishing public transport systems it is crucial that maintenance takes place to protect this investment and provide an efficient and safe public transport system (Transportation Research Circular, 2006). The challenge is to keep public transport systems well maintained to avoid any issues in the future that will affect the perceptions attached to public transport and how many people feel it is a reliable mode of transportation.



4.6 Assessing the efficiency of public transport for students in Johannesburg

What is efficient public transportation? In understanding the meaning of efficiency and what it entails, one is able to list a set of attributes that can be analysed to measure the efficiency of a public transport system. A list of the attributes of efficiency was drawn up and 10 attributes were established. These were used as a criteria to assess if public transport is efficient and if this has any effect and impact on the way students participate and experience the city. The following is a brief summary of the attributes that were assessed through the use of the questionnaire that was conducted on students and the results of this assessment;

4.6.1 Time

Meaning- How long a passenger has to wait and how far they have to walk to access transport. Passengers should not have to wait longer than 10 minutes, and they should not have to walk more than 400 m, 10-15 minutes (Jefferson, 1996).

Assessment- The time in which students at Wits spent using public transport was 60-120 minutes travelling between university and home. This is a reasonable amount considering factors such as traffic at peak hours and the fact that public transport does not drop a person off right at home, they have a route they take, and this may mean that your destination is the last one. Having dedicated lanes improves travelling times and improves the flow of traffic. However, the only mode of public transport that has a dedicated lane is the BRT, which one student uses (Business Location Centre, n.d.). Taxis do not have this privilege and this may explain why they drive recklessly, as complained about by students, as they rush to get people to their destinations quickly whilst trying to beat the traffic. A majority of the students stated that they had to walk less than 25 minutes to access public transport, which is also not too bad as the average time a person should walk to public transport should be 10-15 minutes. Considering these outcomes of the questionnaire, there is room for public transport to make a few improvements to better the travelling time and the distance from stations for all passengers in Johannesburg.

4.6.2 Intermodal connections

Meaning- This refers to a passenger's ability to utilise a variety of public transport modes of their choice to get to their destinations the best and quickest way possible. There needs to be a versatility and ease of integration between the different modes of public transport to achieve this (Jefferson, 1996).

Assessment- Intermodal connection points in Gauteng are scarce. As indicated in Map 8, Park Station is the only appropriate intermodal station as it facilitates a wide variety of transport systems. This intermodal transport facility accommodates the Metro Rail, long distances buses, a Rea Vaya station outside, along with a Gautrain station, while the Noord Street taxi rank is a 5 minute walk away from Park Station. There are five modes of transportation in and around this station and



this is why it is the largest intermodal station in South Africa (City of Joburg, 2015). However, having one intermodal station in a province with 6 municipalities is not efficient. What is happening at Park Station is good, thus, there should be more intermodal stations around Johannesburg and Gauteng, to better improve access and mobility from any part of the city and not just from the centre of Johannesburg. There also needs to be an intermodal connection between the modes of public transport, which is not the case in Johannesburg. Berlin has an intermodal map that makes it easy to plan your trip beforehand, as it clearly shows you where you will to get the train, bus, or a tram and where you can change modes. This does not occur in Johannesburg.

4.6.3 Comfort

Meaning- This is associated with the well-being of passengers making use of public transport. Johannsson (1989) defines the concept of comfort to be “the level of a person’s experienced well-being during a trip” (Johannsson, 1989, p. 2).

Assessment- The students were asked if the space in their mode of transport accommodates them. This question was intended to understand if the passenger feels comfortable in the space they are in, in terms of having enough space for their goods and to sit. With the majority of the students using taxis, the answer was no, as taxis are very cramped and sometimes extra people are forced in, so one does not sit comfortably. This situation is worsened if you are carrying luggage or extra goods, as there is hardly any space to accommodate this, meaning no passengers in wheelchairs or with a pram can make use of a taxi. The BRT and Gautrain catered for this extra space. This is an issue, as taxis are the most used form of public transport by students and by the whole population of public transport users in South Africa. This physical exclusion brings about an exclusion from not only public transport facilities, but an exclusion from accessing the city. The nature of public transport systems and the built environment are factors that can bring about physical barriers to certain groups’ accessibility and this is what taxis do (Sullivan, et al., 2000). Comfort is a crucial element in public transport, as people will not opt to use a mode of public transport that does not look comfortable, unless it is their only choice, which it should not be. Taxis are a lot of peoples only choice as it is the only mode of public transport that covers the whole city, and goes to parts of the city that the other modes do not reach. It is an issue when people are forced to use uncomfortable public transport because they are left with no other choice.

4.6.4 Safety

Meaning- The safety of passengers on board public transport, while waiting for it and walking between public transport and one’s destination are the areas that need to be considered when analysing the safety of public transport users (Karlsson & Larsson, 2010).



Assessment- A lot of the students did not feel at ease and safe when using public transport because of reckless driving. The students' feeling of safety was restored after coming off public transport because they felt safe and no longer had to worry about their lives being in danger because of reckless driving. However, they did feel safe in terms of not being worried about being robbed in public transport, as this is a difficult thing to do in a confined space with nowhere to run. Different spaces ignite different feelings for different people. Fear is one such feeling for certain groups in certain spaces and transport modes (Sullivan, et al., 2000). The manner in which public transport is managed and by driving with caution, impacts on a person's feeling of fear and lack of safety which puts a person on edge or at ease. Transportation is a tool used to shape and connect parts of the built environment, making it very important for there to be functional integration between the built environment and modes of mobility to enable people and goods to move about safely. If the feeling of safety is compromised then the ability of people to be mobile is compromised too, just as students mentioned they do not go out at night because of a fear created by crime and the lack of public transport.

4.6.5 Ease of use

Meaning- The actual design of the transport improves the efficiency of public transport, as this affects the manner in which people access public transport. This is very important in creating an inclusive mode of transportation (Karlsson & Larsson, 2010). There needs to be an ease of access for all users (Jefferson, 1996).

Assessment- Taxis in Johannesburg are not easy to use, as students complained about the lack of space to put ones legs or any extra bags. As the Gautrain and BRT are larger, they have more space and this makes it easier to use as you can comfortably sit with extra luggage or a wheel chair. All public transport in Berlin makes the use of public transport easy. Cycling is popular in Berlin, and something that is being introduced in Johannesburg, so transport accommodates this by making public transport easy for a person who is cycling to enter a train or bus with their bicycle as seen from Figure 11-14. This is an example of a transport system that is truly inclusive as it accommodates everyone and anyone who wants to use it in an easy way. Public transport in Johannesburg, especially taxis, need to work on ways to make public transport more easy to use. A taxi may be small, thus, it may be difficult to accommodate a person in a wheel chair, however, taxis could start by finding ways to make the passengers who can access it feel comfortable and that it is easy to use.

4.6.6 Maintenance

Meaning- This is very important in providing an efficient and safe public transport system that is reliable and inviting for all to use (Transportation Research Circular, 2006). Maintenance includes exterior and interior maintenance of the vehicles, stations, and stops. Maintenance also makes people feel comfortable while using public transport (Litman, 2015).



Assessment- With maintenance, the issue was mostly with taxis, as this mode of transport was poorly maintained with old vehicles that were not road worthy, making it very unreliable. The BRT and the Gautrain are newer fleets of transportation so they are still well maintained, so students had no complaints with these modes, as they were reliable. In less developed countries the perception of public transport is based on the lack of maintenance and the use of un-road worthy vehicles that often experience high accident rates. This has brought about the perception of public transport to be unsafe, low in quality, uncomfortable, less reliable and a mode that is for those who cannot afford to buy cars (Govender & Vilakazi, 2014). This is the perception of many people in South Africa. If taxis continue to provide a service that is not welcoming for all to use, the public transport industry will not flourish and grow in the manner it can. Blue mentions, "there is a certain perception attached to public transport, but public transport also needs to sort themselves out to change these perceptions". As more money is being invested in establishing public transport systems, it is crucial that maintenance takes place to protect this investment and provide an efficient and safe public transport system (Transportation Research Circular, 2006). The challenge in Johannesburg is to keep public transport systems well maintained to avoid any problems in the future that will further affect the perceptions attached to public transport and how many people feel it is a reliable mode of choice.

4.6.7 Affordability

Meaning- Public transport should be set at an affordable rate so everyone can use it. When transport fares are too high, the poor are often excluded from accessing public transport and, thus, excluded from accessing the city, which infringes on the right to the city (Criden, 2008).

Assessment- Most of the students felt that public transport was not affordable as they mentioned that finances become a restriction when they need to consider going out. Public transport should be afforded by every single person in the city to remove any barriers to accessing the city. The Metrorail is the cheapest public transport systems but it is not used, as it does not cater for the needs of passengers. This is a problem as an opportunity for passengers to save is lost. The Metrorail does not access all parts of the city as seen in Map 8, so it excludes access, making it inconvenient to use. If there were more affordable options that give access to every part of the city similar to taxis, then passengers would not be restricted to the one mode of transport that takes them anywhere, but happens to be unaffordable for some of the students. The only speed rail in Johannesburg, the Gautrain, brings about the most exclusion, as prices are too high, so it caters for certain social classes who can afford it. Transport, especially in a developing country, needs to cater for everyone's financial position.



4.6.8 Reliability

Meaning- Reliability may be defined as the ability of public transport to be a dependable source of mobility. This may be influenced by things like punctuality, as public transport needs to arrive at the specified times and maintained to make mobility more efficient (Litman, 2015).

Assessment- As the maintenance, the lack of operating times for taxis, and reckless driving were an issue amongst the students, reliability becomes an issue. If public transport is not reliable then how is it expected to attract more people to use it? Public transport in Johannesburg needs to work toward recreating its image by becoming reliable so that more people can be comfortable to use it.

4.6.9 Operating times

Meaning- As the city should be a 24 hour destination there should be access to mobility 24 hours a day. Public transport needs to cater to the needs of people at any time of any day.

Assessment- Cities are meant to be active all day and through the night. Blue states that: "In America the subway goes on till early hours in the morning, so here you are restricted by time and have a curfew that's determined by public transport." Public transport is not meant to restrict people from participating in the city, but rather enhance their ability to do so. Public transport in Johannesburg does not run at night past 10 pm which brings about social exclusion, because if you cannot afford a private cab, then a person's interaction with the city ends along with the last taxi, bus, or train of the day.

4.6.10 Service

Meaning- The quality of the service is determined by ones experience whilst using public transport. Factors such as being treated respectfully and politely by drivers or staff, receiving reliable information when requested from staff members, and complaints being investigated with correct action taken to increase customer satisfaction (Litman, 2015).

Assessment- Being provided with a good service makes someone want to come back next time. A positive experience with public transport is very important in shaping a person's perception around this mode and if further use will continue (Rietveld & van Exel, 2010). Public transport should be made appealing to everyone and not those who do not own a private car, thus, they are forced to use it. This is where the issue is with public transport in Johannesburg, there is no value is put in these small things to improve the industry. Taxis drivers have involved innocent passengers in their turf wars that end up injuring and killing innocent people. Such acts tarnish the image of the service in this industry.



Public transport is not available at all times. Students have concerns about how certain modes of transport are being operated. Students spend a lot of time travelling over short distances. The amount spent on public transport fares is unaffordable for them and they have to walk over 400 m to gain access to public transport. These are the perceptions that students have of public transport. To sum up how student viewed and felt about public transport, they were asked what they would change about the public transport that they used. Some stated that old taxis need to be removed, the drivers need to be professionally trained to provide a better service, have an integrated system of public transport that can be accessed on a map, there needs to be an extension of the operating times, and routes need to be extended to certain areas as to make public transport more accessible, change people's perception of public transport by changing the way it looks, the way it feels and operates, and maintaining taxis. None of the students said that nothing needs to be changed, every student made mention of something. These statements and the assessment of efficiency are a clear indication that public transport in Johannesburg is in need of work. Cities are not made for cars and only people who own them, cities are supposed to cater for everyone, and go the extra mile to include those who would be otherwise excluded if extra attention was not paid to them. Students, for one, may not have the financial means to manoeuvre the city as they please, but the city should be convenient for them and public transport should be their first choice because it should just make life easier for everyone in the city. An efficient public transport system is one that gives you access to every part of the city, at any time, at affordable prices and good service. According to all the information gathered and analysed, public transport in Johannesburg cannot be classified as efficient.

“Public transport would be more fun if more people used it, it would be great if public transport was the first thing you thought of when you want to go out. In other countries everyone is ok with using a bus or public transport, whereas here it's all about how much you have in your bank account, if you can't afford private then public is your second option. But it's supposed to be public first and private as the second option” -Blue

“I like the idea of public transportation because it reduces cars on the road, and it saves more than what you would use for petrol” - Yellow

“Instead of students' striving to get cars they should embrace public transport and enjoy the city. If you get lost hop on another taxi and through this you explore and learn and walk the city. Students' need to explore the city through public transport and walking” -

“Public transport should make student's lives easier, I don't enjoy using public transport, and I dread every day I have to think of taking public transport. The first thing I want when I start working is a car, I'm 100% convinced. This right now is not life” -

Olive



Chapter 5 Conclusion

The purpose of this research report is to answer the question, “How is the holistic experience and participation of students in the city shaped by public transport in Johannesburg and Berlin?” Through a comparative study of public transport in Johannesburg and Berlin, The aim of this research report is to establish an understanding of how public transport contributes to creating inclusive cities that influence the right to the city for students in different contexts. The efficiency of public transport has been used to narrow the topic of public transport down. Through the use of efficiency criteria, public transport has been interrogated to understand how it shapes the experience and participation of students in the city. A series of interviews were conducted on students from Johannesburg to create the grounds to analyse the efficiency of public transport in the city, and how it influence the participation and experience of students in the city. The concluding chapter makes use of the literature review, case study reviews, and the analysis of the findings to answer the question posed in this report, as well as understanding what lessons can be learned from different contexts and the views of students in improving public transport in the future. The research question looks at understand a few thing. Firstly there is the matter of understanding if students are given the right to participate in and experience the city, and secondly if this is shaped or influenced by efficient public transport in any way. The manner in which the survey has been divided up into three sections helps answer this question. The three sections being a personal profile, student’s lifestyle, and the mode of transport they use. The purpose of dividing the questionnaire into these three sections is to first establish if the respondents are students, the second section is to identify if they are able to exercise their right to the city through their orientation and movement, and lastly if this is hindered or improved by the efficiency of public transport.

5.1 Limitations of the research

The comparative study of public transport in Johannesburg and Berlin presented a number of limitations in this research report. Berlin is a country in another continent, thus, conducting research in a country miles away, that predominantly speaks German, was a challenge. In May 2015, I travelled to Berlin for 2 weeks, and it was in this period that I planned to maximise the opportunity to conduct some research. However, conducting in-depth research and interviews in May was too premature. At this stage, I was completing my proposal and an adequate amount of research and reading had not been done yet, leaving me unequipped with



all the information I needed to conduct further research in the relevant areas. This was evident, as the questionnaire that I had prepared and conducted a pilot of during my visit, yielded insufficient results. However, once more work was done, upon my return, the questionnaire was finalised, and successfully addressed the issues that would assist in answering the research question. This meant that the interviews conducted on Berlin students needed to be done again. Due to me being relocated back in South Africa, I arranged with two students to assist in the distribution of the surveys by email and social media. However, this did not work as planned. The interviews that were to be conducted on the TU Berlin students' were not successful, as only one student responded to the questionnaire and the other students did not respond to emails and the notifications that were posted on Facebook by my two student liaisons in Berlin. This issue may be due to the fact that students in Berlin were on holidays during the time the questionnaires were conducted. Due to these unforeseen circumstances that were out of my control, the comparative study was limited however, where information could be compared from the interviews with information from the literature and case study review, this was done. The results from the Wits questionnaire were analysed independent of whatever the outcome of the interviews would have been in Berlin. However, information available on students in Berlin was used in parts of the analysis.

Another limitation was presented in the study of transportation in Berlin. This was a challenge due to the lack of information available in English. I asked students from Berlin to assist me by sending documents on public transport in Berlin, and they mentioned that there may not be a lot of information that I can use due to the fact that a majority of the documents are in German. From conducting desktop research I came to realise that this was correct. This meant that I had to rely on a very few sources, and internet sources that can be translated by Google, leaving the case study review of Berlin without a range of citations.

The "fees must fall" protest at Wits University was a hindrance to this research report as well. This is due to the fact that Wits was closed from the 14th to the 28th of October 2015, meaning I could not conduct any more interviews on students who use public transport. Ten students were initially interviewed from Wits University, however two of the students were sent the questionnaire via email, and their responses were not adequate enough as it seemed it was done in a rush or haste, due to the lack of in-depth answers. I scheduled to meet with the two students to get some clarity on the questions that were not answered adequately, however, this was made impossible due to the strike. For this reason two of the interviews were not used and only the 8 interviews conducted face to face were used. This situation made me question if the same would have occurred with the students from TU Berlin, as they would also have to answer via email.



These limitations did not hinder the research from being completed, however a comparative study was not carried out adequately. This comparison could have been more in-depth to yield more results to be analysed. With more time, the research that was required to carry out the comparison as planned may have been possible. This comparative study could possibly be taken further in research at a higher level, such as at a Masters, or PHD level research report.

5.2 The quality of life and public transport

Public transport plays an important role in keeping cities liveable and alive. It plays a major role in shaping the way cities look, the manner in which they function and the way people are able to use the city (The Canadian Urban Transit Association, n.d.). Opportunities in the city are accessed by those without private cars through the use of public transport. It helps people participate in the activities of the city so everyone can have an equal chance to live life to the fullest and make the most of what the city has to offer. There is access to peoples' needs, employment, education, leisure, and wherever one may want to go in the city (The Canadian Urban Transit Association, n.d.). Public transport bridges the gap between people and the activities of the city, and between business and the profit they earn from having customers. The freedom to move is valuable, however, in contemporary cities this is something that is being compromised more and more by the day, as cities are expanding outwards, more roads are being built to accommodate cars, bringing about an increase in congestion and longer travelling times.

Public transport helps improve mobility, as it gives commuters the freedom to move in spaces as they may, whilst also assisting in relieving the amount of pressure that private cars cause on the road (The Canadian Urban Transit Association, n.d.). However, the purpose of public transport goes beyond just moving from one part of the city to another; it's also about expanding the way in which one experiences the city and all it has to offer (White, 2015). This makes public transport an important necessity for those who cannot afford to buy cars, as this is the only way to gain access to the things they need to access, the things that every person in the city should have access to, regardless of income or location (White, 2015). But, it becomes very difficult to alleviate inequality in the city if there are no good public transport systems to bridge that gap. "Access to just about everything associated with upward mobility and economic progress—jobs, quality food, and goods (at reasonable prices), healthcare, and schooling— relies on the ability to get around in an efficient way, and for an affordable price" (White, 2015, p. 1). Being able to access good public transport also means that this should be done at a low cost to accommodate everyone who needs to utilise it. The quality of life is improved by public transport in the various ways mentioned above. The questionnaire conducted on students at Wits University revealed that inefficient public



transport was not improving the quality of all areas of life for students, due to the various reasons discussed in the assessment of the efficiency of public transport, summarised below.

5.3 Efficiency of public transport for students and the right to the city

The following attributes were used to assess if public transport was efficient and how this efficiency or lack of it affected students' participation and experience in the city: time, intermodal connection, comfort, safety, ease of use, maintenance, affordability, reliability, operating times, and service. This criteria revealed three main arguments. Firstly, the report shows how the attributes cannot be viewed in isolation, rather there is an interconnected relationship between these attributes as some affect and influence others. Thus, it is important to understand that the definition of efficient public transport is established through an interconnected understanding of the attributes listed and discussed above.

Secondly, the assessment reveals the current state of public transport in South Africa. Public transport in South Africa has focused on providing a technical solution to the need of public transport, as seen in the introduction of new projects such as the BRT and Gautrain. However, the provision of generic technical solutions lacks the understanding and the ability to address the interconnected user needs that are revealed in the criteria (Future Cape Town, 2012). This brings about a public transport system that is inefficient, as it lacks the ability to do more than just get passengers from point A to point B. Due to the historical background of the country, spatial inequalities are still very prevalent and this is perpetuating social exclusion. Public transportation has been used as a tool to try and bridge these spatial inequalities, however, there has been no thought put into the provision of public transport as it goes beyond just infrastructure, but the manner in which this infrastructure works for the people it will service. Public transport is about the provision of mobility and access to the different parts of the city, but it is also about the provision of a good, quality service (Govender & Vilakazi, 2014).

The State of Transport Opinion Poll South Africa (STOPSA) is a survey conducted on over 1000 South Africans over the age of 18 years, as to understand their perceptions of public transport (Luke & Heyns, 2013). The biggest issues, identified by the STOPSA were some of the key areas questioned in the questionnaire conducted on students. Issues "related to public transport quality, frequency, and amount of services, travel times, issues that relate to customer service and mobility and accessibility. Other aspects that were mentioned were affordability, quality of public transport infrastructure, safety, transport in rural areas and government attitude to public transport" (Luke & Heyns, 2013).



The third argument revolves around the right to access the city. In a city such as Johannesburg, that has experienced years of oppression through racial and spatial segregation, it is very important for any remnants of the apartheid spatial planning system to be eradicated, so that spatial equality can be attained. This makes public transport a crucial element in bridging the spatial gaps causing inequality. Public transport plays a major role in developing and building not only the city, but the people who make the city. Transportation is a tool used to shape and connect parts of the built environment, thus, making it very important for there to be functional integration between the built environment and modes of mobility, as to enable students and goods to move around as they please in an efficient manner. Public transport should not hinder movement but enhance and improve it. The inefficiency of public transport is affecting students' right to the city, as their participation and experience is hindered by the lack of efficient public transport in Johannesburg. This is seen as students cannot stay out late, long travelling times over short distances, unaffordable public transport fares for some, some modes of public transport being unreliable and uncomfortable and issues of access to some modes of public transport. Students responded that they did not feel they were able to do all the activities that they would like to in the city, because public transport is not efficient and it doesn't work for them the way they would like it to.

With policy documents addressing these issues, it is confusing as to why the efficiency of public transport in South Africa is still an issue. The importance to make improvements to public transport is listed as the country's 3rd priority (Luke & Heyns, 2013). This indicates that there is an acknowledgment of an issue in this sector, however there is still no connection between the policy documents that have been drawn up to address these issues, and their actualisation.

5.4 History shaped tomorrow

We live in complex cities that are difficult to tame. This makes it very important that urban governance plays its role in managing cities through efficient administration, plans, and regulations. Urban governance is an interdisciplinary field that is concerned with understanding the city and, thus, being able to improve it by exercising power, authority, and influence, to bring about order and structure in cities so that management can effectively address the physical and non-physical issues that cities face. This is a process that is very complex and should bring about the right for the poor and the vulnerable to exercise their right to have their interests heard in the planning process, decision making and policy outcomes that influence urban development, public life, social, and economic matters. This indicates how urban governance plays a very crucial role in establishing accountable relationships that seek to solve urban issues. There are studies that look into the political state of Africa's governance and why democracy is failing after gaining independence and it is crucial in understanding the current position of public



transport as an element of a post-colonial and apartheid city (Chipkin & Meny-Gibert, 2011). Coming from a long history of oppression, African countries have been stained with the legacy of colonialism, and in the case of South Africa, apartheid as well (Chipkin & Meny-Gibert, 2011). These past legacies have had an influence on the contemporary state of African countries and its administrative bodies. Due to the paralysing system of apartheid, South Africa has been left with a dysfunctional administration system that lacks the capacity to actualise policy (Chipkin & Meny-Gibert, 2011).

“In the early years of transition from apartheid to the democratic dispensation, the focus was on political settlements and stability. Understandably perhaps, less attention was paid to the way in which new institutions of government would be developed and structured, and how these changes might deal with the legacy of the homeland system (Chipkin & Meny-Gibert, 2011, p. 8). The country needs to focus on developing organisations and institutions within government that have the capacity to reform the administrative bodies of the country. This is a tool in developing the planning systems of the country as homeland administration has hindered this, especially in the delivery of public services, a matter that has been highly politicised and has been a hindrance in the forward development of the South African state. “Inquiry into the performance of institutions cannot simply be reduced to questions of leadership or to techniques of organisations. We suggested that insufficient attention has been paid to the state and public administration” (Chipkin & Meny-Gibert, 2011, p. 11).

Policy documents such as the White Paper on National Transport Policy of 1996 aim to address the issues faced in public transport, as discussed in the assessment of efficiency, along with documents such as the National Development Plan reiterating the need to address these issues. The White Paper states that its aim is to promote “a safe, reliable, effective, efficient, co-ordinated, integrated, and environmentally friendly land passenger transport system in South African urban and rural areas, and the southern African region, managed in an accountable manner to ensure that people experience improving levels of mobility and accessibility” (as cited in Luke & Heyns, 2013, p. 2). This shows that what is being said in policy documents sounds promising however, “a gap is appearing between what the policy says should be happening and what is actually happening. This gap is most likely a result of a lack of government capacity to meet the policy objectives” (Trusler, 2003, p. 504). In 2002, former president Thabo Mbeki argued that the challenges that were faced by government would not be solved by changing the policies, but to rather make sure that these policies were implemented (Khosa, 2003). Showing that policies from 1994 have no problem, but the issue is with the manner in which these policies are implemented, as this due to lack of managerial skills and the lack of human resources and capacity which is affecting how public transport works for the people and, in this particular case, for the students in Johannesburg (Khosa, 2003).



The lack of capacity to address the issues of public transport in South Africa is affecting other spatial and social elements of the city. Transport, whether it is public or private, plays a major role in the concept of social exclusion, as it provides people with access to desired goods and services. The ease or difficulty in which opportunities are reached perpetuates social exclusion according to studies around this topic. "These factors interact with one another to determine a given individual's level of access to opportunities, but at a basic level, it is the city's design or form, how its activities are organized spatially and the connection of these activities through transportation, that conditions personal accessibility and exclusion" (Scott & Honer, 2008, p. 90). As policies are not being implemented to their full capacity, due to the unstable origins of urban governance in the democratic South Africa, it is the city and the way it functions that is affected, leaving systems such as public transport paralysed and unable to function to its full capacity and potential.

5.5 What lessons can be learnt and what does this mean for planning?

Looking at the case study of Berlin, public transport has been a priority in Germany for many years. Investment has gone into public transport and the importance of maintenance has been stressed. Cities with wealth have invested money in good public transport systems and infrastructure (Newman, n.d.). Cities that have been built to be car dependent tend to waste money on getting around, and cities that focus funds on public transport infrastructure spend less on getting around, allowing people to spend their money in other areas of the city (Newman & Kenworthy, 1999). Berlin is a developed country, with the funds, capacity, and resources to develop an efficient public transport system that improves the right of students to participate in and experience the city. The strong policy foundation of Berlin has been carried out effectively in creating a city that includes students, due to the capacity they have to make this possible.

As one of the largest cities in Europe, Berlin was ranked as one of the most appealing cities to young people in the Youthful Cities 2014 Index (Federal State of Berlin, 2014). With a public transport system that is well functioning and integrated, the use of private vehicles is discouraged through policies, such as the charge of high taxes for the ownership of private vehicles and fuel taxes in Germany, making the cost to own a private car expensive (Stahlberg, 2016). Policies that have been implemented in Berlin, specifically, to discourage the use of private vehicles include controlled parking zones, where one has to have a parking permit to park and one is charged to park in any other parts of the city (Stahlberg, 2016). Good, efficient public transport, cycling lanes, and sidewalks, have been presented as a good alternative to the use of private cars, encouraging the decrease in private car use.



This is a lesson for the Johannesburg case, as it tries to introduce the lifestyle of public transport use to students and the population, it fails to market this industry by providing a good service alternative to private car use. More and more buildings are being erected just for parking, indicating that the use of private cars is not decreasing, because of the lack of a good efficient public transport system. Wits is growing in the number of students who use private cars and it has been said that the University is currently looking to demolish a Wits residential building to make way for more parking (Nkosi, 2015). As Wits makes way for more parking, TU Berlin, which has a number of bus stops and train stations located around it, makes space for student's bicycles to be parked. Semester tickets have been used to cut down the cost of using public transport for students in Berlin, whilst there is not one student policy in place to insure the inclusion of university students in the public transport system of South Africa.

The efficiency of public transport is improved through the integration of all modes of public transport that operates in Berlin. This integration is made easier as there is one administrative body that facilitates the organisation and coordination of public transport in Berlin. Berliner Verkehrsbetriebe (BVG) is the public body that consolidated public transport in the city of Berlin to improve its ease of use for passengers and its efficiency. In South Africa there are private and public organisations that own the different modes of public transportation, making it difficult to integrate public transport in Johannesburg. This has resulted in a public transport system that is competing for passengers and routes, making it a less safe and efficient transport system for students to make use of. The design of the city also comes into play when analysing if students are included in the city. Most of the buildings in Berlin have retail at the lower level and apartments upstairs, which makes trips shorter and encourages students to interact with the city. In Johannesburg a person needs a car to get around as a lot of activities are dispersed and located a distance from each other.

There are a number of lessons to be learnt from the Berlin case study for many cities, and cities in developing countries, such as Johannesburg. Berlin's combination of policies that encourage the use of public transport, whilst discouraging the use of private cars, have been very effective. The well integrated and functioning public transport system encourages most users to make use of this mode of transportation, while the built environment has also played an important role in creating an efficient city that is fast, cheap, safe, and convenient for students to use. "With a system that covers most of the city, that is reliable, fast and affordable, more people will choose to leave their car at home, or not buy a car at all. A city that is less dependent on private vehicle use is a more sustainable city" (Stahlberg, 2016). A city that is welcoming for students from all walks of life to fully participate in it and experience all it has to offer. In the pilot interviews that were conducted during my trip to Berlin in May 2015, I asked students what they would change about public transport, a majority said nothing really, whilst some stated



that it would be nice to have Wi-Fi and if other passengers could be more friendly. One of the male students, aged 25, said he didn't even know how to drive, and sees no use in ever having a driver's license. Compared to the responses from students in Johannesburg, public transport in Berlin seems to be faced with extremely marginal issues that do not have an effect on students' access and participation in the city.

Cities have become dominated and designed for cars whilst it is becoming less about the people who need to access it. It is in recognising that this is an issue that the need for transport planning and urban planning as two spatial tools need to be used in conjunction and not separately in the planning of cities that are inclusive for students and urban dwellers. The aim of having one vision is required to be established between these two fields in the discipline of planning. Transport plays a major role in developing and building not only the city, but the lives of those in the city. "These factors interact with one another to determine a given individual's level of access to opportunities, but at a basic level, it is the city's design or form, how its activities are organized spatially, and the connection of these activities through transportation, that conditions personal accessibility and exclusion (Scott & Horner, 2008, p. 90). Students are entitled to mobility, access to the city, and efficient public transport systems, just as they are entitled to water or proper sanitation. Public transport "is a public utility; and the benefits derived from this public utility can only be realised if the system is planned and regulated so that all members of society benefit, both the poor and the rich" (Govender & Vilakazi, 2014, p. 260). Public transportation is a tool used to shape and connect parts of the built environment, thus, making it very important for there to be functional integration between the built environment and modes of mobility to enable people and goods to move about safely, freely and conveniently. It is in this type of city, that the participation and experience of students is enhanced, through the use of efficient public transport systems that are integrated with the built environment. Low cost, efficient public transport is very important, as this is the only way to give students a fair chance at competing or participating in the city. This means that public transport systems have to work for students and not work against them as the lack of good public transport makes it very difficult to deal with inequality in cities (White, 2015). "Access to just about everything associated with upward mobility and economic progress—jobs, quality food, and goods, healthcare, and schooling—relies on the ability to get around in an efficient way, and for an affordable price" (White, 2015, p. 2). A city such as Berlin offers this, through the integration of urban planning with public transport planning, whilst Johannesburg still needs to work on the integration of these two planning fields.

The public transport industry in South Africa faces a multitude of issues and challenges, and the lack of intermodal integration has been to the demise of the public transport industry, as different public transport systems play a different role and would benefit more from the integration of these differences (Walters, 2010). However, integration is also sought after between transport planning and urban planning, as to assist in reducing issues of sprawl and the lack of connectivity

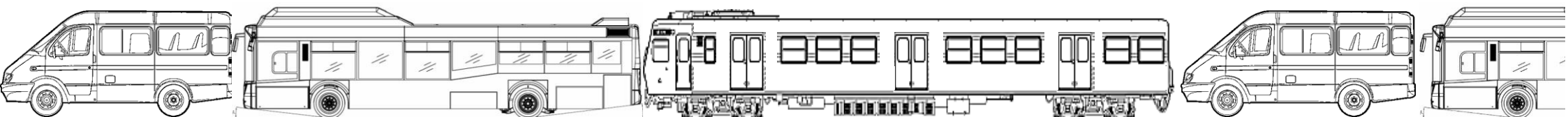


between spaces in the city (Simpson, et al., 2011). This along with institutional integration, as South Africa has struggled to integrate the institutions in the different spheres of government, which has left industries such as public transport un-unified in its goals and objectives (Simpson, et al., 2011). Apart from issues of integration, the public transport industry also faces issues of maintenance and funding, as the road infrastructure backlog of 2010 was estimated to be R72 billion (Simpson, et al., 2011). Bus and rail subsidies are also backlogged by R204 257,82 million, an indication that the government is under financial pressure and is in need of help from external sources (Turok, et al., 2011). This financial pressure has negative externalities that affect students. A city is not only meant to provide for its people, but protect it through planning.

The success of German public transport is due to a coordinated package of mutually supportive policies that include, “more and better services, attractive fares and convenient ticketing, full multimodal and regional integration, high taxes and restrictions on car use, and land-use policies that promote compact, mixed-use developments and densities high enough to support public transport” (Buehler & Pucher, 2012, p. 563). Whilst South Africa faces a multitude of issues and challenges that are crippling the industry, these issues include “challenges of urban sprawl, automobile dependence, and high commuting costs are compounded by an un-integrated public transportation system which is unable to meet the transportation needs of the population” (Simpson, et al., 2011, p. 24). These are two contradictory cases that reveal the importance of capacity and having the means to establish a good public transport system that does more than just enable mobility. A combination of policies, financial means, capacity and the built environment are needed to establish and maintain good public transport systems that work for and include students in the city. This is shaped by the demographics, population, socio-economic logistic responses and land uses planning.

As the importance of public transport in the city has been established, the manner in which students' experience this has been a key analytical lens for this research report. Students in the two cities have different experiences of public transport. With the issues mentioned above and the answers from the questionnaire, public transport in Johannesburg effects the participation, and shapes the experiences of student in the city as students did not feel included in the city and they could not participate in all the activities they would to partake in. This has resulted in students from Wits being excluded from some activities and parts of the city, as there is lack of efficient public transport to facilitate their integration into their urban surroundings. With the information gathered on Berlin and its effective public transport system, an efficient public transport system has been established that works for everyone in the city. Lessons from this case can certainly be taken away to improve how public transport works for future students and future generations in Johannesburg.





Reference List

Angloinfo, n.d. *Bus, Metro, and Tram Services in Berlin*. [Online]
Available at: <http://berlin.angloinfo.com/information/transport/public-transport/city-transport/>
[Accessed 18 June 2015].

Baron, P., 1995. Transportation in Germany: A historical overview. *Transportation Research Part A: Policy and Practice*, 29(1), pp. 9-20.

Bawa, Z., 2008. *Right to the City? Rethinking Urbanization, Urban Restructuring, Change, and How the City is Accessed Physically and Symbolically*. [Online]
Available at: <http://kafila.org/2008/10/30/right-to-the-city-rethinking-urbanization-urban-restructuring-change-and-how-the-city-is-accessed-physically-and-symbolically/>
[Accessed 21 March 2015].

Baxter, P. & Jack, S., 2008. Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(4), pp. 544-559.

Beavon, K., 2001. *The Role of Transport in the Rise and Decline of The Johannesburg CBD, 1886-2001*, Pretoria: Transformation Technologies.

Bedoyere, R., 2014. *2014 Student Lifestyle Survey shows how increased debt is changing student attitudes*. [Online]
Available at:
<http://www.thecompleteuniversityguide.co.uk/news/2014studentlifestylesur>

[veyshowshowincreaseddebtischangingstudentattitude](#)
[Accessed 2 August 2015].

Berlin.de, 2015. *Public Transport in Berlin*. [Online]
Available at: <https://www.berlin.de/en/public-transportation/>
[Accessed 21 July 2015].

BMVBS, 2012. *Verkehr in Zahlen [German transport in figures]: 1991-2012*, Berlin: Berlin: German Federal Ministry.

Broekmans, T., 2013. *Spontaneous City: People making the city*. Netherlands: TEDx Breda.

Brown, J., Hess, D. B. & Shoup, D., 2003. Fare-free Public Transport at Universities: an Evaluation. *The Journal of Planning Education and Research*, Volume 23, pp. 69-82.

Buehler, R. & Pucher, J., 2012. Demand for Public Transport in Germany and the USA: An Analysis of Rider Characteristics. *Transport Reviews*, 32(5), pp. 541-567.

Bullock, S., 2004. *Alcohol, Drugs and Student Lifestyle!*, Stockholm: Centre for Social Research on Alcohol and Drugs.

Burdett, R. & Sudjic, D., 2007. *The Endless City*. London and New York: Phaidon .

Business Location Centre, n.d. *Berlins Transportation System*. [Online]
Available at:
<http://www.businesslocationcenter.de/en/businesslocation/infrastructure/transportinfrastructure/>
[Accessed 14 April 2015].



BVG, 2015. *The Berlin metro (U-Bahn)*. [Online]

Available at:

<http://web.archive.org/web/20070820025315/http://www.bvg.de/index.php/en/Bvg/Index/folder/670/name/Underground>

[Accessed 14 April 2015].

BVG, n.d. *The Company in Brief*. [Online]

Available at: <http://www.bvg.de/en/Company/Profile/The-company-in-brief>

[Accessed 23 October 2015].

Calthorpe, P. & Fulton, W., 2001. *The Regional City*. Washington: Island Press.

Calthorpe, P. & William, F., 2001. *The Regional City: Planning For the End of sprawl*, Washington: Island Press.

Calvino, I., 1974. *Invisible Cities*. English translation ed. New York: Harcourt, Inc.

Casey, B., 2013. *How to College on a Budget*. [Online]

Available at:

<http://www.moneyaftergraduation.com/2013/09/04/howtocollegeonabudget/>

[Accessed 10 August 2015].

Cass, N., Shove, E. & Urry, J., 2005. Social exclusion, mobility, and access. *The Sociological Review*, 53(3), pp. 539-555.

Chipkin, I. & Meny-Gibert, S., 2011. *Why the Past Matters: Histories of the Public Service in South Africa*. PARI Short Essay Number 1, Johannesburg.

Chu, S.-W., 2001. *Paranoid Urbanism- Enclaves In Johannesburg, Version 1, 1886-2001: Part1) Pre-Apartheid (1886-1948) to Apartheid (1950s-1994)*.

[Online]

Available at: <http://swchuarchitect.blogspot.co.za/1997/12/paranoid-johannesburg.html>

[Accessed 5 September 2015].

City of Joburg, 2015. *Charter: Transportation*. [Online]

Available at:

http://joburg.org.za/index.php?option=com_content&task=view&id=2126&Itemid=49

[Accessed 6 October 2015].

City of Joburg, 2015. *Students overcome life challenges with the Rea Vaya*.

[Online]

Available at:

<http://www.reavaya.org.za/newsarchive/february2015/1151studentsovercomelifechallengeswithreavaya>

[Accessed 5 August 2015].

Constitution of South Africa, 1996. *The Constitution of the Republic of South Africa*.

Cookson, J., 2010. *Should all public transit be free?*. [Online]

Available at: <http://bigthink.com/thinktank/should-all-public-transit-be-free>

[Accessed 29 August 2015].

Creswell, J., 2004. *Research Design Qualitative, Quantitative, and Mixed Methods Approach*. third edition ed. Thousand Oak: Sage.

Criden, M., 2008. *Recognizing the Importance of Public Transportation for Low-Income Households*, Washington, DC: National Association for State Community Services Programs.



CSIR Building and Construction Technology, 2001. *Guidelines for: Human Settlement Planning and Design Volume 2*, Pretoria: CSIR Building and Construction Technology.

CSIR, 2005. *Guide for human settlements and planning and design*, Pretoria: CSIR Building and Construction Technology.

Debate.org, 2011. *College students should have access to free public transportation at taxpayers expense*. [Online]
Available at: <http://www.debate.org/debates/Collegestudentsshouldhaveaccesstofreepublictransportationattaxpayersexpense/>
[Accessed 29 August 2015].

Department of Environmental Affairs and Tourism, 2010. *Background information on transport issues in South Africa*. [Online]
Available at: <http://www.afritest.net/index.php/south-africa-2/southafrica-overview>
[Accessed 24 July 2015].

Department of Roads and Transport, 2013. *Annual Performance Plan 2013/2014*, Johannesburg: Gauteng Province.

Department of Transport, 2003. *Technical Report, The First South African National Household Travel Survey*.

Desai, V. & Potter, R., 2006. *Doing Development Research*, London: Sage.

d'Estries, M., 2011. *Top Five Most Sustainable Cities in the World*. [Online]
Available at: <http://www.ecomagination.com/top-five-most-sustainable-cities-in-the-world>
[Accessed 18 July 2015].

Dimitriou, H., 2006. *Urban Mobility and Sustainability in Asia and the Power of context*, Beijing: China Planning Network 3rd Annual Conference.

Donnelly, L., 2012. *Loans weigh students down*. [Online]
Available at: <http://mg.co.za/article/20120831loansweighstudentsdown>
[Accessed 10 August 2015].

Federal State of Berlin, 2014. *Berlin- A success story*, Berlin: Press and Information Office of the Federal State of Berlin.

Forbes, 2015. *With Carlos Slim Leading The Way, Mexico's Billionaires Have A Better Year*. [Online]
Available at: <http://www.forbes.com/sites/doliaestevez/2015/03/03/with-carlos-slim-leading-the-way-mexicos-billionaires-have-a-better-year/>
[Accessed 11 July 2015].

FU Berlin, 2015. *Semesterticket and Social Fees*. [Online]
Available at: http://www.fu-berlin.de/en/studium/international/studium_fu/auslandssemester/erasmus_in/infos_incomingstudents/gebuehren_bei_traege_exchange.html
[Accessed 21 September 2015].

Future Cape Town, 2012. *Will a public transport lifestyle be a possibility in South African cities?*. [Online]
Available at: <http://futurecapetown.com/2012/07/will-a-public-transport-lifestyle-be-a-possibility-in-south-african-cities/#.Vi7HFzYVi00>
[Accessed 26 September 2015].

Gauteng Department of Roads and Transport, 2013. *Annual Report 2013/2014*, Johannesburg: Gauteng Provincial Government.



Gautrain, 2015. *Timetables*. [Online]

Available at: <http://join.gautrain.co.za/Timetables.aspx>

[Accessed 23 October 2015].

GCRO, 2014. *Mobility in the Gauteng City-Region*, Johannesburg: Gauteng City Region Observatory (GCRO).

Gehl Architects, 2015. *Gehl live*. [Online]

Available at: <http://gehlarchitects.com/>

[Accessed 17 March 2015].

GeoDiverCity, 2013. *Cities and Transport relations in South Africa over the long term*. [Online]

Available at:

<http://geodivercity.parisgeo.cnrs.fr/blog/2013/04/citiesandtransportrelationsinsouthafricaoverthelongterm/>

[Accessed 03 March 2015].

Google Maps, 2015. *Malls in Gauteng*. [Online]

Available at:

<https://www.google.co.za/search?biw=1240&bih=621&q=malls+in+Gauteng&npsic=0&rflfq=1&rlha=0&tbm=lcl&sa=X&ved=0CClQtgNqFQoTCMn32NOo3MgCFc2GGgodPJYG6w#q=malls+in+Gauteng&rflfq=1&rlha=0&tbm=lcl&tbs=lf:1,lf ui:4&oll=-26.12231648101265,28.076129450000053&ospn=0>

[Accessed 20 October 2015].

Govender, K. K. & Vilakazi, A., 2014. Commuters' Perceptions of Public Transport Service in South Africa. *Journal of Social Science*, 3(1), pp. 258-270.

Grove, J., 2012. *Student lifestyle survey- More debt, more paid work, more pressure, less alcohol*. [Online]

Available at:

<https://www.timeshighereducation.co.uk/news/studentlifestylesurveyemored ebtpmorepaidworkmorepressurelessalcohol/419279.article>

[Accessed 5 August 2015].

Gschwender, A., 2007. *A Comparative Analysis of the Public Transport Systems of Santiago de Chile, London, Berlin and Madrid: What can Santiago learn from the European Experiences?*, Fachbereiches Bauingenieurwesen and Bergischen Universität Wuppertal.

Hall, P., 1988. *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*, Oxford: Blackwell Publishers.

Hancock, D. R. & Algozzine, B., 2006. *Doing Case Study Research: A Practical Guide for Beginning Researchers*. New York: Teachers College Press.

Harrington, W. & McConnell, V., 2003. *RFF Report: Motor Vehicles and the Environment*, Washington: Resources for the Future.

Harvey, D., 2006. Neo-Liberalism as Creative Destruction. *Geografiska Annaler: Series B, Human Geography*, 8(2), pp. 145-158.

Harvey, D., 2012. *From the right to the city to the urban revolution*. London: Verso.

Hocane, F., 2012. *Perception is an important aspect of human behaviour*. [Online]

Available at:

http://www.ted.com/conversations/14518/perception_is_an_important_asp.html

[Accessed 05 October 2015].

Huchzermeyer, M., 2012. *The right to the city*.



Human Transit, 2011. *Basics: Walking distance to transit*. [Online]
Available at: www.humantransit.org/2011/04/basics-walking-distance-to-transit.html
[Accessed 23 September 2015].

International Labour Organization, 2003. *Organising in the taxi industry: The South African experience*, Switzerland: International Labour Organization.

IVT, n.d. *Quantifying Public Transport Reliability and its Parameters*, Zurich: Institute for Transport Planning and Systems.

Jacobs, J., 1961. *The Life and Death of Great American Cities*. New York: Random House.

Jefferson, C., 1996. Improving access by public transport. *Landscape and Urban Planning*, 35(2-3), pp. 173-179.

Johannsson, B., 1989. *Comfort in collective traffic*, Gotenborg, Sweden: Chalmers University of Technology, Department of Transportation, and Logistics.

John, K. F., 2004. A Pioneers perspective on the spatial mismatch literature. *Urban Studies*, 41(1), pp. 7-32.

Karlsson, J. & Larsson, E., 2010. *Passengers' Valuation of Quality in Public Transport with Focus on Comfort*, Goetborg, Sweden: Chalmers University of Technology.

Kates, R. W., Parris, T. M. & Leiserowitz, A. A., 2005. What is sustainable development? Goals, Indicators, Values and Practice. *Environment: Science and Policy for Sustainable Development*, 47(3), pp. 8-21.

Kellett, J. & Rofo, M., 2009. *Creating Active Communities: How can Open space and Public Spaces in Urban and Suburban Environments Support Active Living?*, University of South Australia, pg 1-70: Literature review: Institute for Sustainable Systems and Technologies.

Kenyon, S. & Lyons, G., 2003. The value of integrated multimodal information and its potential contribution to modal change. *Transportation Research*, Volume Part F, pp. 6:1-21.

Khosa, M. M., 1992. Routes, Ranks and Rebels: Feuding in the Taxi Revolution. *Journal of Southern African studies*, 81(1), pp. 232-251.

Khosa, M. M., 2003. *Towards effective delivery: Synthesis report on the project entitled 'Closing the gap between policy and implementation in South Africa'*, Johannesburg: Social policy series.

Kihato, C., 2011. "Here I Am Nobody": Rethinking Urban Governance", Sovereignty and Power. *African Centre for Cities and Chimurega Magazine (eds) African Cities Reader II: Mobility's and Fixtures*, University of Cape Town, pp. 70-71.

Kotkin, J., 2013. *What is a city for?*, Singapore: Lee Kuan Yew Centre for Innovative Cities.

Krige, S. & Donaldson, R., 2000. *Dynamics and inertia of the post-apartheid city*. [Online]
Available at:
https://www.impulscentrum.be/south_africa/mod3_city/rechts.asp
[Accessed 27 05 2015].

Kuo, L. & Tshabalala, S., 2015. *How a Public Bus System in Johannesburg Saved South Africa \$890 Million*. [Online]



Available at: <http://www.citylab.com/commute/2015/09/how-a-public-bus-system-in-johannesburg-saved-south-africa-890-million/404557/>
[Accessed 5 October 2015].

Kyte, R., 2012. "A good public transport system must be easy and convenient to use, fast, safe, clean and affordable". [Online]
Available at:
<http://www.globalbriefing.org/2012/07/agoodpublictransportsystemmustbeeasyandconvenienttousefastsafecleanandaffordable/>
[Accessed 30 May 2015].

Lambert, T., 2014. *A Brief History of Transport*. [Online]
Available at: <http://www.localhistories.org/transport.html>
[Accessed 24 July 2015].

Lambert, T., n.d. *A Timeline of Transport in History*. [Online]
Available at: <http://www.localhistories.org/transporttime.html>
[Accessed 24 July 2015].

Learn.org, 2012. *How Public Transportation Can Save Students Time and Money*. [Online]
Available at:
http://learn.org/articles/How_Public_Transportation_Can_Save_Students_Time_and_Money.html
[Accessed 21 October 2015].

LG, 2010. *What is cityness and why should you bother?*. [Online]
Available at: <https://cityness.worldpress.com/2010/10/23/what-is-cityness-and-why-should-you-bother/>
[Accessed 4 September 2015].

Litman, T., 2015. *Valuing Transit Service Quality Improvements: Considering Comfort and Convenience in Transport Project Evaluation*, Victoria: Victoria Transport Policy Institute.

LSE, 2015. *Student travel cards (Oyster)*. [Online]
Available at:
<http://www.lse.ac.uk/intranet/students/campusLondonLife/studentTravelCard.aspx>
[Accessed 18 October 2015].

Luke, R. & Heyns, G., 2013. Public transport policy and performance: The results of a South African public opinion poll. *Journal of Transport and Supply Chain Management*, 7(1), p. 8.

MacNeela, P. et al., n.d. *Health and Well-Being of NUI Galway Undergraduate students: The student lifestyle survey*, Galway: National University of Ireland.

May, T., 2001. *Social Research issues methods and processes*, Maidenhead: Open University.

McCarthy, J. J. & Swilling, M., 1985. South Africa's emerging politics of bus transportation. *Political Geography Quarterly*, 4(3), pp. 235-249.

McKnight, C. E., Pagano, A. N. & Paaswell, R. E., 1986. *Using Quality to Predict Demand for Special Transportation, in Behavioural Research for Transport Policy. International Conference on Travel Behaviour*, Noordwijk, Netherlands: VNU Science Press.

Morales, E. B., 2010. *Promoting the right to the city through a transport system? The case of Transmilenio, The BRT of Bogota*, London: Development Planning Unit, University College of London.



Mumford, L. & Osborn, F., 1971. *The letters of Lewis Mumford and Frederic J. Osborn; a transatlantic dialogue 1938-70*. New York: New York Prager.

Murray, T. A., 2001. Strategic analysis of public transport coverage. *Docu-Economic Planning Sciences*, Volume 35, pp. 175-188.

Natrasony, S. M. & Alexander, D., 2004. *The Rise of Modernism and the Decline of place: The Case of Surrey City Centre, Canada*, Vancouver: Simon Fraser University.

Newman, P. & Kenworthy, J., 1999. *Sustainability and cities: overcoming automobile dependence*, Washington DC: Island Press.

Newman, P. & Kenworthy, J., 1999. *Sustainability and cities: overcoming automobile dependence*, Washington DC: Island Press.

Newman, P., n.d. *Why do we need a good public transport system?*, Western Australia: Curtin University Sustainable Policy (CUSP) Institute.

Nkosi, B., 2015. *Student protest brings Wits University to a standstill*. [Online] Available at: <http://mg.co.za/article/2015-10-14-student-protest-brings-wits-university-to-a-standstill> [Accessed 18 October 2015].

Nteta, Z., 2014. *Women have a right to safe public transport*. [Online] Available at: <http://www.capetownpartnership.co.za/theme/public-spaces/> [Accessed 22 March 2015].

Palys, T., 2008. Purposive sampling. In L. M. Given (Ed) *The Sage Encyclopedia of Qualitative Research Methods*, Volume 2, pp. 697-698.

Park, R., 1967. *On social control and collective behaviour*. 1st Phoenix ed ed. Chicago: University of Chicago Press.

Pearson, S., 2012. *The Swiss don't miss: Explaining the world's most efficient public transportation system*. [Online]

Available at: <http://news.discovery.com/adventure/travel> [Accessed 3 March 2015].

Pieterse, E., 2010. *Cityness and African Urban Development: Working Paper No 42*, United Nations University and World Institute for Development Economics Research.

Pirie, G. H., 1986. Johannesburg transport 1905-1945. *Journal of Historical Geography*, 12(1), pp. 41-55.

PUTCO, 2015. *PUTCO Buses*. [Online]

Available at: <http://www.putco.co.za/index.php/our-bus-services/our-bus-fleet/putco-buses> [Accessed 23 October 2015].

ReaVaya, 2015. *Bus Schedule*. [Online]

Available at: <http://www.reavaya.org.za/consumer-information/bus-times> [Accessed 5 October 2015].

Rietveld, P. & van Exel, N. J., 2010. Perceptions of public transport travel time and their effect on choice-sets among car drivers. *Journal of Transport and Land Use*, 2(3/4), pp. 75-86.

SA Commercial Prop News, 2012. *Demand for student accommodation spikes in South Africa*. [Online]

Available at: <http://www.sacommercialpropnews.co.za/property-types/housing-residential-property/4946-more-on-demand-for-student-accommodation-spikes-in-south-africa.html> [Accessed 5 October 2015].



Samsa, A. L., 2012. *If You Can't Afford Public Transit, You Can "Choose" to Take Your Car*. [Online]

Available at:

<http://www.care2.com/causes/ifyoucantaaffordpublictransityoucanchoosetotakeyourcar.html>

[Accessed 30 July 2015].

Sandercock, L., 1998. *Towards Cosmopolis: Planning for Multicultural Cities*, Chichester : Wiley.

Sassen, S., 2005. *Cityness in the Urban Age*, London: Urban Age- Bulletin 2.

Scott, D. M. & Horner, M. W., 2004. *Urban Form and Social Exclusion: An Exploratory Analysis in a U.S setting*, Canada: Centre for Spatial Analysis.

Scott, D. M. & Horner, M. W., 2008. The role of urban form in shaping access to opportunities. *Journal of Transport and Land Use*, 1(2), pp. 89-119.

Sekhonyane, M. & Dugard, J., 2005. *A Violent Legacy: The taxi industry and government loggerheads*, SA Crime Quarterly No.

Shields, R., 1996. A guide to urban representation and what to do about it: alternative traditions of urban theory. Re-presenting the city: Ethnicity, capital, and culture in the twentyfirst-century. *King, A (Ed), London: Macmillan*, pp. 227-252.

Simpson, Z. et al., 2011. *Past and Present travel patterns in the Gauteng City Region*, Johannesburg: University of Johannesburg and GCRO.

Somerset, T., 2014. *Nursing Times*. [Online]

Available at:

<http://www.nursingtimes.net/studentnursingtimes/icantaaffordtogettoaplacem>

[ent/5068965.article](http://www.southafrica.info/travel/advice/joburg.htm#VPWjovmUe8A)

[Accessed 21 July 2015].

South African History Online, S., n.d. *Term 3: Transport through time*. [Online]

Available at: <http://www.sahistory.org.za/transportland>

[Accessed 24 07 2015].

SouthAfrica.info, 2015. *Transport in Johannesburg*. [Online]

Available at:

<http://www.southafrica.info/travel/advice/joburg.htm#VPWjovmUe8A>

[Accessed 3 March 2015].

Stahlberg, S. G., 2016. *Lessons in Urban Transport from Berlin*. [Online]

Available at:

<http://www.saisperspectives.com/2015issue/2015/4/15/lessons-in-urban-transportation-from-berlin>

[Accessed 20 October 2015].

Stake, R. E., 1995. *The art of case study reserch*. Thousand Oaks: CA: Sage.

Stanley, J. & Lucas, K., 2008. Social exclusion: What can public transport offer?. *Research in Transportation Economics*, 22(1), pp. 36-40.

Statistics South Africa & Department of Transport, 2014. *National Household Travel Survey*. Pretoria, Statistics South Africa.

Stein, A. & Runge, D., 2013. *Financing Public Transport in Germany- Part C: Case study Berlin*, Berlin: GIZ.

Student Loan Centre, 2015. *Stop Student Debt from Ruining Your Life*. [Online]

Available at:

<http://usstudentloancenter.org/stopstudentdebtfromruiningyourlife/>

[Accessed 7 August 2015].



Sullivan, K., Frost, M. & Church, A., 2000. Transport and social exclusion in London. *Transport Policy*, Volume 7, pp. 195-205.

TCRP, 2009. *Literature Review for Providing Access to Public Transportation Stations*, United States of America: Transit Cooperative Research Program.

The Canadian Urban Transit Association, C., n.d. *Public transit and our quality of life: Building better communities*, Toronto: CUTA.

Top Universities , 2015. *Top 10 Universities in South Africa 2015*. [Online] Available at: <http://www.topuniversities.com/university-rankings-articles/brics-rankings/top-10-universities-south-africa-2015> [Accessed 7 October 2015].

TouristBerlin, 2015. *Using Berlins Public Transport*. [Online] Available at: <http://www.touristberlin.com/usingberlinspublictransport/> [Accessed 14 April 2015].

Transportation Research Circular, 2006. *Maintenance and Operations of Transport Facilities*, Washington, DC: Transport Research Board of the National Academies.

Trusler, J., 2003. South African e-Government Policy and Practices: A Framework to Close the Gap. *Electronic Government*, Volume 2739, pp. 504-507.

Turok, I. et al., 2011. *State of the cities report*, Johannesburg: South African Cities Network.

Tyler, N., 2002. *Accessibility and the bus system: from concepts of practice*, London: Tomas Telford.

van Ryneveld, P., 2008. *15 Year Review of Public Transport in South Africa with emphasis on metropolitan areas*, Hunter van Ryneveld.

Victoria State Government, 2014. *Transporting Students*. [Online] Available at: <http://www.education.vic.gov.au/school/principals/spag/safety/pages/transporting.aspx> [Accessed 18 October 2015].

Walters, J., 2010. Is the bus transport contracting system in South Africa leading to trusting relationships between contracted parties? An analysis of funding issues and the impact on relations between government and operators. *Research in Transportation Economics*, Volume 34, pp. 236-243.

Warder, L., 2014. *Memories; the good and the bad*. [Online] Available at: <http://lizinservice.com/2014/06/19/memories-the-good-and-the-bad/#comments> [Accessed 21 September 2015].

Washington Post, 2015. *Images*. [Online] Available at: <https://images.washingtonpost.com/?url=https%3A%2F%2Fimg.washingtonpost.com%2Fblogs%2Fwonkblog%2Ffiles%2F2015%2F08%2F7hAJ4qG1.gif&op=noop> [Accessed 27 October 2015].

Wesi, T., 2015. *Fees Must Fall protest in Pretoria 'hijacked'*. [Online] Available at: <http://citizen.co.za/833478/fees-must-fall-protest-in-pretoria-hijacked/> [Accessed 24 October 2015].



White, G. B., 2015. *Stranded: How America's Failing Public Transportation Increases Inequality*. [Online]

Available at:

<http://www.theatlantic.com/business/archive/2015/05/strandedhowamericafailingpublictransportationincreasesinequality/393419/>

[Accessed 2 July 2015].

Winster Jr, R. B., Miller, T. K. & Cooper, D. L., 1999. *Preliminary Technical Manual for the Students Development Task and Lifestyle Assessment*, Georgia.

Yago, 1984. *The decline of transit: Urban transportation in Germany and US cities, 1900-1970*, New York: Cambridge University Press.

Yin, R., 2009. *Case Study Research: Design and Methods*. Fourth Edition ed. United States of America: SAGE.



Appendix A: Questionnaire

Personal profile

- 1) How old are you?
- 2) What is your city of birth?
- 3) What city do you currently live in?
- 4) If you moved from your city of birth, what are the reasons for this move?
- 5) Where do you live? (Please specify exact location)
- 6) What university are you registered with?

The first set of questions are brief and just introduce the demographics of the students to be interviewed and to get well acquainted with the students and their location within the city of study. These questions also start locating the students in relation to their university and this will form the bases of analysis at a later stage in the study. The questions in this section are brief and straightforward as the survey builds up momentum slowly, before asking the more complicated and thought provoking questions, so the interviewee is eased into the questionnaire.

Lifestyle

- 7) What activities do you like to pursue in the city?
- 8) What other parts of the city do you visit? And what is the purpose of

these visits? (Entertainment, academic, leisure etc.)

- 9) How late can you stay out in the city when pursuing the activities mentioned above?
- 10) Do you feel that you are able to do all the activities that would like to do in the city?
- 11) If not, why?
- 12) Why do you feel you are able to pursue the activities above? (e.g.: affordable, have no choice, need to relax, close to your home etc.)
- 13) Which parts of the city are more and which parts are less accessible for you?
- 14) Briefly explain why this is the case?
- 15) Are you satisfied with the life you are able to live in the city?
- 16) Do you feel that life is easy in the city?
- 17) What makes you feel this way?
- 18) Do you feel like the city accommodates you and your everyday needs?
- 19) If not why, and if yes how?
- 20) Do you feel unsafe in certain parts of the city?
- 21) If yes, please explain which parts of the city and why you feel unsafe?
- 22) Do you feel that the city is made for everyone to participate in it? (all ages, races, social classes, sexes)
- 23) Please explain in detail why you gave the answer that you gave above.
- 24) Considering your answer above, do you, as a student, feel included in



the city?

25) Please explain your answer above.

26) Would you change anything about the city you live in, according to the things discussed above?

The second set of questions are based on unpacking a student's lifestyle as this section is targeted at understanding how the student interacts with the city, if this interaction is hindered by any factor and if their pleased with their capacity to interact with the city. This section gets students to start thinking beyond their daily activities and reflect on how they feel in space and if the spaces they are in cater for them in a variety of aspects. Student's right to the city is questioned here and whether or not they are given a fair and free chance to participate in the city and make it their own space.

Choice of mobility

27) What modes of transport do you utilise to get to university and back home?

28) How long does it take for you to get from home to your campus?

29) Which mode(s) of transport do you prefer and why?

30) What route does your mode(s) of transport use? (Please specify the rail line, which station you embark and disembark at, which bus, or what route a taxi might take. Be as detailed as possible)

31) Do you feel at ease when using public transport?

32) Explain why you feel this way?

33) Does public transport make your life easier? (Please explain this in detail, why and how)

34) Do you feel safe and secure when using public transport?

35) Why do you feel this way?

36) Do you feel safe after coming off public transport? (e.g. walking home or to university after disembarking from public transport)

37) Is your answer above affected by time and the days of the week, if so please explain which times and days and why? (e.g. Sundays are less safe because it is quiet at train stations the whole day)

38) Is the mode(s) of public transport you use accessible at any time?

39) Does the mode of public transport that you use run on a timetable? (Does the bus, train or any other mode run at certain intervals, every 15 minutes, or a bus comes at 13:00, 14:00, 15:30 etc.).

40) If it runs on a timetable is it always on time?

41) Do you experience good service when using public transport?

42) How much time do you spend using public transport a day? (Specify trips, e.g. Monday from home to school=1 hour, Sunday from church to McDonalds= 2 hours)

43) How much money do you spend on public transport per day?

44) How much money do you spend on public transport per month?

45) Do you feel this is affordable?

46) Does the space in your mode(s) of public transport accommodate you? (With many bags, groceries, a wheel chair, a baby, a bicycle etc.).



- 47) Is it easy to gain access to a public transport stop or station from home and from school?
- 48) Are there transport stops or stations close to the areas of interest you like going to?
- 49) How long does it take to gain access to any mode of public transport? (time- how long do you wait and distance- how far do you have to walk to a station)
- 50) Can you get off one mode of transport and directly catch another mode? (Is the transport you use inter linked with other modes of transport)
- 51) Is the public transport you use well maintained?
- 52) Which form of transport makes your life in the city easier, public or private, and why?
- 53) What would you generally change about public transport and why?
- 54) Any more thoughts on public transport, you, and the city?
- 55) Can you tell me a story that summarises your experience of public transport?

discussed in the literature review. I have used the following adjectives to describe what an efficient public transport system is : reliable, comfortable , safe, quick, modern infrastructure, intermodal connections, meeting the demands of urbanisation, punctual, well maintained, available at different times and places, affordable, user friendly, secure, short waiting time, and quality of service.

This sections looks to unpack students' thoughts and feelings about the public transport they use through asking a set of questions related to the mode(s) of transport they make use of to get to university, home, and around the city. The section interrogates the efficiency of public transport through asking a variety of questions that are in line with the efficiency criteria



Appendix B: Participation information sheet

Participation Information Sheet

Research title: A comparative study of students' experiences of public transport in Johannesburg and Berlin
Johannesburg and Berlin

Interviewer: Maryam Nwabisa Monakali

Contact details: 071 026 2851

Email: 536527@students.wits.ac.za

My name is Maryam Monakali and I am conducting a study on students' experiences of public transport in Johannesburg and Berlin. This study seeks to understand how public transport affects the way students gain access to, and participate in the city. This research aims to explore if students in different cities have different experiences of public transport and what elements of public transport and the context shape these differences. This research will reveal what lessons on public transport can be learnt from different contexts as to aid in the improvement of public transportation in South Africa.

The information collected in this questionnaire will be confidential and you have the choice to stay anonymous if required. There are not risks attached to being involved in this research. However, please feel free to refuse to answer any questions that make you uncomfortable. Whether or not you take part in this questionnaire is by your choice. If you do not want to take part, you do not have to give a reason. If you do want to take part now, but change your mind later, you can inform me and the information collected from you will not be used in this research.

You have been chosen through purposive sampling and will be required to answer questions on your use of public transport. You will be asked a series of questions that will bring about an understanding of how you experience public transport in Johannesburg or Berlin. This will take place in a comfortable quiet area where there will be no distractions, at any time you are available during working hours between 08:00-17:00 from Monday to Friday.

This information will be used in this research report and upon completion will be available from The University of the Witwatersrand. A hard copy of the research report will specifically be available in the Martienssen Library in the School of Architecture and Planning, John Moffat building, first floor as well as online.

This Participant Information Sheet will help you decide if you'd like to take part in this research. You are welcome to contact me to ask any questions of clarity. A summary of the research will also be made available if requested. If you agree to take part in this study, you will be asked to sign the Consent Form on the last page of this document. This document is 3 pages long, including the Consent Form. Please make sure you have read and understood all the pages.



Contact details:

Location: Wits School of Architecture and Planning

Researcher: Maryam Nwabisa Monakali

Phone: +27 71 026 2851

Email: 536527@students.wits.ac.za

Location: Wits School of Architecture and Planning

Supervisor: Dr Brian Boshoff

Phone: +27(11)717-7708

Email: brian.boshoff@wits.ac.za



Consent form

I have read and I understand the Participant Information Sheet. Yes ☐ No ☐

I agree to become involved in this research through the completion of the questionnaire. Yes ☐ No ☐

I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet. Yes ☐ No ☐

I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without this affecting me. Yes ☐ No ☐

I consent to the research staff collecting and processing my information. Yes ☐ No ☐

If I decide to withdraw from the study, I agree that the information collected about me up to the point when I withdraw may continue to be processed.

Yes ☐ No ☐

I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study without my consent.

Yes ☐ No ☐

I agree to be recorded during the interviews. Yes ☐ No ☐

I know who to contact if I have any questions about the study in general. Yes ☐ No ☐

I understand my responsibilities as a study participant. Yes ☐ No ☐

I understand that my information will be kept strictly confidential and that I have the choice to stay anonymous. Yes ☐ No ☐

I hereby give my consent give to the above and agree to take part in this study.

Participant's name:

Signature:

Date:



Declaration by researcher:

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it.

I believe that the participant understands the study and has given informed consent to participate.

Researcher's name:

Signature:

Date:



Appendix D: Permission from Registrar

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



OFFICE OF THE DEPUTY REGISTRAR

28 May 2015

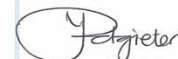
TO WHOM IT MAY CONCERN

**"A comparative study of students' experiences of public transport in
Johannesburg and Berlin"**

It is hereby confirmed that the enclosed research material has been distributed in accordance with the University's approval procedures for such a project. Please be advised that it is your right to withdraw from participating in the process if you find the contents intrusive, too time-consuming, or inappropriate. The necessary ethical clearance has been obtained.

Should the University's internal mailing system be the mechanism whereby this questionnaire has been distributed, this notice serves as proof that permission to use it has been granted.

Students conducting surveys must seek permission in advance from Heads of Schools or individual academics concerned should surveys be conducted during teaching time.


Nicoleen Potgieter
Deputy Registrar

Private Bag 3, Wits, 2050, South Africa | T +27 11 717 1204/8 | F +27 86 553 2271 | www.wits.ac.za



