

https://dspace.org/

Commuter Choices and Prospects for Improved Urban Mobility: Investigating BRT and Mini Bus Taxi in Pimville, Soweto

Mandyanda, Aviwe

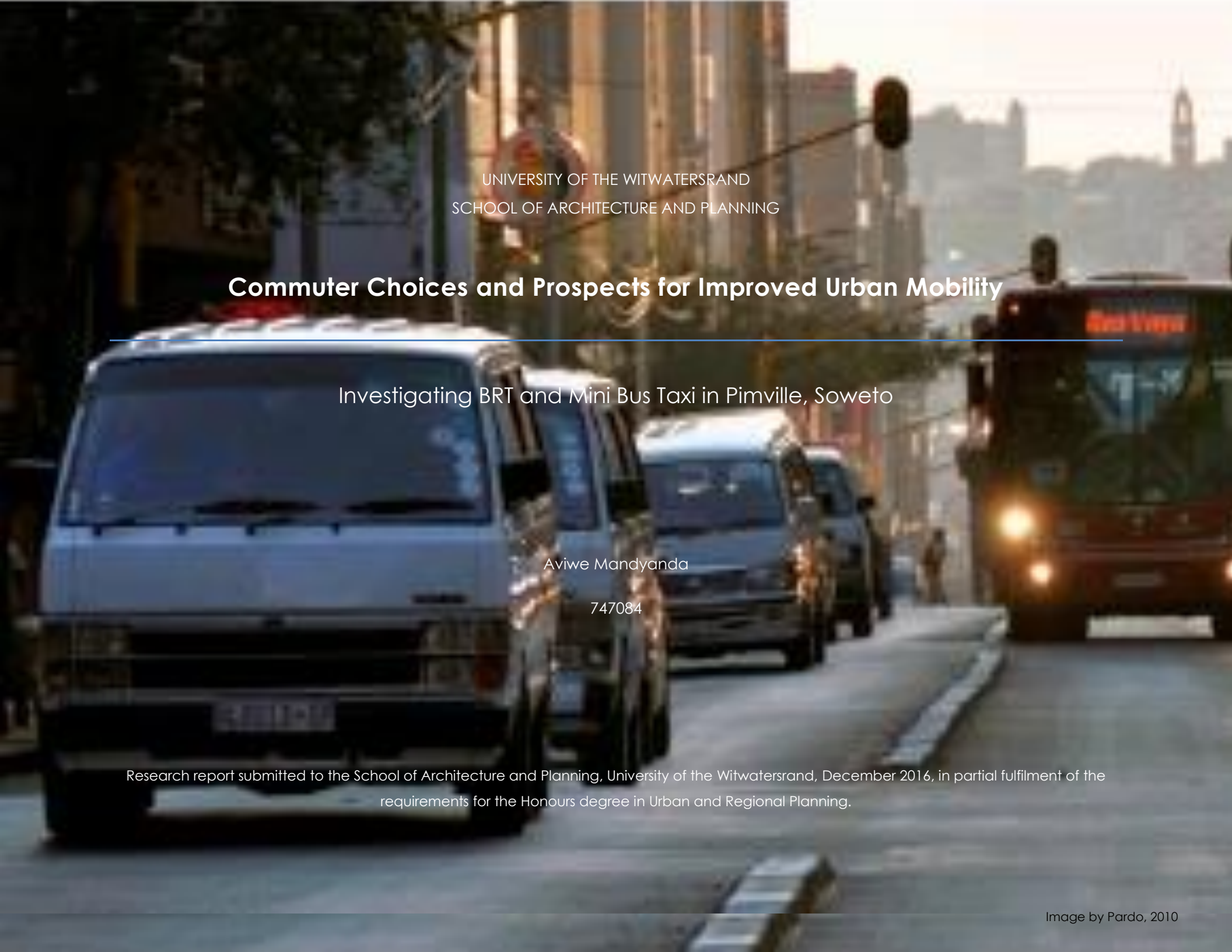
2016

UNIVERSITY OF WITWATERSRAND FACULTY OF ENGINEERING & THE BUILT ENVIRONMENT

http://hdl.handle.net/10539/22799

Mandyanda, A. (2016), Commuter Choices and Prospects for Improved Urban Mobility. Faculty of Engineering and the Built Environment, University of the Witwatersrand

Downloaded from a DSpace repository. https://dspace.org/



UNIVERSITY OF THE WITWATERSRAND
SCHOOL OF ARCHITECTURE AND PLANNING

Commuter Choices and Prospects for Improved Urban Mobility

Investigating BRT and Mini Bus Taxi in Pimville, Soweto

Aviwe Mandyanda

747084

Research report submitted to the School of Architecture and Planning, University of the Witwatersrand, December 2016, in partial fulfilment of the requirements for the Honours degree in Urban and Regional Planning.

Image by Pardo, 2010

Declaration

I declare that this research report is my own unaided work. It is being submitted to the degree of Bachelor of Science in Urban and Regional Planning Honours to the Faculty of Engineering and the Built Environment at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

_____

Aviwe Mandyanda

9 day of December 2016

Abstract

The purpose of the study is to understand the everyday social and spatial practices that affect transportation choices in the city from the perspective of public transport commuters.

My research is a qualitative inquiry of commuter mobility choices and particularly the reasons behind them. In the pursuit to better understand how transport in South Africa can become more efficient in providing improved levels of access and mobility to a wider spectrum of people, my research focuses on contributing to an understanding of how and why people make individual travel decisions. It investigates how people are responding to the increasing public transportation options and aims to gain a deeper understanding of commuter choices concerning accessibility and mobility in Johannesburg.

Drawing from theoretical writings on urban mobility and travel behaviours the main argument of my study is that commuter choices between different modes of transport are influenced by both various socio-economic, spatial and cultural factors, which are attached to practices, narratives and meanings.

My study focuses on two transport modes operating along the Johannesburg – Soweto corridor within metropolitan Johannesburg: the Rea Vaya Bus Rapid Transport (BRT) system and the Minibus Taxis (MBTs). It investigates how the two systems have addressed commuter mobility needs, and how commuters are responding to the increased transport options that have become available to them along this corridor. Based on semi-structured interviews, imagery, literature and detailed descriptions emanating from fieldwork, this research report presents everyday life in Pimville as a negotiation and displays the MBT and BRT stations and their users as active participants in this negotiation. The different themes present the different forms of commuter life as negotiation in Pimville.

Acknowledgements

I thank God; it is through divine grace that I have made it this far.

To my family, thank you for your support. Your encouragement and love have kept me going at my most difficult times.

To my supervisor, Amanda Williamson, thank you for your patient guidance. I have often come to you in disarray but left being clear minded and encouraged, taking put one foot after another. Thank you for all you have done to keep me afloat.

A special thank you goes out to the champion, Solam Mkhabela. Thank you for believing in me even when I did not believe in myself. Thank you for always giving me the opportunity to share new ideas with you. Your passion about the city is contagious; I continue to respect you as a mentor.

Thank you to Mfaniseni Sihlongonyane, for taking the time out of your busy schedule to help centre me whenever I got all flustered about this research and steering me towards the right direction. To Mpho Matsipa and Gerald Chungu, thank you for being an inspiration throughout the process of writing this Research report.

Thank you to my entire Black Studio Family, the squad that kept me inspired, made the time to listen to my ranting and turning it into something positive. Thank you for the laughs, the cries, meat and pap. To Nkosilenhle Mavuso, for your support through this research process has been phenomenal. Thank you for the lengthy discussions we had with regards to this research report and your assistance in structuring this document. I am truly indebted to you for all your support.

To every participant who has contributed to the content of this report. Thank you for your time and for provided me with a wealth of insight and exposure to some of the nuances of what it means to be a transport planner in Johannesburg.

CONTENTS

Declaration i

Abstract ii

Acknowledgements iii

List of Figures vii

List of Maps vii

List of Tables vii

List of Acronyms viii

1. CHAPTER ONE: Setting the scene: Introduction and background 9

1.1. Introduction 9

1.2. Background 10

1.3. Problem statement 11

1.4. Research aim and objectives 13

1.5. Research question and sub questions 14

1.6. Research methodology and methods: Qualitative case study 14

1.6.1. Qualitative method 15

1.6.2. Case study method 15

1.6.3. Why Pimville BRT and MBT commuters that travel between inner city and Johannesburg. 16

1.7. Data collection method and analysis: Participant observation, semi-interviews 18

1.8. Desktop study 18

1.9. Observation 18

1.10. Semi structured interviews 19

1.10.2. The questionnaire 20

1.10.3. Sampling 22

1.11. Data processing and analysis 22

1.12. Research rationale 23

1.13. Ethical considerations 25

1.14. Conclusion 25

1.15. Research outline 26

2. CHAPTER TWO LITERATURE REVIEW: Building the theoretical framework: Urban mobility, and making sense of everyday travel Behaviour and Choices 29

2.1. Introduction 29

2.2. Understanding urban mobility 30

Urban sociology approaches to mobility 30

Transport geography approaches to mobility 30

2.3. What do these mobility concepts mean for assessing commuter choice 33

2.4. Urban form and travel choices 34
2.5. Socio-Demographic aspects on mobility choices 35
2.6. Mobility and the psychology of choice 36
2.7. Considering urban mobility in the (South) African context 36
2.7.1. Mobility in (South) African Global South 37
3. CHAPTER THREE: Contextualising the Research Site Pimville and transport system in Johannesburg 43
3.1. Introduction 44
3.2. Pimville: the study srea & its location 44
3.3. Social dynamics 48
3.4. Livelihoods 48
3.5. Pimville in relation to transportation 50
3.5.1. The Minibus taxis (MBT) 50
3.5.2. The Rea Vaya BRT system 52
3.5.3. Urban transportation and current conditions 54
4. CHAPTER FOUR FINDINGS: Pimville commuters' travel behaviours and attitudes towards travel modes. 58
4.1. Introduction 58
.....**Error! Bookmark not defined.**
4.2. Documenting Bus Rapid Transit (BRT) Journeys 61
4.2.1. Observation: Rea Vaya system and its commuters 63
4.2.2. BRT commuters narratives: 64
4.2.3. Why do you use BRT? 70
Accessibility 70
Time: Trip duration and time of day 71
Reliability 72
Cost 73
Comfort 73
An opportunity to relax and socialize in BRT 74
Influence of others (fellow students, grandparent, and parents) 74
4.3. Documenting Minibus Taxi (MBT) Journeys 76
4.3.3. Observation: MBT System and its commuters 77
4.3.4. MBT commuters narratives 78
4.3.5. Why do you use MBT? 83
Accessibility MBT convenience and flexibility 83
Time 83
Loyalty and attachment 84

5. CHAPTER FIVE: Analysis and discussion of findings: What commuter stories reveal about the transport system in Johannesburg? 86

5.1. Introduction 86

5.2. Accessibility 87

5.3. Time duration of trip 91

5.4. Comfortability, Reliability and Frequency 91

5.5. Habitual 91

5.6. Lack of choice 92

5.7. Conclusion 92

6. CHAPTER SIX: Conclusion and Recommendations 95

6.1. Introduction 95

6.2. Summary of research 95

6.3. Recommendations 97

6.4. Further research 100

6.5. Limitation of research 101

6.6. Reflections 102

7. REFERENCES 104

List of Figures

Figure 1: Minibus taxis in in the Global South..... 40

Figure 2: Diagrammatic illustration of the study's key concepts..... 43

Figure 3: The Growth of Johannesburg and central Johannesburg 52

Figure 4: A simple illustration of commuter dominant travel patterns from Soweto to one of Johannesburg's economic nodes..... 55

Figure 5: Main mode of transport used to travel to work..... 56

Figure 6: The Rea Vaya BRT systems and MBT trip from Soweto to the City . .....**Error! Bookmark not defined.**

Figure 7: Images of Rea Vaya commuters..... 63

Figure 8: Minibus taxi commuters in Modjadji Street..... 77

Figure 9: BRT and MBT models interactions that currently hold the greatest promise in achieving complementarity 99

List of Maps

Map 1 : Countries that have implemented the Bus Rapid Transit System (BRT)10

Map 2: Schematic Map of Old Johannesburg 45

Map 4: A map of Pimville in context of region D 46

Map 3: The regional context of the city of Johannesburg, highlighting the location of Pimville in Soweto in relation to the inner city and other nodal point of places of work and school in the city. 46

Map 5: A locality map of the research focus area in Pimville..... 47

Map 6: All the public transport available in the Pimville Area 57

Map 8: Map of BRT routes, both phase 1A and 1B with trunk, complementary and feeder routes map including the different station and the Pimville route 62

Map 9: Rea Vaya Bus stops in Modjadji Street 63

List of Tables

Table 1: A list of all the participants that took part in the study..... **Error! Bookmark not defined.**

List of Acronyms

APK - Auckland Park Kingsway Campus

BRT - Bus Rapid Transit

C5 – Complementary 5

CBD - Central Business District

CoJ– City of Johannesburg

DoT- Department of Transport

F10 - Feeder 10

GCRO - Gauteng City Region Observatory

IRPTN - Integrated Rapid Public Transport Network

JHB -Johannesburg

MBT - Minibus Taxi

NDoT- National Department of Transport

NMT - Non-Motorized Transit

PRASA - Passenger Rail Agency of South Africa

Putco- Public Utility Company

SA - South Africa

SABC - South African Broadcasting Corporation

SITPF- Strategic Integrated Plan Framework

Soweto – South Western Townships

StatsSA- Statistics South Africa

T1- Trunk 1

T3 - Trunk 2

UJ - University of Johannesburg

UN - United Nations

Wits – University of the Witwatersrand

1. CHAPTER ONE: Setting the scene: Introduction and background

1.1. Introduction

This research report aims to understand public transport conditions from the perspective of commuters. Johannesburg, like many other South African cities, comprises of a dual public transport system in the form of institutionally regulated modes (bus and rail) and paratransit[1] systems, mainly in the form of minibus taxis (MBT).

Johannesburg is changing. The city authorities are taking positive steps for the inclusion of a functioning public transport system in the form of the Rea Vaya Bus Rapid System. It is a system that is long overdue and one that might have resonating effects for the city. One of the key transport issues in South Africa is the poor integration of transportation system modes. This research report investigates the subject of urban mobility in metropolitan Johannesburg by exploring how commuter choices between different modes of transport are not only influenced by various socio-economic and spatial elements but also by perceptions and cultural aspects. This study investigates how the implementation of the BRT system in 2009, on top of the already existing MBT system during that time, addressed inefficiencies in commuter mobility needs, and how commuters are responding to the increased transport options that have become available to them along this corridor.

The study focuses on two transport modes operating in Johannesburg, the Bus Rapid Transport (BRT), as the most recent public transport initiative by the City of Johannesburg (CoJ), and the Minibus Taxi (MBT) paratransit system, as the older and more dominant transport mode.

This chapter begins with an outline of the current context of rapid urbanisation, spatial fragmentation and inequality in Johannesburg and how this has resulted in the need for more sustainable modes of transport in the city, which has seen the implementation of the BRT system between two of the most populated and polarised settlements in the city, that being central Johannesburg and Soweto.

[1] Paratransit network is a heterogeneous, flexible mode of passenger public transportation that does not necessarily follow fixed routes or schedules, usually in the form of mini bus taxis (small- to medium-sized buses) common in the Global South. They typically dominate the public transport modal share in cities of the Global South, offering transport to a significant amount of the populations in cities such as Nairobi in Kenya, in Jakarta Indonesia Caracas in Venezuela and Johannesburg in South Africa. They mostly fall outside the public transport institutional regulation of the city, and are often referred to as informal or illegal forms of public transportation. The term paratransit is preferred to informal transport in this research report as these services are not necessarily provided by informal businesses or unregulated. (Golub, Behrens, and Ferro; 2012)

1.2. Background

In the face of urban mobility and accessibility challenges and the pursuit of sustainable transport, several cities in the Global South are in the process of planning and implementing public transport improvement initiatives (Golub, Behrens and Ferro, 2012). Most call for a restructuring of the existing public transport system, including paratransit systems into a new system to address the deficiencies in the public transport issues, congestion, accessibility and efficiency (Golub, Behrens and Ferro, 2012). These initiatives are often centred on introducing a Bus Rapid Transit (BRT) system. Map 1 illustrates the growth of implementation of the BRT systems in the world (Gauthier and Weinstock, 2010; Pardo, 2009). In Africa there are 3 BRT projects implemented to date (Ferro and Behrens, 2013).

In South Africa, the first BRT system began its operation in August 2009 in Johannesburg, namely *Rea Vaya* (A Tswana word meaning, we are going). The system is a trunk feeder network modelled after the Latin American systems in Colombia and Brazil. This system involved connecting the inner city of Johannesburg with Soweto.

Johannesburg has various public transport modes (Putco, Metro and the Rea Vaya BRT bus system) and a paratransit system, mainly in the form of minibus taxi (MBT), that form a complex composition of both formal and informal transportation that sought to respond and provide a service to the population. This transport system seems to be based on independent, parallel or disconnected agendas of transportation- that are mostly unreliable (Bickford, 2013).

This section begins with an outline of the current context of public transport systems in South African cities against which the research problem– commuter choices in the context of an expanded range of public transport modes.



Map 1 : Countries that have implemented the Bus Rapid Transit System (BRT) in 2016 (Source: Brtdata.org)

1.3. Problem statement

The nature of public transport system in South Africa reflects the apartheid spatial planning aspects that remain embedded in the urban landscapes of South African cities. Apartheid spatial planning dictated that the black labour force would be situated in racially segregated townships on the outskirts of the cities, such as Soweto. Initially, workers from Soweto were transported mainly by rail and buses to the Central Business District (CBD) and other economic nodes (Ferro, Behrens and Wilkinson 2013). In the 1970s, the minibus taxi (MBT) industry emerged, and grew rapidly, fast superseding existing transport modes and becoming the main mode of public transport in most cities (Ferro, Behrens and Wilkinson, 2013).

Paratransit services have long been a common feature of public transport in the cities of the Global South (Avellaneda García 2007 cited in Ferro and Behrens, 2015). The MBTs connects different areas of cities, offering a demand responsive and flexible mobility (Ferro and Behrens, 2015). According to the GCRO 2015 Quality Of Life Survey data, MBTs are an important mode for people who travel to work every day and people in search of work, "…with almost three out of four work-seekers depending on a taxi". MBTs also act as an important mode for other purposes "such as education and shopping/ leisure trips" (GCRO, 2015:21).

However, contemporary policy discourse argues the dominance of MBTs undermine other existing modes and has been contributing to the decline of the public transport system (Ferro, Behrens and Wilkinson, 2013). Paratransit operations contribute to mobility issues such as congestion and air pollution and often display dangerous behaviours on the road (Ferro, Behrens and Wilkinson 2013). Wilkinson (2008, cited in Ferro, Behrens and Wilkinson (2013)) observes that most of the MBT industry is fragmented, and thus it is difficult to regulate by transport or local planning authorities. The MBT system has been resistant to government efforts to transform public transport. Recently the South African National Department of Transport (NDoT) introduced various Integrated Rapid Public Transport Network (IRPTN) projects that became an essential form of policy that proposed the transformation of public transport systems in the country's metropolitan areas, many of which were centred on BRT systems (Pillay and Seedat, 2007). Currently, BRT systems are operating in Johannesburg, Cape Town, and Tshwane; while the Buffalo City, Nelson Mandela Bay, Rustenburg, and Polokwane systems are in the process of implementation.

The IRPTN projects ultimately envisioned the transformation and the absorption of existing public and paratransit systems into new 'formal' systems (McCaul and Ntuli, 2011). This has meant a withdrawal of competing services (such as MBT and Putco)

and the formation of a bus operating company (Grütter, 2011). McCaul and Ntuli (2011) and Grütter (2011) have reported several MBTs that have been withdrawn and cancelled in return for shares in Rea Vaya system.

Despite the implementation of the BRT, the MBT continues to be the most viable option in Johannesburg, and considering the main mode for work trips by municipality the GCRO (2015:21) reports that MBTs account 42% of work trips in Johannesburg whilst "buses and trains play a minor role across all trip purposes." As a result, a complex set of public transport systems remain in the city, comprising paratransit and 'formal' systems. For instance, in some areas in Johannesburg such as Pimville, a sub-area of Soweto, the BRT exists alongside the Putco and Metro bus systems as well as the MBT system.

Most of the research done in South Africa focuses on the integration of organisational arrangements between the taxi associations and transport authorities (Schalekamp, Mfinanga, Wilkinson, and Behrens 2009; Salazar Ferro, Behrens and Golub, 2012; Behrens, McCormick and Mfinanga, 2012). There is limited inquiry from the angle of the users, regarding what are the emerging patterns or everyday choices people make between these different modes to move and access different places in the city and about issues of integration of the two systems.

The management and operation of this complex hybrid nature of these different modes are also not dealt with well, as no regulatory mechanisms are created for such situations (Ferro, Behrens, and Wilkinson, 2012). Further, existing urban regulatory frameworks may be poorly suited to the actual public transport service conditions on the ground. This study therefore investigates how commuters are responding to the increasing public transport options in Johannesburg, after the implementation of the BRT system in 2009 and how it has addressed mobility and accessibility inefficiencies for commuters that travel between Soweto and the Johannesburg on am everyday basis. It explores the commuters of Pimville as a case study as an example of travel behaviours of people living in the previous disadvantaged and marginalised outskirts of the city. It looks into these two modes using the lense of perception that its different everyday users have of them in relation to each other.

It investigates what underpins everyday travel decisions and travel behaviours of commuters in Johannesburg. There are emerging studies (Behrens and Del Mistro, 2010; Behrens et el., 2007; Behrens and Del Mistro, 2006; Cullinane, 2002; Hiscock et al., 2002) indicating that travel behaviours and choices of commuters are influenced not only by socio-economic variables but also by cultural and spatial factors. This research views mobility as attached to practices, narratives and

meanings, i.e. modal choice is a result of the interconnected relationship between social and spatial influences in aspects of the city which are political in nature. Paratransit and 'formal' forms of transportation respond differently to existing socioeconomic and spatial dimensions of the city and influence commuters' modal choices differently. My research essentially is about understanding public transportation and travel behaviours, which implies recognition of how the aforementioned aspects are interconnected.

1.4. Research aim and objectives

My study investigates urban mobility in Johannesburg by understanding the nature of commuter transport behaviour patterns, perceptions and choices. My research aims to contribute towards understanding why people make certain travel decisions and what makes them change their travel behaviour. It investigates how people are responding to the increasing public transportation options in the city and aims to gain a deeper understanding of commuter choices in relation to accessibility and mobility in Johannesburg. In pursuit of this better understanding, my research focuses on understanding why commuters make the travel decisions that they do and what makes them change their travel choices (if they do). It focuses on the existing opportunities for different modes of transport systems to be more spatially and operationally integrated, from the perspective of the users and how transport in South African cities can become more sustainable and effective in providing improved levels of access and mobility to a wider spectrum of people.

Objectives include:

- exploring the relationship between urban mobility and public transport.
- understanding socio-economic and spatial factors that affect everyday transportation choices in metropolitan Johannesburg
- obtaining qualitative data from Soweto commuters on their public transport choices and the reasons for them.
- investigating the role that MBT plays in satisfying the mobility needs of commuters.
- exploring how commuters are responding to the increased transport options that are becoming available to them
- consider what this may mean in terms of engagement with different transport modes.

- considering the implications for public transport planning to facilitate greater urban mobility that promotes accessibility.

1.5. Research question and sub questions

The central question guiding the research is:

How has the dual presence of MBT and BRT systems affected commuter mobility in Soweto?

The sub-questions are:

- How can we assess mobility to make sense of commuter transport mode choices in Johannesburg?

- What role does the BRT and MBT play in contributing to meeting commuter travel patterns in Pimville,

- What are commuter's perceptions of the MBT and BRT in Pimville?

- Is the increase in transport options increasing commuter mobility and accessibility to the city?

- How can existing public transport system better respond to everyday practices?

1.6. Research methodology and methods: Qualitative case study

This section provides an outline of the research's methodological approach and specifics on the methods used to carry out the research. This research is based on a qualitative approach as a methodological strategy. In particular, it takes the form of a case study that includes interviews and observation as research methods. The research studies the perceptions of commuters travelling using BRT and MBT public transport modes. It focuses on how commuters are responding to the increasing public transport options and explores the influences of everyday travel decisions and travel behaviours of commuters in Johannesburg.

The data collection process of the research was not without any difficulties, as Yin (1994) indicates that usually be there can be expected and unexpected problems that can occur during the research. This section also notes some of the difficulties that the researcher comes across in collecting data for the study as well as the strategies that were developed during the process.

It begins with an outline and discusses the qualitative approach about its relevance towards findings (discussed in chapter 5). The main focus of this section is on providing an

overview of the case study area. This is followed by a discussion on the methods and resources used in obtaining the qualitative data obtained from the fieldwork. The last section of the chapter describes the research limits and considerations and precautions taken regarding research ethics towards research findings.

1.6.1. Qualitative method

The qualitative study focuses "at characteristics or qualities that cannot easily be reduced to numerical values" and "typically aims to examine the many nuances and complexities of a particular phenomenon". Qualitative research involves the observation of behavioural patterns of participants over a period (Creswell, 2003). Commuter, urban mobility is often studied and represented through quantitative research, but this has not lead to the better understanding of commuters' travel choices. This is an exploratory study, intended to yield insights into how people are responding to the expanding range of transport options, and what this means for mobility as indicated in the research rationale, the understanding of urban mobility and transport issues in South Africa often falls short in understanding commuter behaviours and travel choices. The transport planning process is dominated by quantitative empirical research and very top down in some respects (Hannam, Sheller, and Urry, 2006). The nature of urban mobility in Johannesburg after Apartheid is too complex to be quantified or reduced to numbers, and thus there is a need to understand to travel pattern choices and perception concerning people's everyday transport practices. The overall intention of the qualitative method is to explore existing perceptions and attitudes towards available public transportation that influence people's mobility choices.

1.6.2. Case study method

The case study research method is applied in this study to gain "in depth" and "direct" (Sarantakos, 1998: 216) insights into specific aspects of public transport choices in a selected case. Yin (1991: 23) in Sarantakos (1998: 211), explain that a case study is an "empirical inquiry that examines a current phenomenon in its real life context". In contrast with all-encompassing, broad research, case studies are detailed studies.

Yin (2003) and Stake (1995) use different terms to describe a variety of type case studies, distinguished from each other by purpose (explanatory, exploratory, or descriptive, single, holistic case studies and multiple-case studies). This research consists of a single case study and is exploratory in nature with the aim of exploring urban mobility, travel behaviour and commuter choices in Johannesburg.

This research focuses on two modes: the MBT (paratransit) and BRT (formal) systems. It focuses on commuters travel behaviours

in the area of Pimville, Soweto as an example of travel behaviours of people living in the previous disadvantaged and marginalised of the city. It focuses on BRT and MBT commuters from Pimville, Soweto that travel to Inner City- Johannesburg to every day. In this study, commuters are defined as people who make use of any form of transport modes to travel either from home to work, colleges and universities on and back home on daily bases, as opposed to travelling for leisure or shopping purposes.

While case study method has strengths, like other methods, it has weaknesses. As Flyvbjerg highlights (2011: 301), a case study is not "… a methodological choice as a choice of what is to be studied". It requires careful time consideration, and it only focuses on it specific context (Flyvbjerg, 2011: 301). For instance, a case study provides an in-depth understanding of the selected case, but it is limited as it cannot be used to generalise for related cases.

It recognises the importance of locating the research within a particular socio-economic, cultural, and historical context. The choice to embark on a case study is also grounded on the argument that an in-depth and case-specific study can also enable more options to be studied in detail and for different interventions for different parts of a single area to be considered. This study contends that urban mobility choices, like other urban systems, are dynamic, multifaceted, and have their individual characteristics that call for context- specific interventions. Consequently, there is a need for context base and an in-depth investigation for transportation systems of each settlement to guide more appropriate interventions.

A case study as a method avoids approaches that generalise ideas about urban mobility choices, and cross-cutting transport interventions. It recognises that as much as one model can be favourable in one in some contexts, it might not be useful in another place.

1.6.3. Why Pimville BRT and MBT commuters that travel between inner city and Johannesburg.

This research investigates the case of Pimville BRT and MBT commuters that travel between inner city and Johannesburg because of its specific context, history and for logical and practical reasons.

Besides the BRT and MBT transport systems, Pimville commuters make use of other transport modes namely private vehicles, along with public transport modes such as Putco and Metro bus. However, the study only focuses on commuters who make use of MBT and BRT to commute to the inner city from Soweto. BRT and MBT have been specifically chosen because the BRT is one of the increasingly expanding public transport models being promoted and implemented in the cities of Global South

without clear understanding how these transport modes means for everyday transport and accessibility in this city (Bickford, 2014).

It focuses on commuters from Pimville who use the MBT and those who use the BRT. The Pimville area presents a particular exemplar of other sub areas in the Soweto and other township areas in South Africa as major residential area where people are commuting from to the inner city in Johannesburg via BRT and MBT for various purposes. The Soweto - Johannesburg inner city is major travel corridor in the city. Johannesburg inner city, particularly the CBD continues to act as the city's major transport hub to travel both into and out of the Northern and Southern suburbs of the city. Many people need to travel into the inner city regardless of their destination, for example two taxi journeys may be necessary to get to Sandton. The Johannesburg context is also appropriate for this study because it has the oldest BRT system, it might show stronger travel choices and perceptions. Pimville as a case was also a practical and logistically viable choice. Before contact was made with the community's commuters the researcher had already had personal experience of public transport system in Johannesburg. I lived in Pimville with my relatives as a scholar for 4 years (from 2013) and thereafter commuted from Pimville to Braamfontein for a year using MBT as a female student at the University of the Witwatersrand. To conduct research efficiently and effectively, I made arrangements to live in Pimville with relatives during the duration of the fieldwork. The site in Pimville was fairly easy to access as my relatives live within walking distances from the site to meet with community commuters and to conduct the three week long fieldwork in the area.

This study can only offer conclusions in relation to the case of commuters traveling living in Pimville traveling between the Soweto-Johannesburg corridors. The BRT is also relatively in its infant stages and thus the research only reflects the early emerging practices and commuter perceptions. It is also important to note that the study observed and interviewed commuters who were making daily trips only between Monday and Friday. However, knowledge and experience of Pimville commuters may allow us to predict more meaningfully about the urban mobility choices in other areas in Soweto. The study could also unveil important lessons that could serve other cities in South Africa currently in planning phases and implementation phases of BRT system.

1.7. Data collection method and analysis: Participant observation, semi-structured interviews

The study aims to investigate BRT and MBT commuter choices and behaviours in the Soweto-Johannesburg corridor and commuter daily practices. The aim was to explore daily incidents and behaviours of commuters at the two different transport stops (BRT and MBT), with the aim of gathering information that not only describes the practices of commuters but also to draw some understanding of the purpose behind the different choices the commuters make and conditions under which choices are made.

As outlined by Marshall and Rossman (2006), interviews, observation (participation observation and direct observation and shadowing) complemented by photography make up one of the strategic forms of data collection for qualitative research. The research made use of semi structured interviews, participation observation, desktop study and photography for data collection to help enable triangulation in the research.

1.8. Desktop study

A desktop study involved extracting findings from existing empirical research to collect demographic and socio-economic data of the people traveling from Soweto to Johannesburg's inner city. This data was aimed to help establish the current socio-economic characteristics that are influencing the choices between the two transport modes (BRT and MBTs). The researcher extracted transport trends, demographics and public transport ridership to lay down background information of the study area. The study also involved the collection available route maps of the BRT and MBT routes and detailed information with regards to time schedule, bus stations, and cost of the two modes between Pimville.

The researcher made use of the Gauteng City Region Observatory (GCRO) website and Statistics South Africa (StatsSA) website documentation. Most of the data was available on from CoJ integrated transport plans and Rea Vaya website.

1.9. Observation

Researchers are able to conduct observations as outsiders (as in ethnography) or as participants in the situation being investigated (de Vos et al, 2005; Leedy and Ormrod, 2010). As I have lived in the inner city and in Pimville and have used a variety of transport modes to travel between them, I am well-equipped with a basic understanding on location and access to bus and taxi stops in the area.

An important part of the research will be on observing the spatial aspect of the everyday mobility of Johannesburg – Soweto commuters and how it influences their choices of using either the BRT or MBT systems operating in the Corridor. The aim was to directly observe and interpret the actions of the commuters, particularly their "social interaction [in order to] shed light on the reality which has been constructed ... routinized social interactions which may serve to reproduce social norms and values" (Whittemore, Langness and Koegel, 1986). A note book and pen to record and make notes were necessary research tools during this initial phase of observation.

The researcher began with a preliminary investigation in Pimville On the first two days of the fieldwork (15-16 of August 2016) observing BRT and MBT stops and then traveling on the two different modes. I observed and joined the commuters on trips on both transport modes: travelling with the Rea Vaya commuters on first day, and then the MBT commuters on the second day.

This involved a random and spontaneous conversations were conducted with a number of commuters at the MBT and BRT stops. Observations the preliminary part of the research proved to be important because becoming familiar and building some trust with commuters before introduced myself as the researcher. I found people were much more at ease at being approached by someone recognisable. I continued to do my fieldwork for three weeks through observations and conducting interviews.

Based on the preliminary observation, the Pimville Square stop was identified as the site for interviews, as this was where most commuters chose to disembark and would allow for the greatest opportunity for selecting interview participants. Similarly, I observed the BRT and MBT commuters during the peak hours in the morning (5:00-7:00 am) and evening (4:30-6:00 pm) on weekdays. The researcher had to carefully plan and consider the purpose and duration of the participation observation as researcher needed funds for commuting fare to travel from Pimville and the inner city to not waste funds.

While observation can offer important insights on subjects it has its weaknesses. It can be infected by researcher's personal assumptions and perceptions of the space and its users. The semi-structured interviews were important in addressing some of these issues.

1.10.Semi structured interviews

The "…participants' perspectives – that is, the subjective view… " (Marshall and Rossman 2006: 102) is the focal point of the study, as a result the researcher conducted semi-structured interviews. They were done to, "... allow the researcher to

understand the meanings that everyday activities hold for [both BRT and MBT commuters]" (ibid: 101 - 2). As Creswell (2009) Face-to-face interviews can be a key data collection method. The researcher is not only able to obtain information verbally, but also directly observe the respondents and notice their body language in response to topics that they may find uncomfortable to talk about.

Thus, the researcher prepared "open-ended semi structured interviews that would enable the exploration of many topics that could focus on cultural nuances, first-hand encounters, meanings and interpretations" (Marshall and Rossman, 2006: 136).

The semi-structured interviews were based on questionnaire comprising a set of open ended questions as well as questions that were framed by the objectives of the study. This resulted in an enriched and more descriptive analysis of the data gained from the participants. Open-ended questions provided opportunities for participants to raise other information that was not anticipated.

The site is located in Pimville, and in particular the researcher focused on the Rea Vaya bus stop and the MBT stop. The site observations were done from Rea Vaya bus stops and on the two modes as a commuter in both BRT and MBT modes. The interviews were conducted in MBT ranks during waiting periods in MBT queues with commuter in front of me or behind me. The interviews with the BRT commuters were conducted during bus trips and on their walk home on their arrival in Pimville. The BRT commuter interviews did not take part in Rea Vaya stations where permission from Rea Vaya management is needed as the study focused on commuter from Pimville and Rea Vaya stations is made out of a mixture of commuter from different parts of Soweto or other parts of the city.

1.10.2. The questionnaire

In line with the Seidman (1991) suggestion that in a qualitative ethnographic investigation, the questionnaire covers three parts: background, experience and meaning. The interviews were designed to reveal information on the everyday practices and perceptions of MBT and BRT commuters; their daily activities; what they say their destinations are; as well as their perceptions and meaning attached to using the two transport modes. As a result the format of the questionnaire was as follows:

- *Background*: This includes demographic and factual questions of the respondent (age, gender, including language and socio economic status).

- *Everyday experience*: This involves asking descriptive questions about everyday commuter experiences on

the two transport modes. (For example how long does it take you to go to the BRT/Taxi station, how often do you use your main transport mode, do you use with other forms of transport to get from Soweto to Pimville? how long do you have to wait for the form of transport? How many destinations do you intend to go in the inner city, how much does it cost to travel from Soweto to Johannesburg in BRT/Taxi how long does it take you to get to Pimville? How long does it take to get to Johannesburg in peak hours?)

- The underlying factors that influence commuter choices of the different transport options available in Pimville: this comprises questions that explore the opinions of commuters about movement in the city and about the relationships of BRT, Taxi (for example, what do you think about having the BRT and taxi available to you, what makes you choose to use the BRT or MBT when travelling between Soweto to Johannesburg, how safe do you feel when you use the BRT or MBT?)

During the fieldwork it became clear that this approach was not the most appropriate. For example most of the MBT commuters were frequently busy on their own or in a small group signalling to catch a MBT that could arrive at any time, and asking people to answer open ended questions proved to be difficult. So it was decided that the BRT and the MBT stops were not the best locations to request interviews. In addition, it also became clear that the best time to interview commuters was when they were returning home in the evening or late afternoon when people were more relaxed as opposed to the morning peak hours. So MBT commuters were approached while they waited in a queue in a MBT rank. The journey itself also offered a window of opportunity. The BRT commuters were approached on the bus itself and when they disembarked at Pimville Square on their return journey.

The main tool used during the field work is the researcher's cell phone recorder and camera because it allowed an accurate recording of interviews and facilitated easy transcription. The cell phone recorder and camera, complemented by notes and drawings in a note book allowed an accurate record of data for research. The voice recorder was used, with clear permission of the respondents as opposed to filling out of a questionnaire form. A recorder with the express permission of the person in question was a direct, faster, informal and unthreatening method to gather data from the respondents.

The recorder was important as it is able to capture some of the emotions and language nuances which are often lost in handwritten notes. The researcher can also listen to responses

repeatedly and quote correctly. It can also help keep record of the exact of the time and place of the interviews conducted. Cell phones and their camera and recorder functions have become part of everyday life and people were comfortable with its use as a research tool.

Public transport is used by diverse number of people and respondents spoke different languages. I asked the respondents about the language they would feel comfortable using during interviews. Languages of their preference included English, isiZulu, isiXhosa and Sesotho respectively. It was easy for me to translate the voice recorded interviews and notes during the transcribing process since I speak and clearly understand these languages.

1.10.3. Sampling

For qualitative sampling Marshall (1996) contends there are three general approaches namely, convenience sampling, judgement sampling, and theoretical sampling. This research adopted the judgement sampling or purposeful sampling, as the more appropriate for this study. Judgement sampling is when the most productive sample is chosen to respond to the research question (Marshall, 1996).

For semi-structured interviews, it was decided (in consultation with my supervisor) that 10 interviews (5 BRT and 5 MBT) would be conducted with commuters who live in Pimville and travel to Inner city Johannesburg on daily basis. This number does not reflect the whole community but is seen as enough to provide meaningful results and be sufficient within the scope and time constraints related to an Honours research report.

Participants were asked if they used BRT or MBT transport on a daily basis, and whether they lived in Pimville. The researcher conducted interviews with commuters who use the Taxi stop and some who use the BRT bus stop, with a share of men and women and students and workers. This was done intentionally to allow the research to reflect some of the diversity of people and perspectives that make use of the two modes. Each interview lasted between 30min to an hour and each participant was interviewed at least twice.

1.11.Data processing and analysis

The data collection was followed by long process of capturing where data collected was then transcribed and analysed. The analysis of findings involved a process of extracting qualitative findings from observation and interviews in the form of describing and mapping each participant's everyday commuting practices. Some of the interviews needed translation in to English and were translated and transcribed by the author. This was followed by mapping out of the spots in which commuter caught the BRT/MBT and where they lived and as well as their MBT/BRT trips as described in the

transcribed interviews. This helped to graphically represent the narratives of the commuter's movement. The researcher then arranged the different issues stemming from the different data collection methods, that are different recorded observations, quotes, images, and recognised concepts that related were grouped together under different folders, and presented as themes.

1.12.Research rationale

This research is interested on advancing the limited research work that has been conducted on travel behaviour and modal choice in developing countries. More specifically my research responds to the shortage of qualitative research on urban mobility in SA cities relating to commuter needs and choices in the context of emerging BRT systems. There is a large amount of international literature on mobility choice and travel behaviour (Cervero, 2002; Handy, Cao, and Mokhtarian, 2005; Hensher and King, 2001 cited in Curtis and Perkins, 2006,). Some explore the relationships between urban form and land use on travel behaviour, and other literature investigates the influence of socio-demographic factors, such as gender, household composition and income, habit and car ownership (Best & Lanzendorf, 2005; Boarnet & Sarmiento, 1998 cited in Curtis and Perkins, 2006).

However, there is limited literature on the interaction between socio-economic factors and urban form in relation to travel behaviour, and it tends to reflect the experiences in either Western Europe or the United States. As a result, transferability of findings from the Global North to the Global South, from one country to another, and the scale of analysis (regional, urban or neighbourhood and so on) need to be taken into consideration.

Locally, most of the literature only focuses on policy implementation (Behrens, 2004; Behrens, 2006; Wilkinson, 2002; Vasconcellos, 2002; Litman, 2011; among others). Existing literature raises and highlights key issues with current understandings and frames new perceptions which are important to the development of more sustainable transport practices (Bickford, 2013). However there is lack of literature that deals with existing conditions based on the everyday experience of commuters.

Moreover, most of the research on policy transport and mobility in South Africa (SA) is drawn from the Cape Town experience (Bickford, 2013). While this research provides a deepened understanding on public transport and mobility, studies are needed that investigate the issues and conditions in other urban centres. The lack of research knowledge on urban transportation in other cities in SA, such as Johannesburg can

be linked to the relatively infant nature of the public transport improvement and development focus, and the lack of capacity to conduct empirical research. This therefore needs to be improved, and as highlighted by the international literature, there are many lessons which can be learnt from systems that have been implemented and are operating in the city. Understanding the role and how users are responding to public transport developments is an essential element of users' travel demand (Curtis, and Perkins, 2006). However to assess and understand of the role of transport mode for individual users is an essential research area with practical implications for transport service providers (Curtis and Perkins, 2006). Given that, both operators and officials of public transport need to understand how users perceive the quality of the service.

It is an inquiry into commuter perceptions and behaviours towards the public transport options available to them. It uses this approach to better understand urban mobility in the city through the lens of the commuter, with the aim of contributing to the current discourse on meeting commuters' needs more appropriately through integrated public transport systems (paratransit and official), urban transport options and/or opportunities.

Murray (2011) in his work City of Extremes, refers to the spatial politics of Johannesburg, and observes that planners, and transport authorities have largely ignored or trivialised the importance of the systematic movements of people for work and family life, for leisure and pleasure, and for politics and protest.

The literature review reveals that urban mobility is attached to practices, narratives and meanings. It hopes to contribute to existing literature about the existing opportunities for different modes of transport systems to be more spatially and operationally integrated, from the perspective of the users, in order to develop more equitable and socially just transport systems. From a knowledge production point of view this research aims at contributing to the currently limited research and knowledge base on the everyday operations of the BRT and MBTs, with the Johannesburg and Soweto Corridor being used as a case study. There is a need for improving knowledge and understanding of how it satisfies the mobility needs of commuters making their way in and out of the city.

Through my research, I argue for the importance of understanding the existing condition of 'dual' transport systems in Johannesburg, which are often composed of both 'paratransit' and 'formal' operations, and how the study and documentation of experiences from commuters or transport users in various areas of the city can provide lessons on how to

better manage these 'dual' public transport systems by both government and private sector.

1.13.Ethical considerations

Jenkins (2006: 98) argues, "researchers... need to be clear what their motivation is, and make this clear for ethical reasons." This research involved the study of people (in this case the commuters) and as a result the author had to obtain ethical clearance from the School's Ethics Committee, and received the clearance certificate on 19 July 2016). I was guided by ethical principles such as informed consent, respect, non-maleficence, and honesty and I needed to:

- Make sure that as and when necessary all parties and participants were made aware and informed of the nature of the study by providing as much information about the research objectives and outcomes.

- Avoid raising expectations of the research such getting rewards such as money for participating in the interview.

- maintain confidentiality and anonymity of participants to be interviewed and not interviewing people under the age of 18.

I needed to ensure the anonymity of respondents. The people operating within the MBT and BRT industry are often suspicious of any enquiries into their activities as a result of perceptions and historical incidents. There is currently a tension that currently exists between BRT and MBT systems where there have been violent encounters between BRT and service providers since the launch of the BRT system in 2009. As a result people are suspicious of negative consequences from the authorities or even being quoted or having their photographs published in the media. To address this problem, before interviews were conducted it was communicated to participants that the purpose of the interview was for academic research. Participants were assured that they would remain anonymous in the research through the use of pseudonyms. It was also communicated that the findings would be made available to the public and that it is hoped that work can be used as a tool in relation to transport planning issues. The participants were also made aware that participation was completely voluntary and it did not promise anything in return. Participants were also advised that they could withdraw from the study at any point without any consequence.

1.14. Conclusion

In sum this chapter provides the research methods used and data collection process of the research. This chapter discusses

the manner in that the study explores the notion of urban mobilities and transportation modes in Johannesburg from the perception of the commuters. The research methods aimed investigate people's choices in the modal transport between BRT and MBTs in relation to the socio-economic, spatial and cultural aspects as important influences into the choices by commuters travelling from Soweto to the Johannesburg inner-city. In sum, it adopts the qualitative research methodology which involved the use of case study method and data collection method involving semi-structured interviews supplemented with participation observation. The research methods are aimed at reflecting the narratives of commuters in a manner that provided valuable information and a view of urban mobility in Johannesburg and the nuances that shaped it.

Face-to-face semi-structured interviews with 10 commuters (5 BRT and 5 MBT) were conducted to gather primary data on the commuter perceptions and different aspects that influence commuter choices as they relate to their social, economic, spatial and cultural interpretation and perceptions. These interviews were complemented by on-site observations of commuter routines at the selected BRT and MBT stops and during their journey from Pimville to the inner city of Johannesburg.

Multiple research tools were used during the data collection process. The cell phone voice recorder was used as the main tools for semi-structured interviews with the formal permission from each participant; during observation participation a cell phone camera and a note book with a pen to jot down corresponding notes was used as main data collecting tools.

The interviews were recorded through the use of three tools. Responses from the participants were recorded via a recorder, during observations images were taken with corresponding notes were jotting dawn on a note book by the researcher. During the fieldwork the researcher was also met with challenges. Conducting the semi-structured interviews with commuters proved to be challenging as it involved trying to capture people on the move, and as a result I needed to be strategic and reconsider some methods. This chapter also describes the strategies used in response to ethical considerations and fieldwork challenges.

1.15. Research outline

My study comprises six chapters.

Chapter One serves as the introduction. It presents the study by way of stating the research motivations and the backdrop against which the research problem arises in the quest for more integrated modes of transport. This lays the foundation

for the research aims, justifications and questions; and the research method and its limitations.

Chapter 1 also outlines the methodology and/or research strategy that was adopted for the study. The emphasis in this section is on outlining and discussing the data collection methods that I used, the challenges that were faced, the strategies used to overcoming obstacles, and the extent of their success. The section also touches on the extent to which my expectations as the researcher were confirmed or not confirmed through my fieldwork.

Chapter Two reviews the available literature on urban mobility and people's travel behaviour and attitudes. It discusses various arguments pertaining to the study's main themes. The conceptual framework diagram integrates the different key concepts emanating from the literature, and provides a basis for undertaking the fieldwork and analysing the empirical findings. This chapter also presents the history of public transportation in Johannesburg and in particular the development of the *Rea Vaya* in context of MBT is analysed in the chapter. It sheds light into the urban transport and examines other BRT systems in relation to paratransit systems.

Chapter Three provides background information of the study area, Pimville, mainly based on secondary sources. It provides a brief history, and demographics of the study area. This is an attempt to produce a profile for the settlement and provide some indication of what socio-economic and spatial issues that might be motivating and shaping commuter choices and practices in the area. The purpose is also to locate how commuters' everyday practices and modal choices might fit into the bigger picture of urban mobility in Johannesburg

Chapter Four presents findings on MBT and BRT commuters' choices in Pimville. Based on interview material, imagery, literature and thick descriptions emanating from fieldwork, this chapter presents everyday life in Pimville as a negotiation, and presents the MBT and BRT stations and their users as active participants in this negotiation. The different forms of life as negotiation in Pimville are presented by way of themes. The chapter is based on my reflection on the social, cultural and everyday experiences influencing on modal choices of people in Pimville.

Chapter Five is the analysis chapter. It brings my findings/results together with the study's critical theories. This chapter provides an analysis of the data collected in relation to the research questions that guided the study. It provides a discussion of the research findings on how commuters conceptualised BRT and MBT to suit their mobility needs. It provides a discussion of the roles being played by the Rea Vaya bus and Minibus Taxi in the area and gives an overview of other existing dynamics

between MBT and Rea Vaya commuters. It presents findings on commuters' choice of transport. The purpose is also to locate how commuters' everyday practices and modal choices fit into the bigger picture of urban mobility in Johannesburg. The chapter is based on my reflection on how the socio-cultural and everyday experiences are influencing modal choices of people in Pimville.

Chapter Six is the study's main conclusions and their implications in the context of Pimville. Based on my findings I also present a set of recommendations and areas for further research of BRT and MBT operations along the corridor can be better conceptualised to suit the mobility needs of their everyday users. The aim is therefore to draw conclusions on the ways in which the MBT and BRT system complement (or fail to complement) each other from the perception of everyday users and how this relationship could be improved in future. I draw conclusions on the possible impacts of the way the minibus taxi and BRT systems may complement each other on meeting commuter mobility needs in the city. It also presents a set of recommendations on how the future of BRT and Mini bus Taxi operations along the corridor can be better conceptualised to suit the mobility needs of their everyday users.

2. CHAPTER TWO LITERATURE REVIEW: Building the theoretical framework: Urban mobility, and making sense of everyday travel behaviour and choices

2.1. Introduction

This chapter reviews literature on urban mobility, and formulates a conceptual framework for exploring the urban mobility in cities of the Global South. It draws together literature on urban mobility to form a critical narrative on the topic in South Africa as well as internationally. It focuses on breaking down the concept of mobility towards answering the first sub-questions raised in chapter 1: How can we assess mobility in order to make sense of commuter choice in Johannesburg? (See section 1.5). It begins by discussing the development of the concept of mobility. This section illustrates how these meanings have evolved over the years as understanding and literature on mobility has gravitated towards the more qualitative definitions. It unpacks three approaches to urban mobility namely; from geography, sociology and transportation. It argues that studying mobility by considering all these different disciplines can enhance how we see commuter choice and mobility at large.

This is followed by an attempt to draw conclusions on what shapes commuter choices. This discussion forms an important part of the chapter that investigates how commuters make sense of their mobility modal choices. It discusses three key influential elements in relation to mobility choice: socio-demographic, urban form, and psychological/perceptions. These three elements are intertwined and cannot be understood in isolation of one another. After discussing each separately, connections are drawn between them to argue how urban mobility choices in the Global South are multifaceted and often linked to local history and geographies of the specific area.

It concludes that it is not possible to obtain answers as there is very little literature on commuter choice in the Global South and highlights ideas that were explored and addressed in the fieldwork. It also draws together the main themes vis-a-vis the experience of urban mobility and transportation systems in the Global South to set out a framework for the empirical research.

2.2. Understanding urban mobility

Generally mobility can be understood as the shift from one point to the next. It can also be defined as the intention or the realization of movement through a physical or geographical space, involving social change (Kaufmann, 2012). But it is a broad term with diverse meanings, and what is meant by the term often depends on what discipline is using it. Litman (2011:2) argues that the way in which transport problems are viewed and assessed can have a significant impact on outcomes and decision making, and that it is therefore important to understand the assumptions and implications. This section of the chapter gives an account of the main approaches on urban mobility arising from three main research fields: **urban sociology**, and **transport science**, and **geography**, in relation to the scope and focus of this research report.

Urban sociology approaches to mobility

Urban sociologists (Park and Burgess, 1925; Simmel, 1950) consider mobility as movement in space, such as residential or daily movement, that reflect an important characteristic of urban life (Cresswell, 2010). As a result urban sociologists coined the term, social mobility. Their underlying assumption was the fact that mobility is an element in "disorganization" and "destabilization" and therefore a course for change (Bassand and Brulhardt, 1980, cited in Kaufmann 2014). According to Sorokin, mobility can be defined as movement in physical space that intended or resulted in a "change in social status" (Sorokin, 1927 cited in Kaufmann, 2007). Similarly in the 1920s the Chicago School (Mckenzie, 1927 cited in Kaufmann, 2014) focused on mobility as dynamic interactions within urban space, its morphology and social relationships. The School focused primarily on the functioning, organisation and changes in the social system (Kaufmann, 2014).

From the 1950s, social mobility research focused on professional paths and the inter-generational exchange of career paths, which critically interrogated the creation of inequalities in urban areas, for instance, social reproduction and the potential to climb up or drop down the professional ladder. Kaufman (2012: 4) argues that "It revitalized the field of sociology, to the point where it became one of the most dynamic research fields, which was to become autonomous with regard to work on the city and the urban". As a result sociology defined mobility as a change of status, role or position (ibid).

Transport geography approaches to mobility

Transportation field defines mobility as movement in physical or geographical space, and focuses primarily on the motor vehicle. Transportation science emerged when urban areas experienced rapid growth in the use of private motor vehicles 1910s and 1920s in North America, and post-1945 in Europe. It

came as a response to the growth of traffic flows and the need to manage them (Kaufmann, 2007). Research that has emerged in the transport field mainly approaches mobility as understanding physical movement as an aspect of mobility. Mobility can be measured and mapped. This data can be assessed through equations to form laws and models. In cities, transport planners are creating models of transport modes in order to make transport more responsive to user needs or reduce ecologically harmful impact (Eliasson and Mattson, 2005). But this says relatively little about what these movements mean and or how they are practiced.

Geographical approaches to mobility started to emerge after 1945. They were concerned on the spatial qualities of mobility (territory, scale). According to Kaufmann (2012), geographical approach to mobility was structured around four main aspects of spatial mobility: daily mobility, travel, residential mobility, and migration. This approach essentially defines moving from origin to destination. However this definition of mobility is general and it essentially limits itself to a vision of mobility as a passing or a movement through space, without considering mobility as change. While these specialisations have produced significant scientific developments, there are strong divisions between each research field and they have not been analysed together. The literature from the field of geography and transport science has limitations. It is stringently spatial and therefore does not allow for social change to be thought of in conjunction with travel. It measures using indicators relative to movement in space and time (spatial scope, travel time budget, speed, motive, etc.), and does not take into consideration the experience of mobility and its imaginaries. In Simmel's words (1907, cited in Kaufmann, 2014), mobility is one of key elements for understanding the experience of modernity, in particular with regards to its differential process at the individual level.

From this standpoint mobility is based on the observation that there is a need for an approach that both incorporates social and spatial dimensions of mobility to advance our knowledge. Importantly for this research, considering both spatial and social perspectives about mobility remind us to be critically aware how different social actors use narratives to frame transportation issues and shape decision-making contexts. There is a need for a mobility approach that focuses on the history of mobility, its modes of regulation, and the power relations associated with it—in short, the politics of mobility (Cresswell, 2006, 2010; Adey, 2009).

In his work Cresswell (2010) lays the foundation for such an approach. Cresswell (2006) offers a broader view of mobility, explaining that it comprises all movements in space, from lifting a mug up to migrating, from dancing to getting on a MBT. He

defines all movements in space as mobility, and all are understood as social constructions. This definition offers mobility spatial, social and psychological qualities. He perceives mobility through three dimensions: observable facts (mobility as an observable movement); representations (mobility as ideas and ideology); and experiences (mobility as a way of being in the world) (Cresswell, 2010).

He outlines of the different aspects of mobility, such as movement, representation and practice/experiences of mobility, and argues that they are highly political[2] and should be approached as such (Creswell, 2010). He argues that mobility involves an entanglement of physical movement, representations and practices, each closely tied to their histories and geographies (ibid). For example, there is a multitude of representations of mobility: the different types of movements (walking, cycling, driving, and flying) can be considered as adventure, educational, freedom, modern, and threatening. Walking has been wrapped up with a range of meanings from conformity to rebellion in literature, film, philosophy and the arts (Solnit, 2000 cited in Creswell, 2010). Mobility has interchangeably been hinted at as dysfunctional, as inauthentic and rootless and, more recently as liberating and transgressive in our own forms of representation (Cresswell 2001). For example, driving a car can be liberating, or nerve wracking, or increasingly, guilt ridden. Whether we have chosen to be mobile or have been forced into it affects our experience of it. Sometimes our mobile practices follow through to the representations that associated with them. At other times there is a conflict between representation and practice. For example, while a car can be regarded as freedom, currently the use of car results in spending time sitting in traffic.

Therefore it can be said that differently forms of mobility have a physical reality, they are encoded culturally and socially, and they are experienced through practice. Importantly, both forms and aspects of mobility have a physical reality, they are encoded culturally and socially and they are experienced through practice.

Understanding commuter choices means giving attention to all facets of mobility (Cresswell, 2010). Essentially this approach combines the idea of mobility as a spatial and social concept and should be assessed as such. This definition gives mobility a quality that is both spatial and social, which gives it more

[2] By politics he means social relations that involve the production and distribution of power. By a politics of mobility he means the ways in which mobility is both productive of such social relations and produced by them. Social relations are of course complicated and diverse. "They include relations between classes, genders, ethnicities, nationalities, and religious groups as well as a host of other forms of group identity." (Cresswell, 2010:21)

richness. It calls for 're-conceptualising' mobility and its infrastructures as sites of (potential) meaningful interaction, pleasure, and cultural production" (Jensen, 2009), where people engage in "negotiation in motion" and 'mobile sense making' (Jensen 2010). Histories of mobility and place-making emphasize the rhythms, forces, atmospheres, affects, and materialities of various modes of transport (Edensor, 2014; Merriman, 2012; Adey, 2010).

However, as stimulating as it may seem, this approach nonetheless has limitations. The first is relative to the links between movement and mobility. Their conception comes from the Chicago School: movement in physical space becomes mobility when it also involves social change (Kaufmann, 2014). In other words, movement is characterised by the fact that it marks the life history, identity or social position of the person in question (immigration, buying a home, etc.). The main limitation has to do with complexity. It regards mobility as one phenomenon that is likely to manifest itself in different ways, which is related to the theoretical research on the subject over the past fifteen years under the umbrella term, "the mobility turn" (see Amin and Thrift, 2002; Kaufmann, 2002, Cresswell, 2001; Sheller, 2003; Urry, 2000), which is concerned with why people move about, particularly why they choose to move using a particular mode over another. It argues that mobility needs to be approached substantively, in a way that involves social aspects. It tends to be extremely heterogeneous and sometimes falls into certain traps including considering mobility as broad, all-inclusive concept at the risk of diluting it (Kaufmann, 2014). The consequence of having such a broad approach develops a generic idea of mobility, no longer having an exact meaning and therefore something heuristic, both for understanding the phenomenon and as a useful concept for empirical research.

2.3. What do these mobility concepts mean for assessing commuter choice

Mobility is an important feature of a well-functioning urban area. It provides access to various social and economic opportunities. In many developing countries urban transportation is a challenge that impacts on the ability of many citizens to access and participate in urban social, economic and cultural activities.

UN Habitat (2013) indicates that there is an increasing level of urban mobility worldwide; approximately 7.5 billion trips were made in cities worldwide each day in 2005. However access to places, activities and services has become increasingly difficult (UN Habitat, 2013). One of the contributing factors to inaccessibility is urban sprawl, which is the horizontal, low-density expansion of cities over large areas (UN Habitat, 2013). This results in longer distances between functional destinations

such as workplaces, schools, hospitals, administration offices, or shopping amenities and has led to a growing dependency on private motorized transport and other car-orientated mobility.

Recently several African countries have seen a rapid growth in private car ownership which can be attributed to several factors which include the emerging middle class and the availability of "affordable" imported used cars (UN Habitat, 2013). Consequently, widespread congestion and traffic gridlock have now become the norm in many cities, impacting on urban life through negative externalities such as pollution, noise stress, and accidents (UN Habitat, 2013).

There are limited studies in urban mobility designed to understand urban travel choices, particularly through the collection of qualitative data that provides rich and everyday information about many attributes of respondents' activities and destinations, linking both social and spatial factors. Transport studies have established methods for predicting movement, its frequency and the speeds. While transport researchers have also been able to also convey information about who moves (Bullard and Johnson, 1997; Hoyle and Knowles 1998), this analysis of people is only measured through quantitative and engineering methods (Sheller, 2014) that have not been effective at communicating the representations and meanings of mobility. As argued by Creswell (2010) understanding mobility (in this case transport choice) is complex. For each journey, people have the choice between different transport modes, each one having particular characteristics, benefits and shortcomings, and costs. Moreover, a particular choice of transport mode can change over time (Beirão and Cabral, 2007). To address these gaps, the need for concepts that help us understand how and why individual and collective actors move clearly arises. So, in order to better facilitate people's mobility and or reduce car use it is necessary to understand the underlying patterns of travel behaviour. The research that has been done can be divided into two broad groups: namely those studies that focus on the impact of urban form on travel behaviour, and those that study socio-demographic and lifestyle factors that may influence travel behaviour.

2.4. Urban form and travel choices

A study by Boarnet and Sarmiento (1998) in Southern California found that the relationship between land use and travel behaviour was statistically insignificant. However, more recently, Boarnet and Crane (2001) in their studies of the travel modes of 7469 households in Orange County and San Diego in 1993 and 1986, found that land use and design proposals influence the price of travel, and hence the type of modes chosen. Thus they conclude that urban form influences travel behaviour. Srinivasan and Rogers (2005) investigated the effect

of urban form on travel choices within two suburbs of Chennai, India. Accessibility to transport modes and the location of employment opportunities were important elements.

2.5. Socio-demographic aspects on mobility choices

Socio-demographics have an influence over travel behaviour and modal choice. Newbold et al. (2005) conducted research on the travel behaviours of Canadians aged 65 years or more to determine if their travel patterns and choices were different from younger Canadians. Their studies revealed that older Canadians made more use of the car, which caused a significant decrease in their use of public transport as a main travel mode. Polk (2003, 2004) in his studies of travel choices in Sweden in 1996, revealed that a significant relationship existed between the use of more sustainable travel patterns (the use of public transport, cycling with improved quality of service) and gender. The data collected revealed that women seemed more willing to reduce their use of cars than men, and were motivated to reduce the environmental impact of travel modes.

In terms of household composition and travel choices, Ryley's (2005) study of 2910 households in Edinburgh revealed that households with children (persons below age 18) had a tendency to be dependent on the use of cars as their major source of travel mode. While they might have access to alternative transport mode, they often choose to use their cars, particularly for residential to work journeys. However, households consisting of students, the unemployed and part-time workers without children were most likely to use alternative modes of transport (such as public transport, cycling, walking), and households composed of retirees and high-income owners tended to use private vehicles as their primary mode of transport.

Anable (2005) argued that there are few differences observed when only socio-demographic classification is considered. The condition of the transport mode (such as, cleanliness) can also act as important influential elements to users (Swanson et al., 1997). Time and cost of travel also influence users' modal choice (Hensher et al., 2003). For instance, research has shown that punctuality of a transport mode (arriving at the set time) is an influential reason (Edvardsson, 1998; Bates et al., 2001; Hensher et al., 2003). The issue is not so much about waiting, but the predictability of when transport will arrive. Similarly, features such as comfort and frequency (Friman and Gärling, 2001; Hensher et al., 2003) are also highly valued aspects by users. Other factors may also have an influence on mobility choice such as how the buses make information clear, simple and easily available (Edvardsson, 1998; Friman and Gärling, 2001).

2.6. Mobility and the psychology of choice

There is emerging research (Anable, 2005 Jensen, 1999; Outwater et al., 2003; STIMULUS, 1999), which identifies underlying psychological constraints, including perceptions and attitudes that are influencing transport choice. These studies, with the use of a variety of approaches and methods, have made useful developments in understanding travel choice and commuter needs. These studies point out that transport choices are not only directly associated with the spatial and socio-demographic aspects, but also are influenced psychologically by perceptions, attitudes and habits (Fujii and Kitamura, 2003). By psychological they mean features such as perceptions, attitudes and habits, and thus, altering the psychological aspects may also change transport mode choice (Fujii and Kitamura, 2003). Therefore, to better understand what attracts more users to a particular transport mode it is important to better understand the psychological aspects. Convenience, speed, comfort and individual freedom are popular arguments for car use (Anable, 2005; Hagman, 2003; Jensen, 1999), and public transport needs to adjust its service to offer these attributes. However attributes such as comfort and safety are intangible and elusive ideas that are difficult to measure (Parasuraman et al., 1985), and complicate the development of valid and accurate constructs of individual users (Prioni and Hensher, 2000).

Daily commuter travel patterns have never been at the top of the agenda in transport studies. There is a limited amount of available empirical work that makes use of qualitative data to provide valuable insights on people's attitudes and perceptions towards transport. For example, Guiver (2007) used focus group method in his research to discuss bus and car travel. The research reveals that to assess each mode the respondents used different standards, and perceived them differently depending on whether they were users or non-users. When discussing bus travel, respondents focused on disadvantages, as opposed to their discussion on the use of the private vehicle.

For example, the use of a private vehicle is often wrapped up in narratives of prestige, ethics and aesthetics, while walking, taking a taxis, a bus ride, cycling are represented as unreliable, unworthy and less decent (Thrift, 2004). Research indicates that psychological aspects such as the perception of safety, power and masculinity play an influential role in travel choice. Hiscock et al. (2002) in their study of car owners and non-car owners in southern Scotland in 1999 revealed the perceived psycho-social benefits of car use and ownership. In particular, the researchers observed that a substantial amount of car users perceived that the car gave them a shield, autonomy and prestige compared with public transport. On the one hand, the car is seen to provide protection from 'undesirable'

people, convenience and better access to a greater variety of destinations than public transport (Beirão and Cabral, 2007). On the other hand, individuals who do not have access to private vehicles were perceived to be underprivileged, particularly those who chose to travel by bicycle (Beirão and Cabral, 2007). Similarly, Gardner and Abraham (2007) performed semi-structured interviews to understand the reasons for using private vehicles to commute to work. The data revealed that "journey time concerns, journey based effect, effort minimization, personal space concerns and monetary costs" where the fundamental purpose to be in control underpinned respondents' choices (Beirão and Cabral, 2007: 480).

This research is of specific interest as there is limited research work conducted on travel behaviour and modal choice in developing countries. The literature on travel behaviour and transport choice is based on case studies of American and European urban experiences and predominantly racially homogenous populations. Further research is required in cities of the Global South and from diverse income, ethnic and racial groups. Different user groups or individuals can perceive the same transport mode differently, and their choices are influenced by various qualities of the transport mode (Andreassen, 1995). As Beirão and Cabral (2007) explain, "the needs, beliefs and expectations of users will vary significantly between different groups of people". As argued by Litman (2011:12) "empirical observation of travel behaviour needs to be inclusive of diversity, and needs to seek to unravel complexity in behavioural adaptations to changes in urban transport systems rather than simplify them."

2.7. Considering urban mobility in the (South) African context

The above section has been through urban mobility literature and commuter choice material. It has problematized the literature regarding its lack of Global South evidence or theory. This section of the chapter draws them together in consideration of urban experiences in the Global South. It will in effect formulate a conceptual framework – how to understand commuter choices in SA townships (i.e. Global South) and what they say about their mobility. It highlights the contradictions and complexities of cities of the Global South, such as Johannesburg, and how mobility contributes towards this. It discusses dual transport system condition and the introduction of BRT system globally and locally (South Africa).

2.7.1. Mobility in the African Global South

Global South urban experiences defy easy characterisation. These cities are both spaces of opportunity and poverty; connectivity to global circuits of people, goods and ideas, yet simultaneously contain spaces of marginalisation; they are

places of hope and creativity, and at the same time despair and despondency; they are the harbingers of democracy yet sites where some of the most violent abuses of human rights have taken place. Urban life in Africa often means straddling multiple worlds – the global and local, modern and "traditional", urban and rural and even roots in numerous countries. They shape and are shaped by layers of history, culture and ideology, making a simple interpretation of them impossible, if not inaccurate, illustrating urban mobility as an example of urban complexities and tensions.

In many cities of the Global South (such as Johannesburg), the physical separation of residential areas from places of employment, markets, schools, and health services force many urban residents to spend increasing amounts of time, and as much as a third of their income, on transportation (Bickford, 2014). In the developing world, and especially in African cities where most people cannot afford to own private vehicles, this low-density horizontal urban development causes exclusion from places of opportunity and the urban core (Bickford, 2014). "Due to the lack of efficient transport systems, many residents cannot afford to travel to the city centres or to areas where businesses and social services facilities are located, depriving them of the full benefits offered by urbanisation" (UN Habitat, 2013). The shape and form of South African cities that were constructed under colonial and apartheid spatial ideologies, which aimed to disperse people in different racial groups, have resulted in the spatially fragmented and sprawling state of the city. A key challenge in many African countries such South Africa, where there are high populations in urban centres, is to improve urban mobility and reduce traffic, congestion and pollution. Many people in the urban workforce, both those formally and informally employed cannot afford private vehicles and so depend on public transportation to go to work.

Emerging research on the transportation on the Global South (Ferro, Behrens, Wilkinson, 2013) indicates that cities of the Global South are characterised by a dual or hybrid transport system consisting of both institutional[3] and paratransit transportation systems. In the case of Johannesburg, and other cities of the Global South represents a complex composition of both formal and paratransit transportation system that provide services to commuters. These systems seem disintegrated and display what appears to be divided or independent systems that operate according to different transport models and coexist in relationships that differ from one context to the another(Ferro, Breuil and Allaire, 2015).

Institutional public transport is a transport service planned or scheduled. Institutional public transport usually provides the

[3] A term introduced by Godard (2001)

general population with the public or private sector companies in line with government transport regulations. (Ferro, Breuil and Allaire, 2015). Thus, ideally, these companies are required to offer a public service that meets a set of requirements to meet the population transport needs (Ferro, Breuil and Allaire, 2015). They are required to offer transport services to the quality level specified by government and forced into charging low fares, which often limits their operation budget.

Paratransit transport services usually referred to as 'informal' or 'illegal' transport operate outside of the institutional transport system. They often are found in cities of the Global South and often even perform as the primary mode of the public transport system (Ferro, Breuil and Allaire, 2015). Emerging research that analyses transport in the Global South defined paratransit transport as chaotic and inefficient transport service; they are described to often have duplicate routes, excessive length of routes, and surplus supply of vehicles on the road, and identified as one of the main contributors to road accidents, traffic congestion and air pollution. Paratransit transport is also criticised for introducing unfair competition that results in declining use of institutional transport. Paratransit transport is defined as harmful to the transport systems in general by specialists that argue for the introduction of transport systems similar to those from the Global North urban areas (Ferro, Breuil and Allaire, 2015).

However, paratransit services have a justified role in urban areas. Emerging research on paratransit services provides insight into the complexity of this mode of transport and its broad range of possibilities concerning the vehicle, regulatory frameworks and service planning. Recent studies have indicated new aspects shaping the relationship between paratransit and institutional transport (Godard, 2013; Ferro et al., 2012, Orrico Filho et al., 2007). This research argues that paratransit transportation services cater for a type of mobility demand that generally can only be met by the paratransit sector. Paratransit transport modes provide a practical service to the local context in the Global South cities, where there is a lack of or an inefficient institutional framework and where the landscape and urban form act as a genuine obstacle for large bus services. Moreover, they are more able to adapt to the spending limitations of users.

The paratransit industry began to fill the gap in the form of shared taxis, vans or freight vehicle conversions. In many countries, these paratransit transport services had unlawful operating practices (such overloading vehicles, breaking road traffic laws) (Cervero, 2000). Where institutional transport operations are largely run by the formal private sector, they

are faced with stiff competition from paratransit transportation services (Gwilliam, 2000). In Johannesburg, the paratransit system in the form of MBT dominates the public transport sector. This is evidenced when MBT strikes affect the function and operation of the city as workers cannot get to their places of employment. In defence against the uncertainty of fragmented competition self-regulating operators associations tended to develop. As the South African experience shows, elimination of the unacceptable aspects of this form of self-regulation (particularly violence) can be a tough task (Gwilliam, 2000). This suggests that articulation between the transport modes is challenging and may not be possible in practice.

Studies that are concerned with understanding the role of paratransit system highlight qualities of the services, such as coverage and frequency, as significant for travel choices. Garcia (2007) illustrates that in Lima, paratransit services, unlike institutional services, are the only transport choice available for the urban population situated on the outskirts of the urban core, or for those unable to afford to access opportunities in the inner city.



Figure 1: Minibus taxis in in the Global South, (source extracted from Ferro, Breuil, Allaire, 2015)

Recently, local and central governments are establishing integrated public transport networks (IPTNs) to reform this spatial fragmentation. The aim of the IPTNs is to use these networks for urban spatial transformation and to concentrate urban development within main nodes and corridors of the public transport network. There has been the implementation of fast, efficient and affordable public transport systems such as the Bus Rapid Transport (BRT) system (Gakenheimer, 1999).

As outlined in the 2007 Public Transport Implementation Framework), Johannesburg's proposal includes the implementation of a full-specification BRT system, where one of the main aims is to integrate 'paratransit' operators into the projects, as major stakeholders (CoJ, 2007).

There has been an extensive period of discussion where agreements have been signed between transport officials and MBT stakeholders. However there still seems to be tension between the MBT and Rea Vaya systems and the MBT industry is still not satisfied. Sibiya (2009) suggests the reason behind this tension is a result of conflicting interests because the MBT industry's livelihood is threatened by the BRT system which is the core reason why they have not accepted the system. Relationships on the ground between BRT and MBT services (including other official modes) are far from being integrated and co-operative, and often the relationship can be reduced to negative competition for passengers.

Both modes of transport have problems in terms of providing efficient and affordable transport options for commuters. On the one hand, the informal manner in which MBTs currently operate often results in a lack of certainty, safety and comfort for its users, particularly when travelling long distances. On the other hand, the BRT system though safer and in most times relatively comfortable, has proven not to be as frequent and flexible as the MBTs in collecting and dropping off commuters at points that are closest as possible to their various points of departure and arrival. The Rea Vaya (2015) report highlights that the entire BRT network now provides transportation for more than 30 000 commuters every day.

Since the introduction of BRT system it has been met with resistance from the taxi industry against the implementation of BRT system as it has been seen as a threat to MBT industry. MBT continues to occupy the largest share of transport trips in Johannesburg, MBT make up 48% of all trips made into the Johannesburg CBD while, for example, private cars make up 27% of trips into the Johannesburg CBD from within metropolitan Johannesburg (CoJ, 2013).

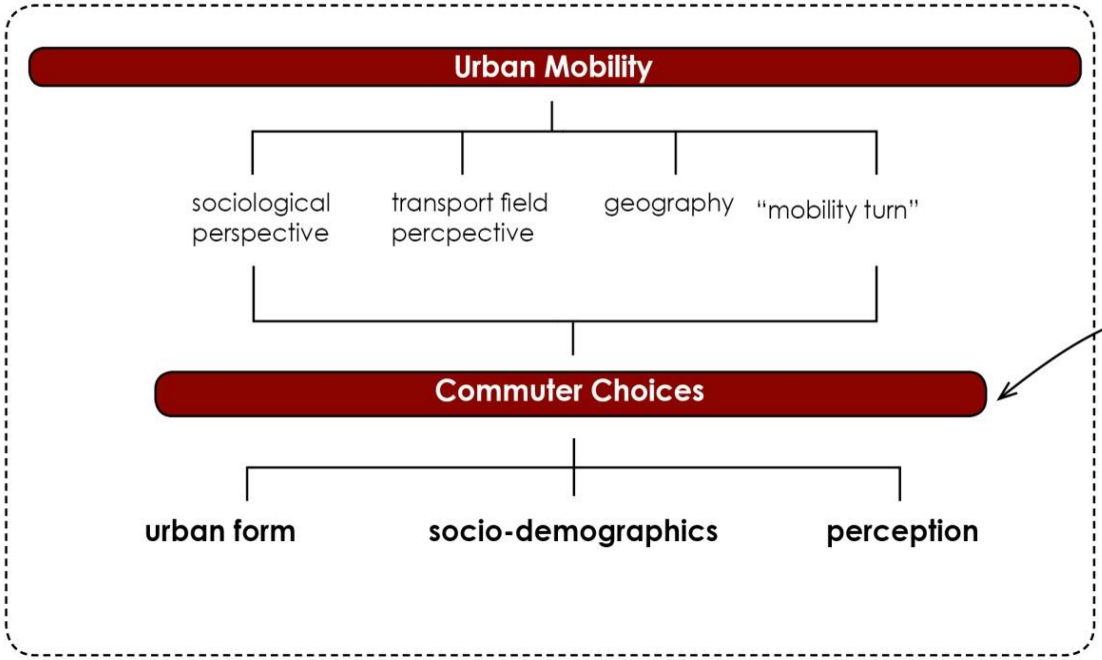
A clear trend emerging from research is that despite the launch of the Bus Rapid Transit (BRT) there is a lack of an

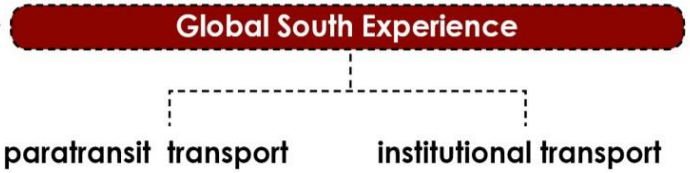
effective, efficient and low-cost public transport system, especially for those of limited financial means who live in the outskirts of the city (Beukes, 2011). In the face of the dominant and resilient nature of MBT there are on-going debates and concerns on how to integrate these two systems.

Bickford (2014) conducted research in Diepkloof (Soweto) that evaluated the impacts of the BRT at the neighbourhood level in Soweto. Although the implementation of the BRT diversified transport options along the route, Bickford (2015) found that commuting in Diepkloof was still largely done using taxis and trains. The study found that the BRT had positive impacts on travel and lifestyle for those who use the system. Moreover, there was a clear indication that some people prefer the Rea Vaya systems over minibus taxis. However, there was no clear sign that the BRT had now become the preferred mode of transport for the residents and commuters in the area over the MBT. A study by Vaz and Venter (2012) in Johannesburg argued that the main benefit of the BRT system implemented along the Johannesburg – Soweto Corridor was not directly linked to employment opportunities, but an improved accessibility to a variety of activities. They also found that people who benefited the most were medium-income earners, rather than the low-income commuters.

Referring back to some of the principles stated in the first two sections of the chapter (on urban mobility and commuter choice), mobility involves a fragile entanglement of physical space, perception, and socio demographics.

"Furthermore, these entanglements have broadly traceable histories and geographies" (Cresswell, 2010:18). These geographies and histories lie in the meanings, representation and practices associated with mobility. Creswell (2010:22) highlights that this is important as, "there seems little doubt that mobility is one of the major resources of 21st-century life and that it is the differential distribution of this resource that produces some of the starkest differences today". So what are these geographies and histories that lie in the meanings, representation and practices associated with mobility? It is difficult to obtain answers as there is very little on commuter choice in the Global South. Figure 2 aims to graphically illustrate the main themes vis-a-vis the experience of urban mobility and transportation systems in the Global South. It sets out a framework for the empirical research.





(Mahadyanda, 2018)

3. CHAPTER THREE: Contextualising the Research Site, Pimville and transport system in Johannesburg

3.1. Introduction

This chapter aims to contextualise the research site, Pimville. It is organised into two sections. The first section provides an overview of Pimville, and locates the area at a regional, metropolitan and local scale. It goes on to provide a description of the social dynamics and livelihoods, which is mainly a descriptive narrative of the socio-economic characteristics of the study area. The second part discusses the transport systems that operate in the area. A brief overview of the history of public transport modes in Johannesburg sets the background for the discussion on the current Pimville transport systems. It discusses the existing transport modes and commuter transport trends in SA, with detailed reference to Johannesburg. It then considers commuters living on the margins of the city, such as Soweto. This section is followed by consideration of the extent to which the new public transportation interventions (such as Bus Rapid Transit) are consistent with current commuter trends.

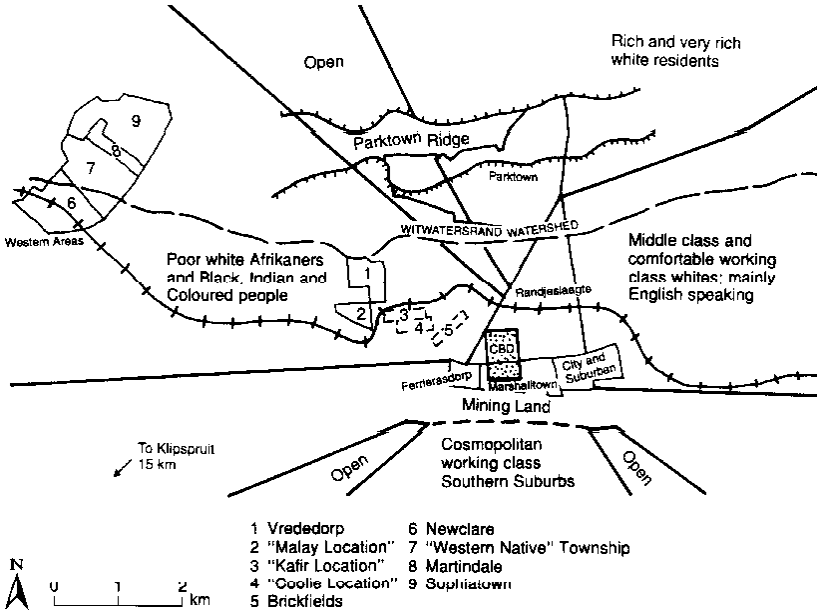
Technical papers and policy literature developed by various urban planning departments are also reviewed in this chapter in relation to urban mobility and public transport. Material from the University of Cape Town Centre for Transport Studies, particularly information related to recent BRT initiatives, has provided a useful source of information.

3.2. Pimville: the study area and its location

Pimville is located in Soweto (South Western Townships), in Region D of the City of Johannesburg (CoJ, 2015). The greater Soweto area is about 200.03 km² accommodating a population of 1,271,628, 43 % of the Johannesburg population (StatsSA, 2011).

Soweto is known as the largest township in South Africa and is referred to as a "city within a city", that was once a separate municipality (Lewis, 1966). In South Africa, the term township refers to a single-use residential area, often underdeveloped and purposefully detached from the economic system. Townships were characterised by racial segregation and the marginal provision of services and economic opportunities. Soweto was developed as dormitory settlement for transitory migrant workers who worked in the inner city of Johannesburg. As such its local economic base was and remains limited (Frankel, 1979). It emerged as a small settlement in 1886 with the discovery of gold reef on the farm Langlaagte that rapidly grew to become a municipality in 1987. While the early Johannesburg settlement (1886-1891) was concentrated in specific parts of the first mining camp, it soon was divided along lines based on social and economic factors (Frankel,

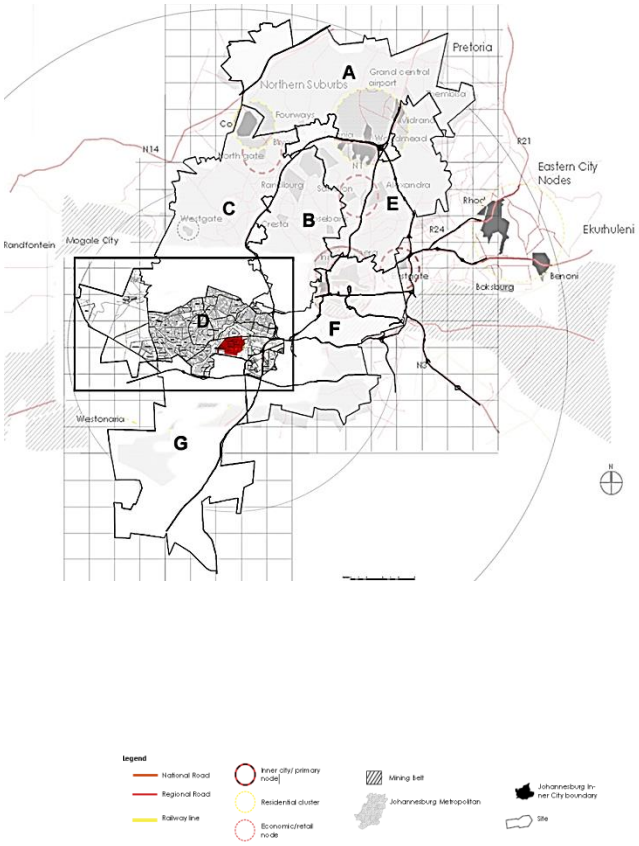
1979). Its upper classes quickly settled towards the northern part of the city and separate suburbs, or 'locations' as they were known, were allocated for Black, Malay and Asian occupation in southern areas of the city (see Map 2). After the apartheid government had come into power, the city was further segregated through laws, policies and traditions, and black people were removed over time to the periphery to areas now known as Soweto, Alexandra, Orange Farm, and Diepsloot. Pimville, as part of Soweto, can be traced to the forced removals of black residents from the area of Brickfields in the inner city in 1904 and also the mass evictions of black people from Sophiatown, Newclare, and Prospect in the 1950s under the apartheid government (CoJ, 2015; Frankel, 1979).



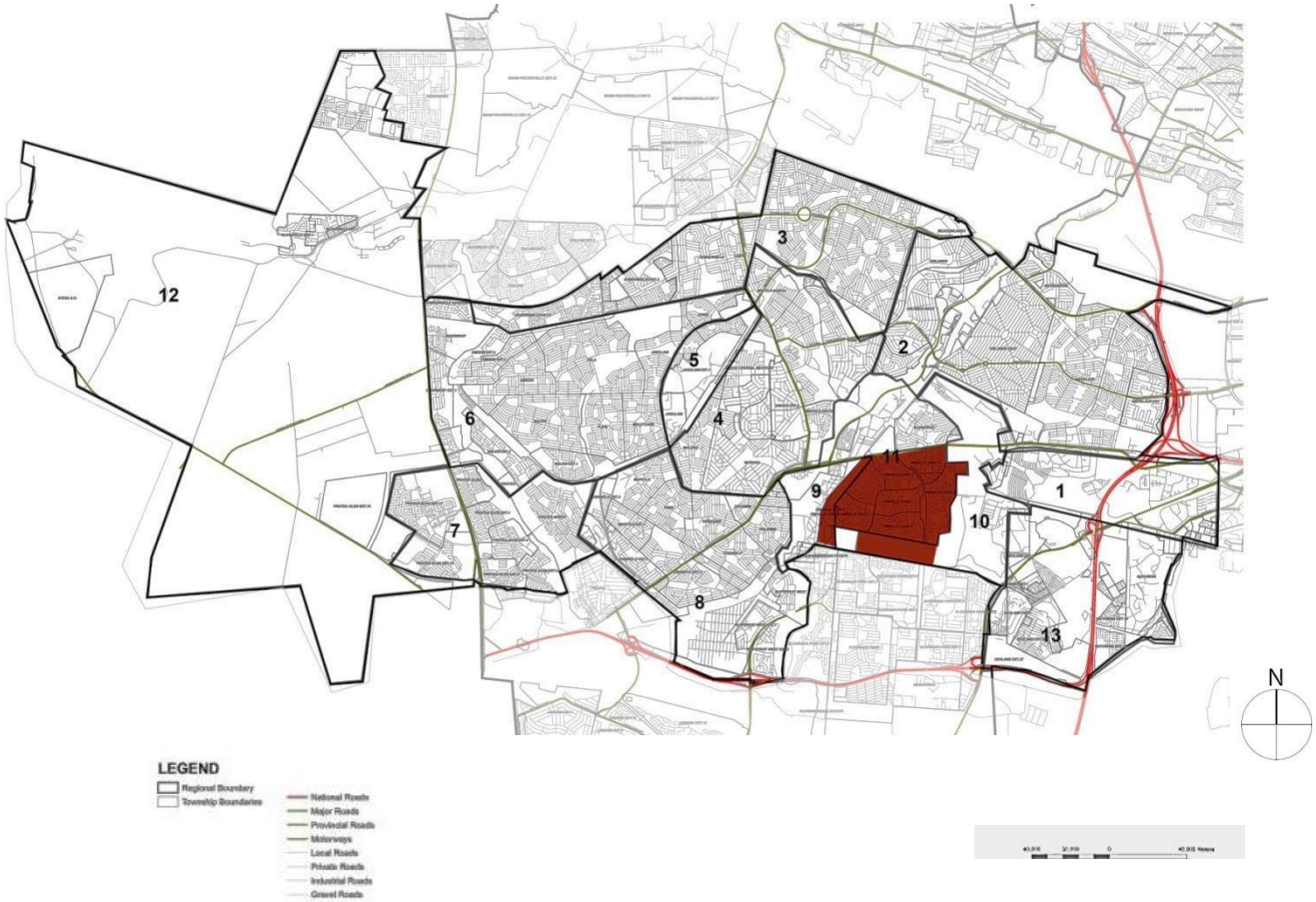
Map 2: Schematic Map of old Johannesburg based on Morris, 1980 (sources: http://www.nzdl.org/gsdlmod?e=d-00000-00---off-0ccgi--00-0----0-10-0---0---0direct-10---4-------0-1l--11-en-50---20-about---00-0-1-00-0--4----0-0-11-10-0utfZz-8-00&a=d&cl=CL2.2&d=HASHc9c19c642f904c23f02583.7.2)

Soweto is divided into sixteen sub-sections or suburbs such as Pimville which forms sub-section 11 and is located mid-south of Soweto, which is approximately 25 km south west of the Johannesburg inner city (see Map 3). It is bordered by the M58/Chris Hani to the north, Nonqwaba Street to the east, the railway line to the west, and Union Avenue to the south. It is surrounded by other residential suburbs, namely Diepkloof, Dhlamini, Klipspruit, and Eldorado Park as well as vacant land.

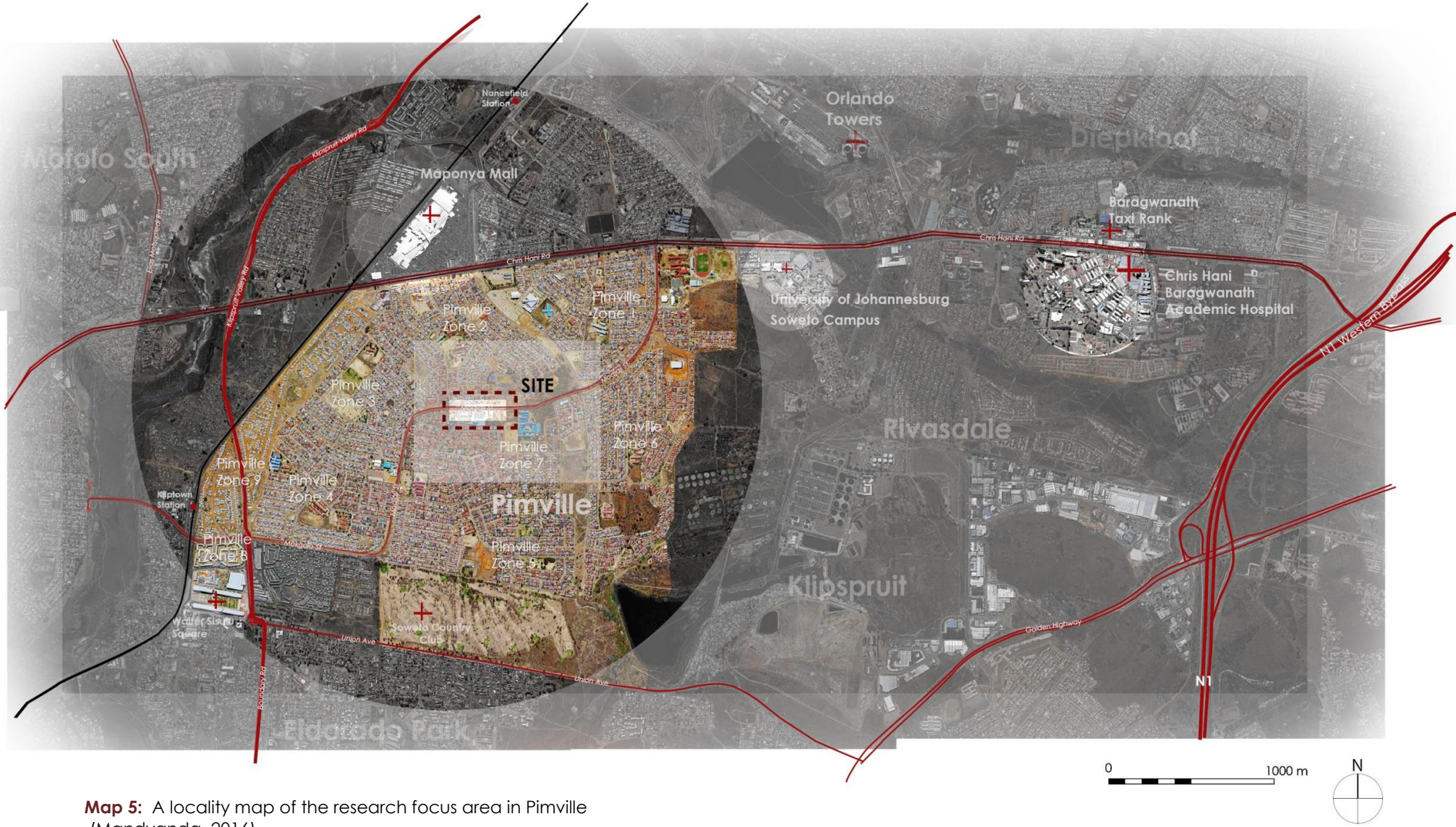
Pimville is arguably one of the better-located townships and has well-developed infrastructure and amenities (Bongwe, 2014). The township has access to four high schools, thirteen primary schools and one technical college, and also the University of Johannesburg's Soweto Campus (Bongwe, 2014). It is in close proximity to one of the major economic nodes, Maponya Mall. The historical Kliptown, where the Freedom Charter was signed in 1955, is also within close proximity. It is also within 5 kilometres (km) from the Chris Hani Baragwanath Hospital, which is the third largest hospital in the world, and the Baragwanath taxi rank, which acts as regional transport interchange (Bongwe, 2014).



Map 4: A map of Pimville in context of region D (Mandyanda, 2016).



Map 3: The regional context of the city of Johannesburg, highlighting the location of Pimville in Soweto in relation to the inner city and other nodal point of places of work and school in the city. (Mandyanda, 2016)



Map 5: A locality map of the research focus area in Pimville (Mandyanda, 2016)

3.3. Social dynamics

Due to the scale and the limited information that is specific to Pimville, Soweto's social demographics and spatial features are presented to describe Pimville. Metropolitan Johannesburg consists of a population of approximately 4.3 million people, making it the biggest metropolitan area by population size in South Africa (CoJ, 2011). Of the 4.3 million people in Johannesburg, Soweto has a population of approximately 1.3 million, i.e., about 30% of Johannesburg's population.

The accurate and reliable total population of people living in Pimville is not available in the 2011 census data. However if one added the available statistical data of Pimville (zone1-8) in 2011, there were approximately 52744 people (Stats SA, 2011), which is about 4 % of the Sowetan population. Approximately 48% (25477) are female and 52% (27267) are male (Quantec, 2013).

Pimville's population consists of culturally diverse Soweto residents that are predominantly black, with the dominant spoken languages being Zulu, Sotho and Xhosa (Hadebe, 2010). The area is a combination of people born in Soweto and also a fluctuating number of people from rural areas and migrants from neighbouring countries in search for better social and economic opportunities (Hadebe, 2010). This might be because townships tend to be areas within the city where low income people can afford to live in as opposed to living in the city centre where property and rental prices are high. While many of the residents are still deeply rooted in African culture and tradition, a very vibrant and dynamic youthful population adds a uniquely South African urban township culture to the mix, including gangs tied to certain territories in the township (Bongwe, 2014). There seems to be a strong sense of community amongst residents which has seen them create certain spaces for themselves within the area, such as pubs and eating spots along the street, where they congregate and interact (Bongwe, 2014).

Pimville is characterised by sprawl and low-rise, single dwelling, detached houses, mainly in the form of residential areas and some informal settlements, with its transport system dominated by MBT and private vehicles. The result is a city of congested roads. The growth and transformation of Soweto have made it evident that the private car and low-density sprawl is not a sustainable approach to living.

3.4. Livelihoods

Pimville and Soweto at large was historically restricted from developing its local economic base. It was established strictly as a residential area that served the Johannesburg inner city with workers (Hadebe, 2010). As a result, Pimville and Soweto's economy is tied to the Johannesburg metropolitan economy

(Hadebe, 2010). Approximately half the employed population in Soweto work in Johannesburg and about 30 % travel daily to the Johannesburg CBD to work, while approximately 20 % work in Soweto(Simpson, et al., 2010).

Of the total population size of Pimville, only 27% of people (14696 people) are estimated to be formally employed (Quantec, 2013). Approximately 75% of household income population earn under R 1 500 per month, 9 % earn R 1 500, and 2 % earn over R 3 500 (CoJ, 2010). The mean level of education is between standard 6 and standard 7 (Quantec, 2013). A significant number of people are dependent on informal economic activities and on social grants (Bongwe, 2014).

In Pimville each of the 9 zones consists of different overall income bracket (Hadebe, 2010). Zone 6 can be regarded as the most affluent of the zones in Pimville, with a number of refurbished homes with luxury cars parked outside (Hadebe, 2010). Zone 2 is considered to be the poorest zone, with very few affluent or refurbished homes, and is characterised by standard two-room state-subsidised housing types (Hadebe, 2010). Since 1994 there has been some improvement with an increase in private sector investment in the form of retail, office, residential and transport infrastructure. Pimville has experienced some infrastructural development, such as building storm water drains, paving sidewalks, and installing street lights, have a positive impact on economic activities (Hadebe, 2010).

The observable economic node in the area is Pimville Square that acts as a local shopping centre with supermarkets, banks, convenience shops and small business. Pimville Square stands next to a local car wash and pub that usually acts as vibrant space in the area with people who gather there not just wash their cars but also to drink, eat and socialise with others. While economic activity in the area seems to reflect some entrepreneurial spirit, it also can be seen as a survivalist activity for the unemployed. There are several street traders selling goods, such as vegetables, fruit, and live chickens. There are also spaza shops and taverns which are mostly extensions of residential houses, or kiosks built of corrugated iron sheets that operate until around 11 o'clock at night while main retail areas close by 6 o'clock.

However, in post-apartheid South Africa, there has been limited and slow economic development taking place, and Pimville mainly remains a residential area. There is also still a lack of public open spaces. New development has largely taken place outside Pimville, and the limited improvements to the area have been outpaced by degradation (Hadebe,

2010). Most of its residents still need to commute to other parts of the City (Beall et al., 2003).

3.5. Pimville in relation to transportation

The transport system in Johannesburg, like other South African cities, reflects the historical spatial planning policies that shaped urban areas in South Africa. Transportation in the apartheid spatial form resulted in poor people living in low density houses on the urban periphery, such as Soweto, Lenasia, Eldorado Park and Orange Farm. This meant that residents in these areas have to spend a significant amount of their earnings on transportation every day in addition to other expenditures.

Initially (in the 1950s) no funds were set aside for the development and implementation of public transport for these areas. The only form of transport officially provided by the government was in the form of passenger rail and bus services. The main function of the transport system was to transport labour to their place of employment (Khosa, 1995). Pimville was mainly serviced by rail and commuter buses. McCarthy and Swilling (1985) explain that in 1940 the bus industry was controlled by cartels, and in 1945 several companies merged into the Public Utility Company (Putco), and it operated as a service provider for established black townships (Mandy, 1984; Czegledgy, 2004). A bus industry monopoly permitted fare increases. In the 1970s passenger rail services and PUTCO bus services showed signs of declining service quality: they suffered from overcrowding, lack of funding, safety, unreliability, amongst other issues (Wilkinson, 2008). During the apartheid era buses were burnt as part of protest action against rising fare prices and resistance to Government action (Mandy 1884). There were a number of bus boycotts as a result of increased transport cost for black people living on the outskirts of cities (Khosa, 1995). As Khosa reports, "Bus boycotts highlight fundamental contradictions in South Africa's transport policy; monopoly control over bus transport, and increased fares in spite of the rising cost of living for the African commuters" (Khosa, 1995: 178).

3.5.1. The Minibus taxis (MBT)

Consequently, these issues offered an opportunity for the emergence of entrepreneurs in the transport industry (Barrett 2003). In the 1970s, the apartheid era saw the growth and establishment of the taxi industry, a paratransit system in the form of minibus taxi (MBT). MBT services do not fit with the idea of a modern urban public transport system (Gauthier & Weinstock, 2010). MBT are a flexible mode of transport, lacking schedules or frequencies, and which features small and medium-sized vehicles, most often ageing minibuses (Schalekamp and Behrens, 2013). Almost 65% of the South African workforce dependent on public transportation used

MBT to get to work (Department of Transport, 2003 cited in Simpson, et al., 2012).

Access by MBT and other bus companies in the transportation industry was restricted and controlled (McCarthy and Swilling 1985 cited in Simpson, et al., 2012). At first, the government tried to safeguard the state-controlled bus and rail public transport systems, by prohibiting entrepreneurs from operating, by not issuing road transport permits to MBT owners. Despite restrictive laws by transport officials, the 1980s saw rapid growth in the MBT industry (Browning, 2001). MBTs began to dominate the public transport industry in most cities, superseding all existing modes (Clark & Crous, 2002).

There are noticeable differences in local coverage and various modes. MBT are often the only transport option available in the marginal areas of the city (Schalekamp and Behrens, 2013). The MBT have more routes in the city than conventional public buses and the BRT network (CoJ, 2013). The City of Johannesburg in their Strategic Integrated Transport Plan Framework for the City of Johannesburg (SITPF) report that in the "last comprehensive survey of all taxi routes in Johannesburg, in 2002, it was estimated that there were 12 300 short distance minibus-taxis" (2013:9), and currently 40% of residents in Johannesburg use minibus taxis as their main mode of transportation (Wray and Gotz, 2014).

The Johannesburg inner city saw substantial changes in its character and function since the 1960s. This can be related to the "white flight" in the 1960s in which white citizens occupying the inner city moved towards the northern suburbs (Beavon, 2004). This can be linked to the predictions that an influx of non-white inhabitants would occur in the inner city (Beavon, 2004). There was a definite trend of urban sprawl, the decline of the original Johannesburg CBD, the subsequent rise of competing CBDs, almost all to the north of the original, and also the expansion of shopping centres to the south of the city (see figure 3). Subsequently, this caused a rise in demand and cost of transportation moving in and out of the city. Unfortunately, urban sprawl has not declined, and although people can move around freely now, many cannot afford to move house. Thus, for many of the region's residents, the daily experience of poverty, overcrowding and unemployment continue to limit their choice of residence and mode of transport (Rahim, 2014).

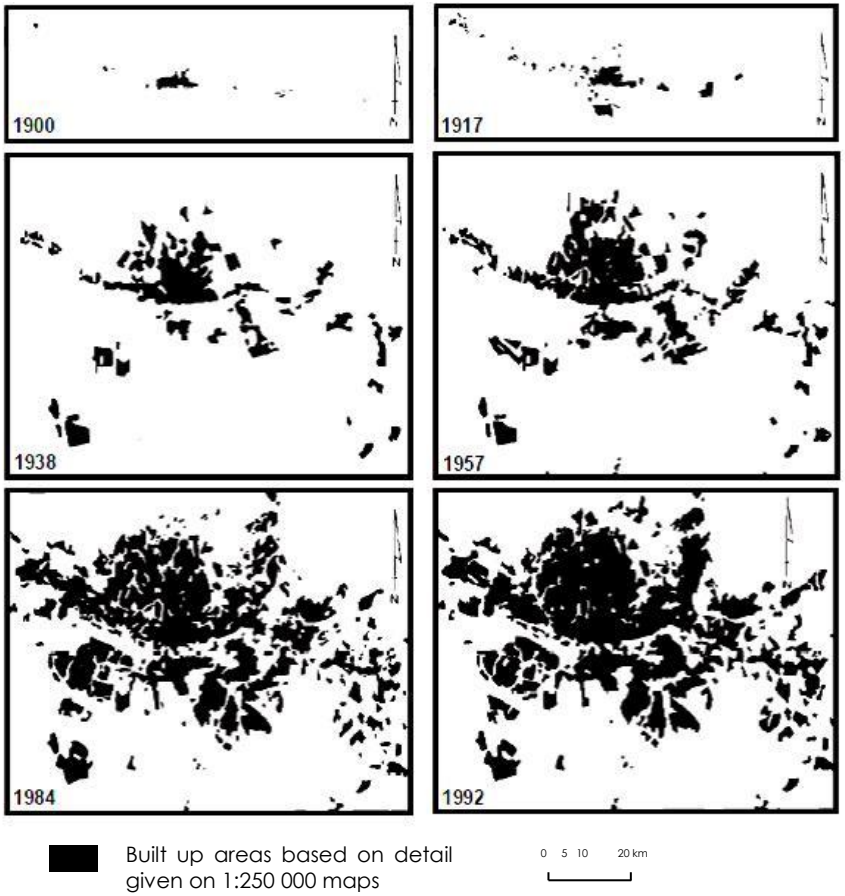


Figure 3: The Growth of Johannesburg and central Johannesburg 1900 -1992 (Source: Whitlow & Brooker, 1995)

3.5.2. The Rea Vaya BRT system

After 1994, in response to the former policy of exclusion, 'integration' (social, economic, administrative and spatial) became the vision for South African cities. The South African National Department of Transport (NDoT) initiated different projects that were aimed at modifying the existing public transport system and addressing spatial inequalities introduced by apartheid spatial planning. Most recently various Integrated Rapid Public Transport Network (IRPTN) projects have been introduced to form the foundations of the proposed transformation of public transport systems in South Africa (Ferro, Behrens, Wilkinson, 2013). They mainly involve the introduction of a network of bus rapid transit (BRT) corridors modelled after the systems in Latin American cities such as Bogota and Curitiba (Lleras & Pereira, 2009). These initiatives aimed at providing people who are at some distance from their places of work with an improved transport system The IRTPN or BRT projects have been introduced in the South African metropolitan areas, and Johannesburg was the first city to implement a BRT system (Grütter, 2011). The IRPTN plans usually involve a phased replacement and transformation of the existing mixed formal and paratransit system with a comprehensively regulated and formally operated the system. It aims to 'modernise' public transport and alter the perception of public transport (Wray and Gotz, 2014). Its basic elements

include exclusive bus highways and lanes, technological and street design, traffic signal, bus stations and bus shelters, characterised by faster service, and cleaner, quieter and more attractive branded buses (Cabrera, 2010:2).

The BRT is mostly presented and defined in a positive light. It promotes a positive image to the general public to generate an identity as a world class, efficient transport system (Hess, 2008). This BRT image aims to present a sense of confidence and give the user a sense of community pride (Wright and Hook 2007).

The Rea Vaya has been introduced in phases with 3 exclusive BRT bus lanes T1, T2 and T3 (phase 1A and phase 1B) plus their complementary and feeder lines. The city has implemented and completed phase 1A and 1B that focused on connecting the inner city to the southern parts of the city, such as Soweto. The city is currently busy implementing Phase 1C that focuses on connecting the inner city to the northern areas of the city, such as Sandton and Alexandra Township (Wray and Gotz, 2014).

This study is concerned with phase 1A and 1B that form the Soweto-inner city Johannesburg corridors. The city began with the phase 1A trunk route which began its operation in August 2009. It has a length of 25km and includes 27 stations. This phase is serviced by the trunk 1 and 2 buses (T1 and T2) connecting Soweto to the CBD and Ellis Park. To expand the area's coverage, the trunk route is accompanied by four complementary routes making up 90km (Grütter, 2011) and five feeder routes that make up 54km.

Phase 1B came into operation in October 2013 and involved a trunk route that is 18 km in length. It is serviced by the Trunk 3 bus (T3 connecting Soweto to the CBD via the western suburbs, Parktown and Braamfontein). It has 12 feeder routes stretching 62km in length to increase the coverage and six complementary routes that stretch 82km in length to increase the system coverage. Map 10 shows both the Phase 1A and 1B routes, with the added 17 stations. The Rea Vaya Trunk routes have dedicated transport lanes separated from general traffic that act as corridors that connects major passenger origins and destinations. They are located in the middle of the road reserve with stations allowing for level boarding (typically through right-handed bus doors) and a bus floor 940mm from the ground. Complementary routes are bus services that use a combination of both mixed traffic roads and trunk routes that connect major passenger origins and destinations, served by buses able to interface with both kerbside Rea Vaya bus stops and median Rea Vaya stations. Feeder routes are bus services that feed the trunk route. They begin in mixed traffic roads connecting areas of significant passenger origins to a Rea

Vaya trunk or complementary route, either kerbside outside the station, or at the station itself (Grütter, 2011).

The trunk buses can carry up to 112 persons including room for disabled persons and have platform-level access. Feeder and complementary buses can carry up to 81 passengers. The fare system is based on pre-board ticketing. Passengers have an option to register and get a Rea Vaya smart card or to buy a ticket at Rea Vaya stations or selected shops (Grütter, 2011). Rea Vaya stations and buses have validator machines where a passenger can tap their smart cards or tickets at the beginning and the end of the journey. This is aimed to speed up the boarding process and allows drivers to focus on operating the bus (Grütter, 2011).

There are seven BRT stops in Pimville but this study examines only one of them, the Pimville Mall/Square bus stops. Pimville is served by the feeder route 10 (F10) which connects Pimville to the Lakeview station where the two trunks bus routes (T3 and T1) take people to the inner city. The F10 was introduced as part of Phase 1B and has been in operation since 2013. Pimville comprises of 8 zones and the current BRT service for Pimville runs through major public transport roads such as Chris Hani, Modjadji and Mohloka Streets and ends in Mpondonde Street.

The BRT cuts through the middle of Pimville and connects 5 out of 8 zones in the area, namely Zones 2, 3, 5 and 7. The other zones that are further away from the BRT routes continue to depend on private vehicles, minibus taxis and Putco bus services for their daily trips to and from Pimville (CoJ, 2015).

In Soweto all trunk routes end or begin at Thokoza Park, however for people coming from the inner city to get the F10 bus to Pimville, Lakeview station becomes final trunk route station.

From the Lakeview Station, the F10 has 7 stops: Chris Hani and Klipspruit, Kenny's Brick and Tiles, Mohlaka Street and Modjadji Street, Pimville Mall/Square, Mpondonde and Modjadji, Mpondonde and Morobadilepe bus stop. The research focuses on the Pimville Mall/Square bus word missing because this stop is located in Modjadji Street. Modjadji Street functions as a major public transport route in the area that is not only served by BRT buses and MBT, but also by Putco and Metro bus services. Pimville Square is located along this road.

3.5.3. Urban transportation and current conditions

The current public transport modes available in the city are, buses (Putco and Metro bus, and recently the Rea Vaya BRT), minibus taxis (MBT), metered taxis, passenger cars, motorcycles, commuter train (Metrorail), rapid rail (Gautrain), and non-motorized transit (e.g. in form of cycles). There are currently 5 transport modes that service Pimville apart from

private vehicles: commuter trains (Metrorail), buses (Putco and Metro), minibus taxis, and the Rea Vaya BRT system.

Currently, the transport system reflects the inherited fragmented spatial form that continues to exist in post-apartheid South African cities (Wray and Gotz, 2014). Transport in Johannesburg reflects a system where commuters are unable to move from one point to another without first being transported to the city centre (Figure 4). There is a substantial inequality in access to transportation and inadequate level of connectivity between several suburbs, townships, cities and regions (Simon, 1992). Johannesburg has a poorly developed transportation network that is unable to effectively accommodate both rich and poor residents (Simon, 1992). There is a transport system which consists of lengthy commute time and where available buses and trains only operate at peak times.

The national statistics agency noted in the 2013 household travel survey that 39% of all work trips in the country used public transport as the main mode of travel, followed by private motorised transport at 38%, and walking at 22% (Statistics South Africa, 2014). This trend is not only the effect of increasing private car ownership, but also of the relative decline of people who choose to use public transport. The majority of people who commute to work and school is dominated (42 %) by cars followed by minibus-taxis (40%) with the other modes making up the smallest amount (17%) of the modal share (see Figure 5).

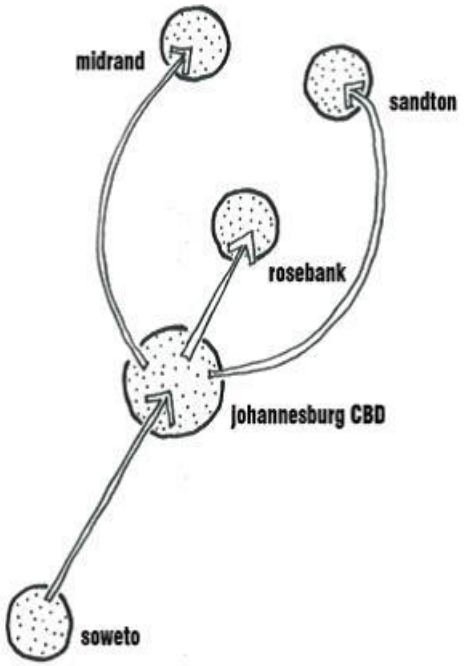


Figure 4: A simple illustration of commuter dominant travel patterns from Soweto to one of Johannesburg's economic nodes (sources: De Villiers, 2015)

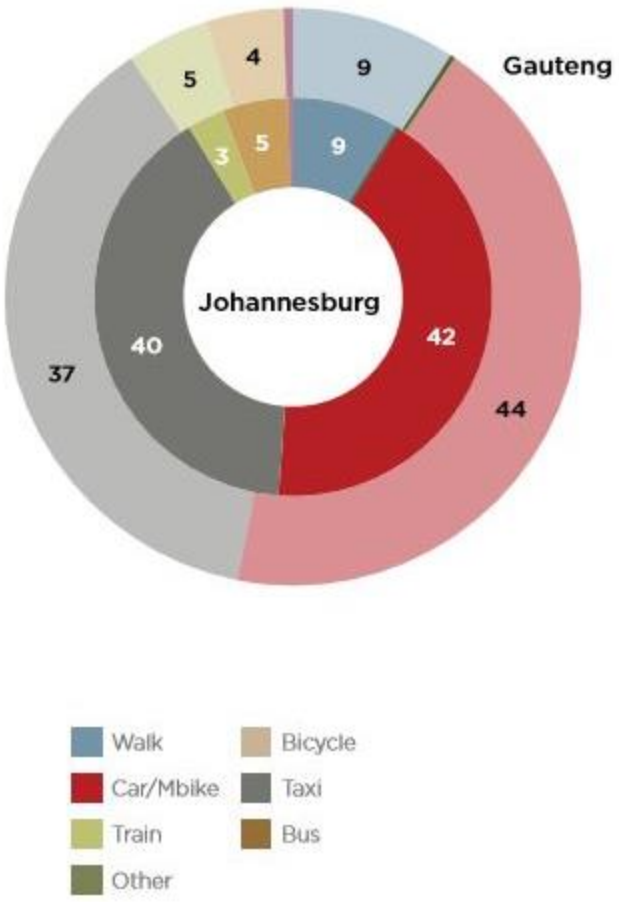
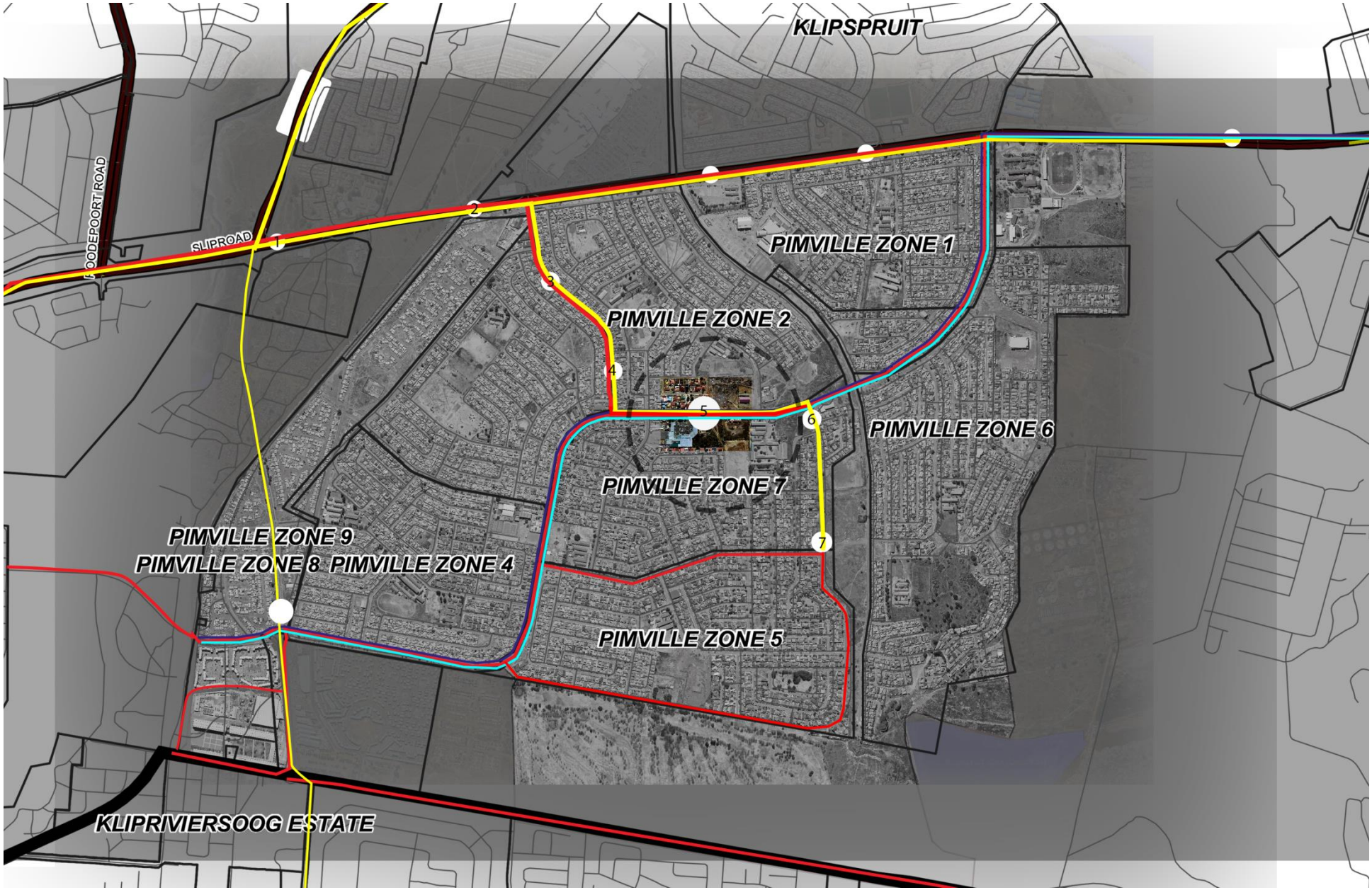


Figure 5: Main mode of transport used to travel to work (sources (Götz, 2015:102)

Although there is a diversified transport network, commuting in Soweto continues to be mainly dominated by MBT (Wray and Gotz, 2014). As Schalekamp and Behrens (2010) note, Pimville and Soweto at large is characterised by a modal share decline of 'formal' services (rail and bus systems); violent competition in the market on overtraded routes; the poor quality of service provided by paratransit or MBT modes (most notably aggressive driver behaviour and the lack of safety of vehicles); and regulation and integration of the existing different modes.

The choice of mode depends on the affordability and the accessibility of the three most important public transport modes (MBT, bus, rail and now Rea Vaya BRT). While the bus and rail services are subsidised and cost less, the MBT provides more frequent and conveniently located services (Wilkinson, 2008). Metro and Putco bus services provide approximately one bus every 15 minutes during peak hours, and the train runs at a frequency of every 3 to 8 minutes during peak hour periods, while MBTs are often always available, with more operating during peak hours (Götz, 2015). MBT services remain the most flexible and demand responsive. These paratransit services are very responsive to a dynamic pattern of demand (Clark & Crous, 2002). The Rea Vaya is emerging as the most compatible service with fare prices similar to the MBT. It is offering a service that operates at high frequencies and has feeder routes that help increase spatial coverage of the system reaching the peripheral places in Soweto.



Map 6: All the public transport available in the Pimville Area. Source: Mandyanda, 2016.

4. CHAPTER FOUR FINDINGS: Pimville commuters' travel behaviours and attitudes towards travel modes.

4.1. Introduction

The focus of this chapter is presenting the findings from the fieldwork that investigated the transport choices of individual commuters and the reasons behind their choices. The chapter presents findings from observations and semi-structured interviews undertaken in Pimville between 15 August and 16 September 2016. Interviews were conducted with ten commuters (5 BRT and 5 MBT respondents) who make use of BRT and MBT to travel from Pimville to Johannesburg on a daily basis. The interviews were captured through voice recordings, and observations were recorded with field notes. The average age of respondents was 23 years old, with the youngest respondent being 19 and the oldest being 46 years old. Table 1 illustrates the full list of all participants.

The findings are organised into two sections. The first section discusses the BRT users and the second section covers the MBT users. The respondents were asked to answer questions in relation to how they commute, how they use the travel choices available to them, and to the reasons behind their travel behaviours and choices. However, a more nuanced view of urban mobility is taken than a conventional index type investigation, where variables representing reasons behind people's choices are predefined and tested, as this study is concerned more with investigating what these variables may be and what they may mean. The aim is to display the nuances that inform the commuters' travel behaviours and attitudes.

The participants were asked about their travel choices and reasons behind these choices. This was done with the intention of ascertaining the level of influence social, economic, spatial and cultural aspects of travel have in determining their final choice of transport mode.

The first part of each of these sections displays mapping and images taken from the fieldwork. Respondents' routes from their homes to the station and commuters' final destinations (education or work) are presented by maps and images showing the physical character of station spaces and paths used to and from the station. Each section begins with an outline of biographic details (age, gender, and occupation, and socio-economic status) of the commuters, including duration of use of mode, frequency and cost. Pseudonyms are used for respondents to ensure their anonymity. The second part of each section focuses on the responses to the questions about their modal choice, and these findings are organised into themes. The second section also aims to uncover the

nuance and texture, complemented through the use of quotes. It investigates the key socio-economic and spatial attributes and perceptions underlining public transport mode choices. The findings essentially show the complexity and variation of commuters and the way they use the two different modes.

Reya Vaya BRT Commuters				
Commuter	**Age**	**Sex**	**Household Structure**	**Occupation**
 Mpho	21	Male	Nuclear Family 	Student
 Mpendulo	23	Male		Employed & part time student
 Rethabile	29	Male	Single 	Employed
 Lindile	33	Female	Single mother 	Employed
 Thando	19	Female	Nuclea Family 	Student

Pimville Minibus Taxi Commuters				
Commuter	**Age**	**Sex**	**Household Structure**	**Occupation**
 Thandeka'	23	Female	Extended family 	Student
 Phindile	21	Male	Nuclea Family 	Student
 Vuyiswa	26	Female	Extande family 	Student
 Khanyiso	39	Male	Nuclear Family 	Employed
 Kgato	42	Male	Couple 	Employed

Table 1: **A list of all the participants that took part in the study (Mandyanda, 2016).**

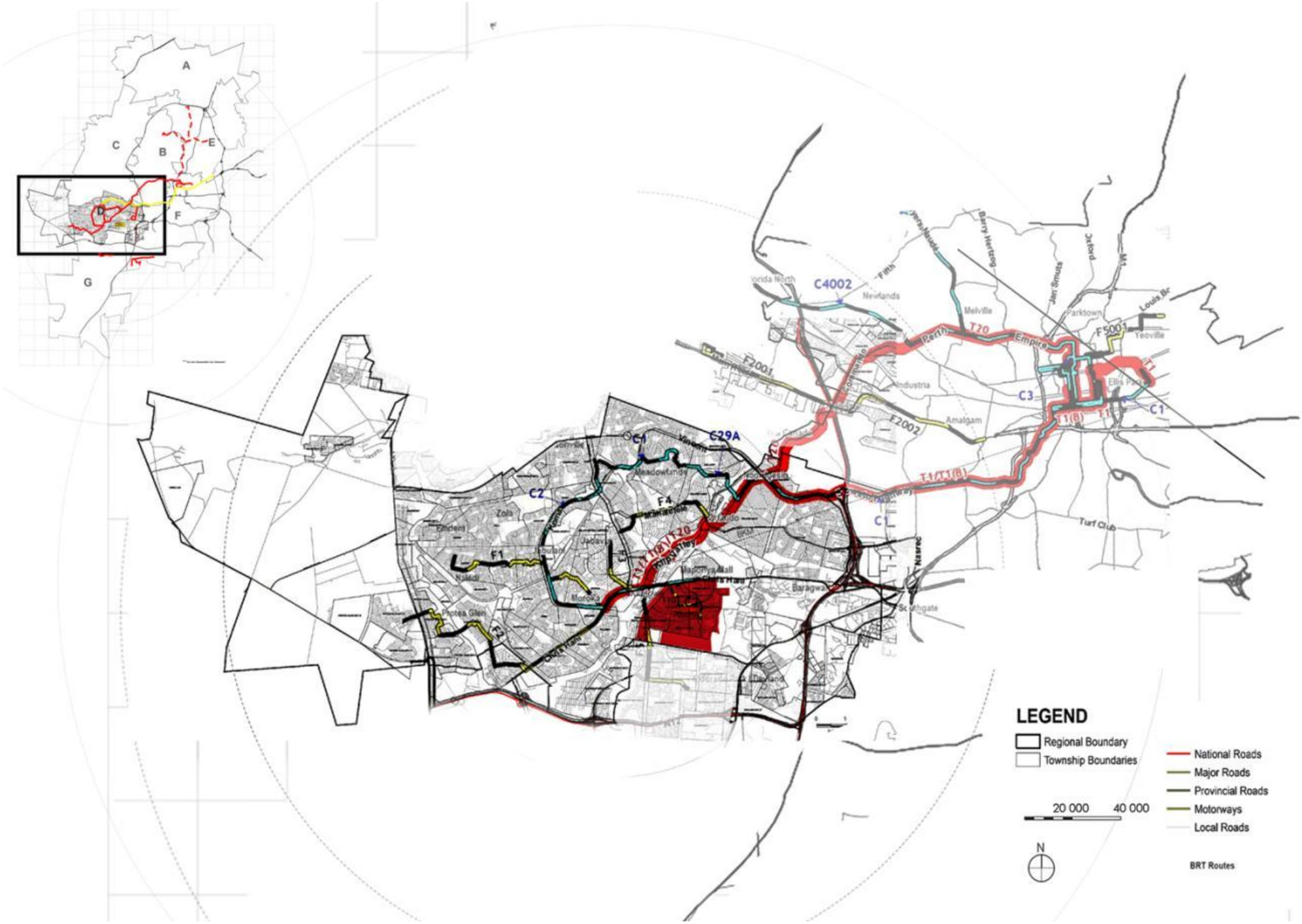
4.2. Documenting Bus Rapid Transit (BRT) Journeys

The following focuses on providing data collected from BRT commuters' travel behaviour as extracted from interviews and observations. The second part consists of narratives of respondents' choices organised into themes.

In Pimville Trunk 3 and Trunk 1 (referred to as T3 and T1) is available to commuters, and are complemented by the Feeder 10 bus (F3). Commuters who travel to Pimville T3 and T1 can board at different stations in the inner-city depending on the commuters' location. However, as T1 and T2 enter Soweto, they both converge at the Lakeview station as their last stop, where users can catch the complementary and feeder buses to their final destinations.

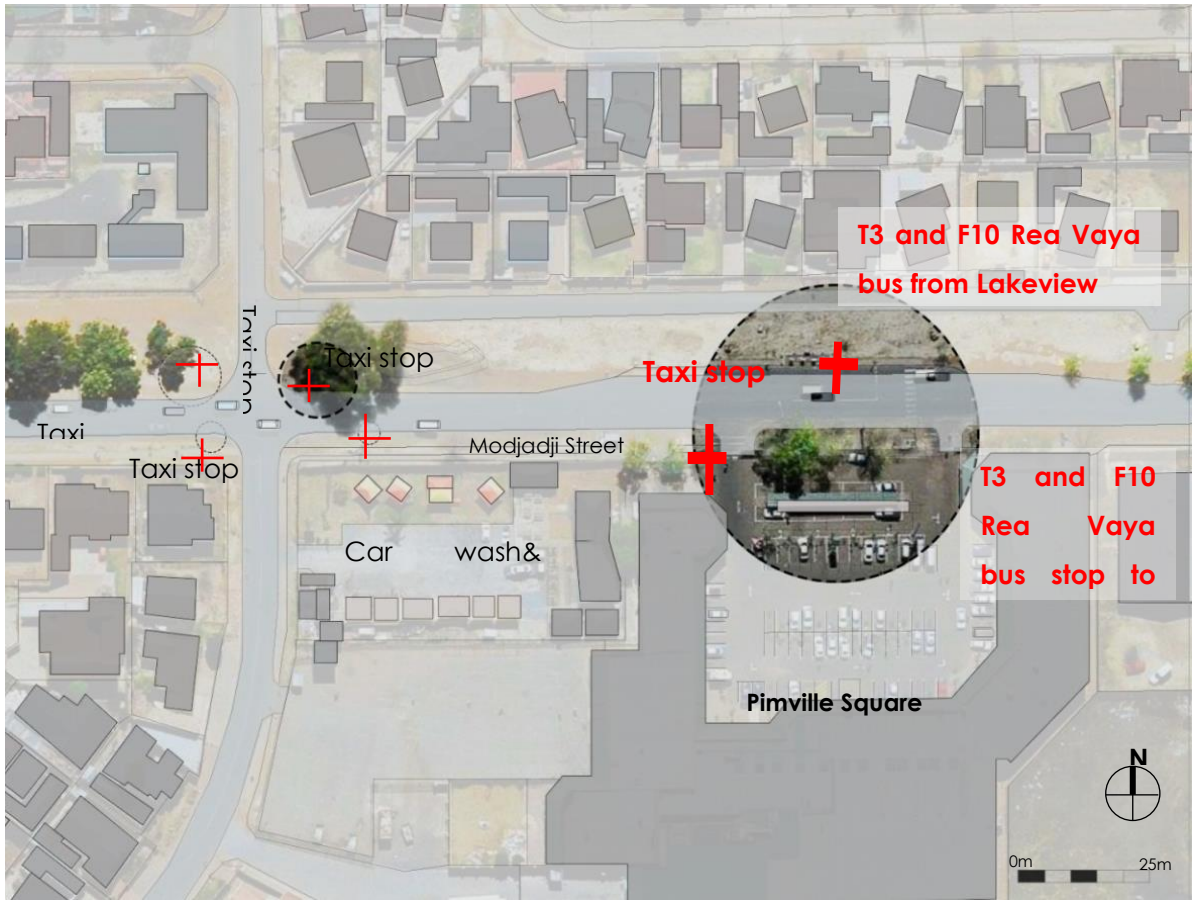
It became evident from the fieldwork that Pimville commuters wait approximately 5-15min at Lakeview for the F10 bus. They take the F10 bus to reach their final destination at one of the various bus stops in Pimville area. The research site is the Pimville Mall/Square bus stop located in Modjadji Street. This bus stop is important because it is a major stop in Pimville that functions as a major public transport node in the area. The bus stop is not only served by BRT buses and MBTs, but also by Putco and Metro bus services. I conducted interviews with a sample of 5 commuters (randomly selected) whose final stop was the Pimville Square (see Map 8).

I conducted interviews with three students. Two students are at the University of the Witwatersrand (Wits). I met one of them at the Pimville Square bus stop and the other at the Wits bus station at Empire Road. The third student, who I met on the F3 bus, studies at the University of Johannesburg and works part time at the SABC. The fourth respondent is an employee at Bank City, and the fifth respondent is a nurse from Helen Joseph Hospital who I met on the F3 bus.



Map 7: Map of BRT routes, both phase 1A and 1B with trunk, complementary and feeder routes map including the different station and the Pimville route.
Source: Mandyanda, 2016.

4.2.1. Observation: Rea Vaya system and its commuters



Map 8: Rea Vaya Bus stops in Modjadji Street, Source: Mandyanda, 2016.





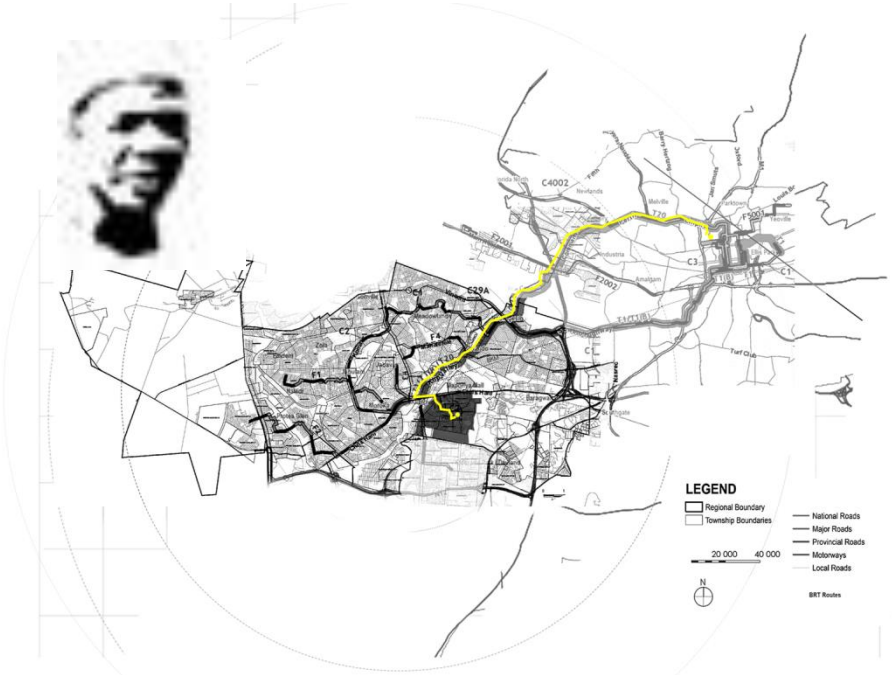




Figure 6: Images of Rea Vaya commuters
Source: Mandyanda, 2016)

4.2.2. BRT commuters' narratives:

The story of Mpho: Pimville to Wits



Respondent 1
Gender: Male
Occupation: Student

Age: 21
Household composition: Nuclear (mom, dad and younger sister)
Trip duration: 1 hour and 5min

Family income: low
Cost: Peak-hours: R12.00
Off-peak R6.00

The first respondent was Mpho, a 3rd year student from the University of Witwatersrand. He is a 21 year old man who lives with his mother and father in Pimville zone 3, where he grew up. The interview with Mpho began at the Lakeview station and continued in the F10 bus station.

Mpho makes use of the Rea Vaya bus as a primary mode to commute weekly from Pimville to Wits station located in Empire Road. He began by using the MBT in the beginning of 2014 for two years and has since changed to using the BRT for approximately one year and seven months. He explained that he began using the Rea Vaya when a friend and class mate introduced it as the best option for him and he has been using it to travel to Wits every day. Mpho takes a 5 minutes' walk from his house to the F10 BRT bus stop located in Modjadji Street. He explained that he leaves his house at 6:45 to catch the F10 Rea Vaya bus at 7:05. The F10 takes him to the Lakeview station where he waits for the T3 for an estimated 10-15 minutes depending on the day. The T3 then takes about 40-45 minutes to arrive at the Wits station, where he walks into the university on Yale Road.

Mpho explains that sometimes he travels by MBT when there are technological problems at the BRT station (the card system often goes offline making it difficult for people to pay for their trip). In these instances he has to take two taxis, one on Bertha Street in Braamfontein which drops him at Bree Street taxi rank (also known as Metro Mall), where he takes another one to Pimville where he gets dropped off at Pimville Square. But he explains that this rarely happens because he always tries to make sure he has sufficient funds loaded in his smart card.

Mpendulo's journey: from Pimville to Bank City



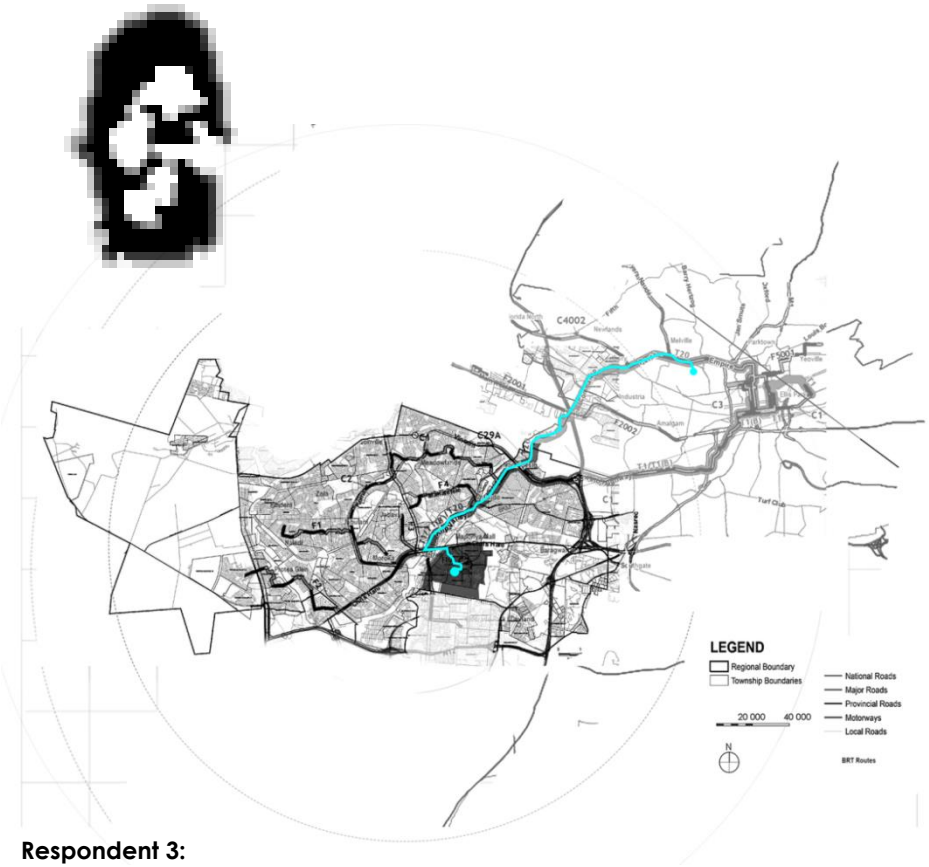
Respondent 2:
Gender: Male **Age:** 28
Occupation: employed **Family composition:** bachelor
Trip duration: 1h: 15 min
Cost: Peak-hours: R12.00

The second participant was Mpendulo, who is a 23 year old man who lives in Pimville with his sisters, and mother in zone 3 where he grew up. The interview with Mpendulo was conducted next to Pimville Square and while he walked home after he disembarked from the F10. He is currently an employee at Bank City and a part time student at the University of Johannesburg (UJ) at the Auckland Park Kingsway Campus (APK). Mpendulo explained that he has been using the BRT for an estimated nine months from Pimville to Bank City three times a week and to the University of Johannesburg once every week.

Mpendulo began using the Rea Vaya in February 2016 after it was introduced to him by a friend at UJ. Like Mpho, Mpendulo lives very close to the bus stop and is able to take a 5 minute walk to the bus stop to board the bus. He boards the F10 bus on Modjadji Street at Pimville Square at 6:45 and it takes him to Lakeview station. He then waits about 10-15 minutes at the Lakeview station and then he takes a T3 bus to the Harrison Street bus station and arrives at 7:45 am and makes his way to his office. He explained that when he is going to UJ he is able to take a later bus that arrives at 7:05 am. He pays different prices for these trips as the Rea Vaya charges based on the distance travelled and Bank City is further then the UJ APK campus. He explained that when he gets off work early and wants to get back home faster and avoid crowded BRT buses, he walks to Bree Street taxi rank where he takes a MBT instead of contending with the high number of people in the Rea Vaya bus. He says that sometimes he takes that MBT because he does not have to stand. He explains that the MBT is comparatively faster. "Sometimes I'm too tired, you know, and

I know the taxi will drop me off straight home, and I don't worry about standing the whole way so I take the taxi". Mpendulo explains that he saves time with the MBT going back home in the evenings, but taking the MBT is more expensive in the morning, meaning that he can save money by taking the Rea Vaya in the morning.

Rethabile's Journey: From Pimville to SABC Headquarters



Respondent 3:
Gender: Male
Occupation: student

Age: 29
Household composition: nuclear (mom & dad)

Trip duration: 55 hour

Cost: Peak-hours: R12.00

The third interview was with Rethabile, a librarian at the SABC who is originally from Durban. He now is a resident in Pimville where he rents a room. He started using the Rea Vaya when he began working at the SABC at the beginning of 2016. He explains that after some difficulties and getting lost when he used other transport modes he began to enquire about how the Rea Vaya bus operates as it was situated opposite his work place.

Rethabile uses the Rea Vaya every day from Pimville Square to the SABC station. Like the other respondents he makes use of the T3 and F10. He wakes up at 5:00am to get ready to leave his house at 6:45 am, which is just in time to take the 7:00 am bus to arrive at his work place. Rethabile said he arrives at his destination at 7:45 am. He prefers to leave work at 4:45 pm in order to catch the bus at 5:00pm so that he returns home before dark.

He said that he avoids other transport modes as he only trusts the BRT to get him where he needs to go. As a new resident in Johannesburg, he does not understand other transport modes and finds them difficult and risky to use as he is unfamiliar with the city.

Lindile's Journey: from Pimville to Helen Joseph Hospital



Respondent 4:
Gender: Female **Age:** 33
Occupation: Works at Bank City **Family composition:** Mom, and older sister And young brother)

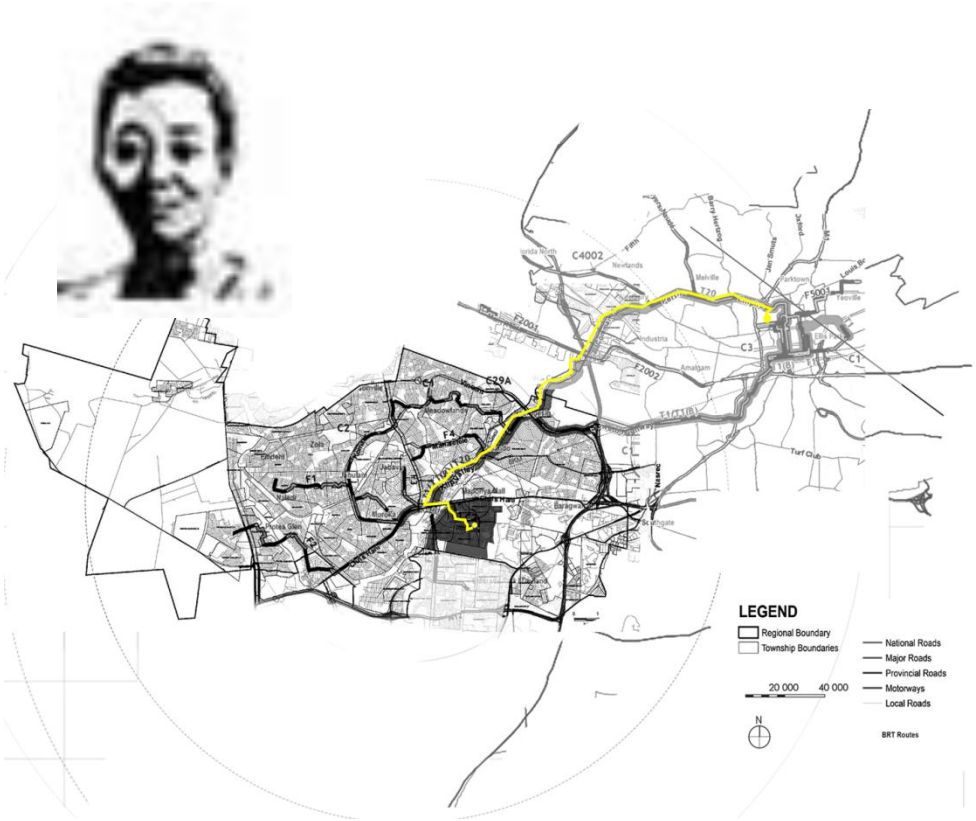
Trip duration: 45 min
Cost: Peak-hours: R12.00

The fourth respondent is Lindile, a nurse who has works at the Helen Joseph Hospital, and lives in zone 7 with her two children, Unlike Mpendulo and Mpho, she was not born in Pimville and moved to Pimville about 13 years ago. She has been using the BRT for almost two years.

Like the other respondents she makes use of the F10 from Pimville and then takes the T3 from Lakeview Station. She begins her day at 5:00 am to catch the 7:00 am bus at the Pimville station. Her house is a 3 min walk from the bus stop but she said that she needs to wake up at 5:00am to make sure that her children are ready for school.

She explained that the BRT has made her life "a bit easier" as she used to wake up at 4:00 to catch the taxi at 5:00am and was not able to see her children off to the nearby school. She makes use of other transport modes. She said that she prefers the BRT during the week, but during the weekend she uses the MBT. She explained that she did that mostly because of time factors. The BRT was easier to use from Monday to Friday, but it was a little unpredictable and the frequency lower during the weekends. The MBT was faster in dropping her off at work when she was on duty.

Thando's Journey: from Pimville to University of Witwatersrand



Respondent: 5
Gender: Female **Age:** 19
Occupation: student
Trip duration: 1 hour **Cost**: Peak-hours: R12.00
Off-peak: R6.00

The last interview with a Rea Vaya commuter was with Thando, a 1st year Wits student. She lives with her family in Pimville and started using the BRT when she started studying at the beginning of 2016. She had been curious about the Rea Vaya and wondered how it worked. Her grandfather advised her to take the Rea Vaya, and on the day of university registration, he accompanied her on her first trip. She began to take the bus during orientation week, and since then she has used it every day.

Like the other respondents, she takes the BRT from Pimville Square as it is within walking distance of her house. She wakes up at 5:00am every day to get ready to leave her house at 7:00am. She said that she arrives in time for the 7:05 am F10 bus at the Pimville Square bus stop. She also gets off at the Lakeview station to get the T3 Bus. When she travels home she usually catches the 5:30 pm bus but because she has afternoon classes to attend on Mondays and Thursdays, she sometimes catches the bus that leaves at 6:00pm.

She uses other modes of transport. Her family has a car and every day her mother drives to work in Florida and where her sister attends school. As the Rea Vaya can get very crowded in the morning peak hours, she avoids this by travelling with her mother to Florida, and then catches the C5 BRT to the Wits bus station She sometimes walks to the bus stops, but most of the

time her mother drops her off at the Pimville Square bus stop. She prefers to use the Rea Vaya because she is able to understand it. The map available online allowed her to make sense of the different routes and bus schedule. T3 dropped her at the Wits station where she takes a 5 minute walk to her lectures. She rarely uses other transport modes as she does not understand them and found them "very tricky" in terms of their times and destinations. She explained that her parents preferred her to use the BRT or to transport her with their private vehicles. Her parents feared that she would lose her way if she used the MBT and did not want her to use any of the other public transport modes (Putco and Metro Bus) as they are unreliable.

4.2.3. Why do you use the BRT?

Respondents were asked to elaborate on why they chose to use the BRT given that there are other modes to travel to their destination. The discussion is organised into themes that emerged from the interviews organised from fairly technical indicators, to more elusive considerations namely; accessibility, trip duration, reliability, comfort and improved quality of life. Essentially Rea Vaya commuters expressed that they used the service as they perceived it to be quicker and more regular, frequent, reliable, comfortable, and more spacious than the MBT service. Respondents also mentioned some more elusive features, such as that it was stress free, modern, attractive, and easy to use. Despite problems with smart cards, the rising cost, and crowded peak hour trips, commuters preferred the BRT and felt it offered an "ideal service".

Accessibility

Public transport should allow commuters to access their work place and a variety of spaces within the city. Ease of access to the Rea Vaya emerged as one of the key reasons why the respondents were using the Rea Vaya as opposed to other modes. Some participants specifically stated that access to BRT bus service from their residences in Pimville connecting them to their final destinations in the inner city was high. They revealed that the introduction of Rea Vaya enabled them to access their places of residence more conveniently. Participants revealed that access was not only in physical terms, but also the immediate availability of information of Rea Vaya schedules, prices and stations.

All participants lived, and worked or went to university within a walking (500m) distance to the Rea Vaya stop. Mpendulo explained that when he is commuting to university the bus dropped him off opposite the University of Johannesburg (UJ) in Auckland Park and in Bank City when he goes to work. Thando explained that she chooses Rea Vaya because she commuted to Wits, which also has a Rea Vaya station located within a 5 minute walk. "Some places do not have the

opportunity to use the Rea Vaya, because it does not go to where they wanted to go and it is not available in their neighbourhood". Mpho said that "When I used to take the taxi, I had to walk so far, it dropped me at Bree, and I had to go over the Mandela Bridge all the way to Wits". Thando expressed that the BRT was a way for younger people to achieve greater freedom and overcome the problems and constraints associated with asking parents to drive them.

Most respondents explained that they used the Rea Vaya because of the ease of access to information on bus schedules, routes and prices. "I could feel more at ease with use other transport modes if they provided more information about schedules and their routes. The MBT could contain information outside or inside the taxi, so people can direct themselves" (Thando). Rethabile who is a newcomer to Johannesburg expressed the same sentiments: "When I arrived in the city I did not have a car so I had to use public transport. I began using the taxi which was a very familiar form of transport back at home [Durban]. So it felt natural to use the taxi when I came here [Johannesburg]. But it was a hassle for me because of where I worked. So I was forced to find out how the Rea Vaya works, and it's easy, you just Google its routes and timetable" (Rethabile).

Time: Trip duration and time of day

Time of day that the transport mode is available is an important factor. Most of the participants stated that the Rea Vaya was available during most times of the day and takes a shorter duration of time to get to the final destination which makes it attractive to them. Participants reveal their quality of life has improved, with the introduction of Feeder Rea Vaya routes as they did not have to wake up in the early hours of the morning because of the anxiety of traffic congestion.

Thando explained that when she gets a lift in her mother's car they must wake up extra early to avoid the traffic congestion. Participants expressed that there is a lot of traffic congestion in the morning and this usually means that one has to wake up no later than 5:00. Mpendulo and Lindile explained that they could save more time sleeping, and the others said that they enjoyed not feeling rushed in the morning. 'Ï can take my time during the morning, ironing and preparing for work" (Mpendulo).

Some respondents explained that the Rea Vaya trip duration was shorter when compared with other transport modes (MBTs, Metro bus and Putco bus). Rethabile explained that before he began using the Rea Vaya it took him more than an hour to reach the SABC as he would have to take two MBTs. Mpho and Lindile also said that their commuting times were longer as

there were no transport modes available in the neighbourhood that went directly to their destinations. They would normally have to catch a connecting MBT at Bree Street taxi rank, which took time.

Mpendulo and Mpho also used the Rea Vaya due to the time it takes to reach their final destinations. But they said that it was not because the BRT took a shorter time compared to their previous transport mode (the MBT), but specifically that Rea Vaya's trip duration and the time it arrives at Pimville Square was relatively constant. Mpho linked it to the fact that Rea Vaya had its own lane: "Rea Vaya is reliable, the [bus] lanes makes it easier for it to avoid traffic [congestion]". My personal experience in using both the MBT and BRT during my field work supports this statement as I timed the trips and discovered that during peak hours in the morning and afternoon, the MBT was faster them Rea Vaya even with traffic congestion, however the times the MBT arrives in Pimville were never constant.

In looking at the participants' overall trip durations using MBTs and the Rea Vaya, we find that MBT trips are shorter or the same as Rea Vaya trips depending on destination of trip. However, all respondents also said that the BRT can take longer during the weekends because of bus transfers. The frequency of Rea Vaya is lower during off peak hours and during weekends, which results in longer waiting periods.

Reliability

Respondents stated that they used Rea Vaya because its bus schedules, times and frequency were reliable. Respondents explained that the BRT reliability meant that they did not have to wake up too early in the morning. With other modes they faced the risk of delays caused by traffic congestion. "Rea Vaya is better, it is preferable! Rea Vaya has its own lane which means facing less traffic and waiting times" (Mpho).

Lindile explained that before she began using Rea Vaya, she had to mitigate the risk of getting to work late by waking up before 5:00 am compared to 6:30 am: "…with Rea Vaya I know if I exit my house at 6:45 I will get the 7:00 am bus. With other transport I have to hope I can get them at a particular time". "With the Rea Vaya I know I only depend on me! But with MBT no, I never know, it is very difficult to get to my destination especially if you don't know when to indicate to the driver where I want to get off" (Thando).

Mpendulo felt that the MBT would be better option for him when he went to work in Bank City; however with the MBT arriving to work on time depends on the amount of traffic and the driver's ability to avoid traffic congestion during peak hours, which is not always guaranteed. With a taxi "you go out and hope you are going to get a taxi quickly. But with the Rea Vaya I know I will find it at the anticipated time" (Mpendulo).

Cost

Township residents suffer two issues: low incomes and long travel distances. To some degree this is an effect of Bantu Education and apartheid spatial planning. Low levels of education have meant that people can only get poorly paid jobs. This limits transport choice as most people do not have sufficient disposable income to spend on transport. Thus, they seek out the lowest cost transport. (Simpson et al, 2012). However cost was barely mentioned as an aspect that influenced respondents' choice in using Rea Vaya. None of the respondents complained about the cost of Rea Vaya fares.

Some respondents expressed that commuting with Rea Vaya was cheaper than their previous transport mode (mostly MBT). "In terms of costs it [the Rea Vaya] is much cheaper to me" (Thando).

On average a Rea Vaya one way trip costs commuters R12 to go to the inner city if they owned a smart card, which earned them discount points, and travelled at peak hours. If they travelled during off peak periods they paid half the price (R6). This makes a return trip R24, if participants only travelled during peak hours. When the cost is compared with other public transport modes in the Pimville Rea Vaya appears to have a lower cost except when compared with MBT. The Putco bus's one way trip costs R15 and a Metro bus one way trip is worth R14.70. The average MBT one way trip costs R11, which is a R1 cheaper than Rea Vaya. There are some participants that are aware of this but maintained that they still prefer Rea Vaya over other transport modes in terms of cost. "While the Rea Vaya ticket is R1 or 2 more than taxi, I choose the BRT" (Mpendulo).

However unlike the MBT the Rea Vaya trip cost is flexible between peak and off peak hours and commuters are able to save with BRT if they travel during off peak hours. Having a smart card that allowed users to earn discount points was a positive feature of the BRT with regards to transport cost. But respondents expressed that there are often problems with loading money on smart cards. A commuter often gets to the station and the machines are offline and there are no one way tickets available meaning they cannot use Rea Vaya and have to find alternatives.

Comfort

Respondents mentioned that having a comfortable commuter experience was important. Comfort can be described as clean chairs, a pleasant temperature, no unpleasant smells and not a lot of passengers during the journey. Comfort was an element assessed differently by different commuters.

Mpho and Thando report that concerns for their personal safety had an impact on why they used the Rea Vaya. Mpho emphasised that the BRT stations are comfortable because they are clean and feel safe compared to MBT stations,. "The Rea Vaya, it's the nicer for me, because it's clean, fast and more efficient! For me the Rea Vaya makes more sense" (Lindile). "Commuting with Rea Vaya has allowed me to escape from bad smells and dirty taxi stations" (Mpho). Mpho explained that to him BRT is more pleasant because he can use a smart card and he did not have to encounter "rude taxi drivers". "The Rea Vaya is better. It has new buses and clean, safe stations" (Rethabile).

In terms of comfort, respondents largely stated that the BRT had new buses with safe stations and handlers making the commuter travel comfortable. However, almost all of the participants felt that the BRT during peak hour was uncomfortable, too crowded and airless. "It is too hot [during peak hours]. Many people are inside the bus, you can't even sit down, and the bus is busy stopping and going" (Rethabile). "There should be more T3 and F10s available during peak hours. The buses get too full during peak hours" (Mpho). "I come back too tired to stand and be pushed around" (Mpendulo). "When I don't want to be angry on my way to school in the morning I choose to drive in our car with my mom to Florida where I can take the C5 Rea Vaya bus" (Thando).

An opportunity to relax and socialize

The stress free journey offered by the Rea Vaya was also an important aspect for several respondents. Thando, Lindile, and Rethabile explained that using MBT and the risk of traffic congestion and road accidents makes them anxious. Mpho mentioned that the Rea Vaya offered time to ease their commuting stress and study or read a novel. This perceived benefit might also be connected with comfort and associated qualities, such as having more space.

Respondents, particularly the women, said they prefer to use BRT as it allowed them to relax. "I have to keep a watchful eye on the road to alert the driver where I want to get off and the taxi doesn't have their own lanes. I get nervous due to traffic congestion" (Lindile). "I am sick of having to face traffic in the morning. It is tiresome. It is much more relaxing coming to school by Rea Vaya and not having to be worried about traffic congestion when driving in my parents' car" (Thando).

Influence of others (fellow students, grandparent, and parents)

Most respondents were introduced to the BRT and shown how it works by friends, colleagues or family members. This social interaction seems particularly significant as to why people used the Rea Vaya. Also once they got used to how the Rea Vaya operated, they did not want to change. Respondents said that

more people might use the BRT service if more Rea Vaya feeder routes were available in their neighbourhood.

One respondent, Thando, referred to her parents' perception of the Rea Vaya as part of the reason why she used Rea Vaya instead of MBT. She indicated that her parents were afraid that the MBT was going drop her in the wrong location. This may also be related to safety concerns. This indicates that choices can also be, to some extent, influenced by the perceptions and attitudes of family members and friends who have negative attitude towards MBT.

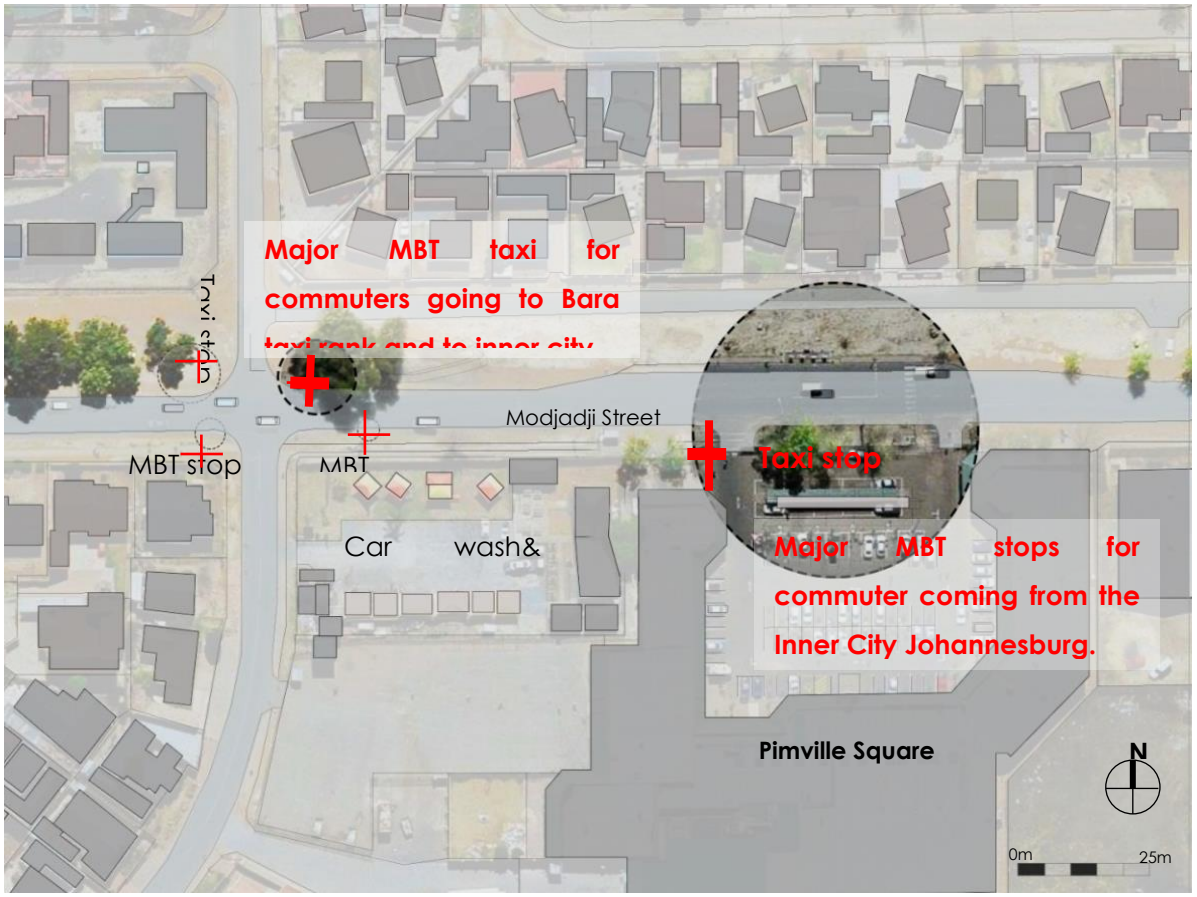
4.3. Documenting Minibus Taxi (MBT) Journeys

This section explores the MBT commuters. From my fieldwork and from my personal experience, there are two ways to travel to the inner city from Pimville depending on destination. There are taxis that go straight to the inner city and there are others that stop at the Baragwanath taxi station where commuters can catch a taxi that goes to the inner city. However the taxis that go to Braamfontein are limited, as they are only available from 4:30 am to 9:00 am in the morning. The taxis that go to Baragwanath is referred to as the local taxi which is hailed with a particular hand sign. The taxi that goes directly to the inner city does not require users to transfer to another taxi during the journey, unlike the BRT.

Travelling back to Pimville with an MBT one needs to travel to a central station in the inner city, namely the Bree Street taxi rank. Most of the respondents said that they either walked to the taxi rank or took an inner city taxi to drop them there.

Similar to the exploration of BRT commuters I interviewed a sample of five commuters, whose final destination was Pimville Square. Most of the respondents were interviewed during a MBT taxi ride and some respondents were approached in the queues while they waited at the Bree Street taxi rank and in Baragwanath taxi rank.

4.3.3. Observation: MBT System and its commuters



Map 9: Minibus stops in Modjadji Street (Source: Mandyanda, 2016)



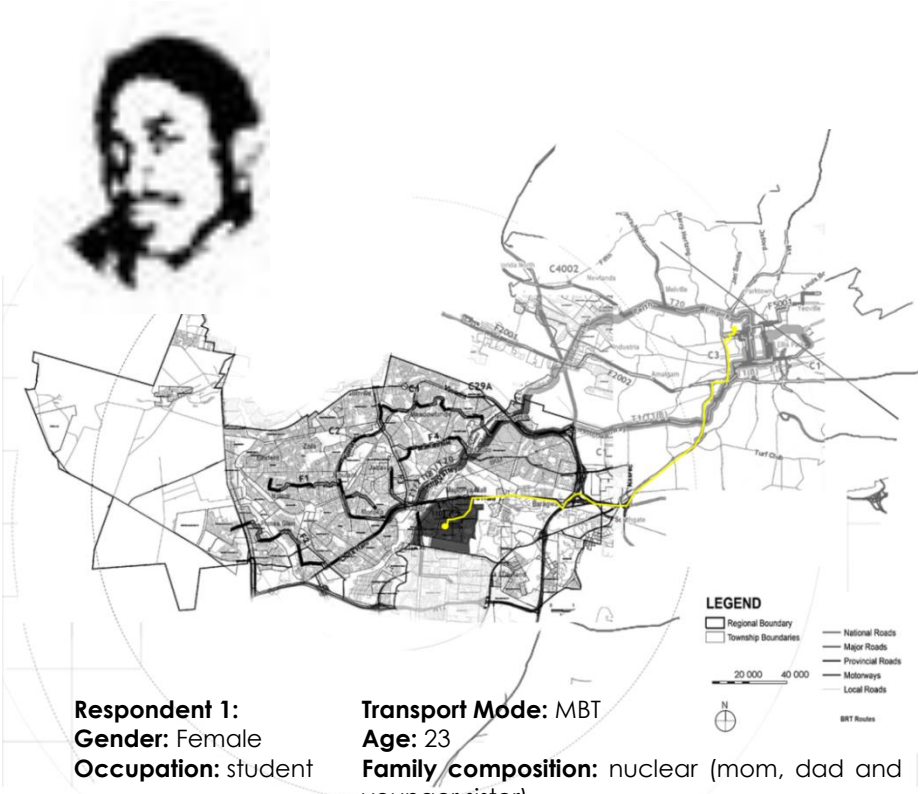




Figure 7: Minibus taxi commuters in Modjadji Street.

4.3.4. MBT commuters narratives

Thandeka's Journey: From Pimville to Rosebank College



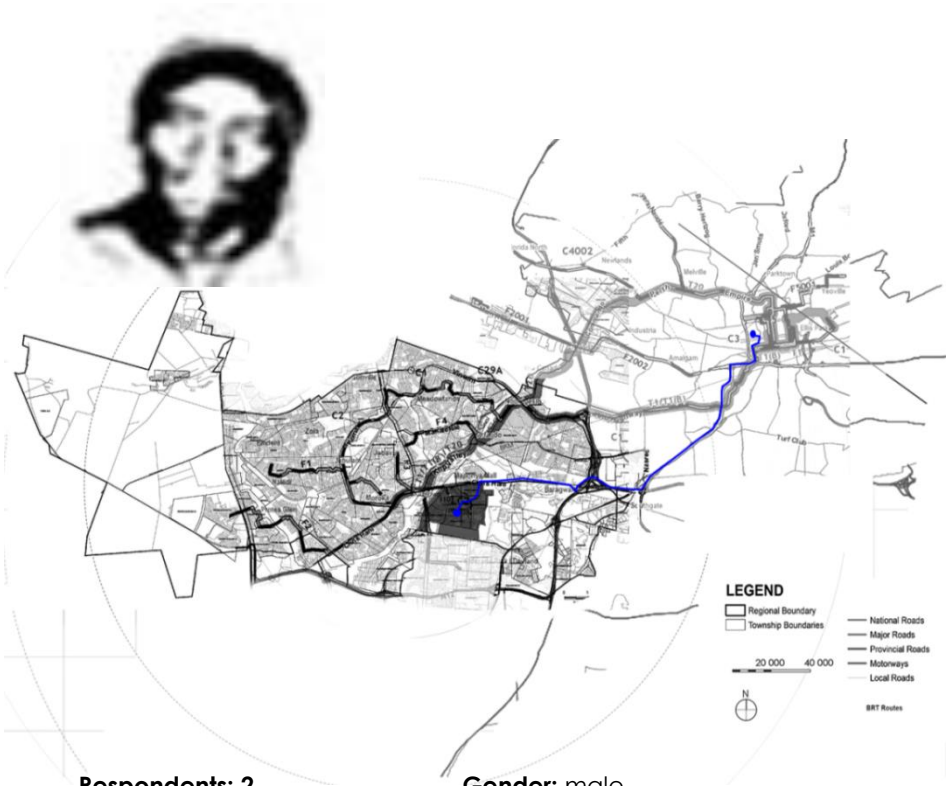
Respondent 1: **Transport Mode:** MBT
Gender: Female **Age:** 23
Occupation: student **Family composition:** nuclear (mom, dad and younger sister)
Trip duration: 30-45 min **Cost**: Peak-hours: R11.00

The first MBT commuter interviewed was Thandeka, a 23 year old female Rosebank college student. She lives with her relatives (aunt, cousin and three nephews) in Pimville. She has been using the MBT every day since she began her studies in 2013. I met and interviewed Thandeka on the MBT to the university in the morning. She also uses the MBT during weekend.

Her day begins at 4:30 am to get ready to take the taxi at Modjadji Street by 5:15 am to avoid peak hour traffic. She takes two MBTs to get to her college and a local MBT to Baragwanath taxi rank and waits in a queue for 5-10min for a taxi to take her to Braamfontein. She said that in the morning she does not have to wait long for the taxi to get full because it is peak hour and "you get there and people are already there waiting for the next taxi ready to go Braamfontein". Her trip to Braamfontein takes 20 minutes. On her return to Pimville she either takes a taxi to Bree Street taxi rank at Bertha Street, or she walks across the Nelson Mandela Bridge to save money. At the taxi rank she waits in the Pimville taxi queue, and this may take approximately 40 minutes depending on whether it is off peak or peak time. One of the main problems is that the MBT only come in shifts, and this means that "sometimes there are lot of people ready to leave in the line, but there are no taxis. She explained depending on when her classes end she arrives at Bree Street taxi rank between 16:00-18:30pm. "It takes around 30-40 minutes for MBT to reach Pimville, depending on how bad the traffic is" (Mpho).

Some of the Rea Vaya participants revealed that they sometimes used MBT as alternative, but not other public transport services because they were unreliable in terms of their time schedules. One participant mentioned that she had relatives with a private vehicle that sometimes dropped her off at the college. "My aunt has a car and drops me off at Baragwanath taxi rank in the mornings on her way to work in Rosettenville" (Thandeka). She explained that this helped to save money.

Phindile's journey: from Pimville to Park Station



Respondents: 2
Age: 29
Family composition: nuclear (Mom, dad and younger sister)
Cost: Peak-hours: R11.00

Gender: male
Occupation: Employed

Trip duration: 35-45 min

The second interview was with a 29 year old self-employed man. Phindile is an employee at the Newtown Junction Mall. He lives with his family in Pimville zone 7. He has been using the MBT to travel to work in Newtown for almost two years.

Phindile begins his day at 6:00 am to catch the MBT by 6:30 am. He takes the MBT that goes directly to the inner city, and the trip takes 40-45 minutes. The MBT drops him off at the Bree taxi rank, where he then walks down Lillian Ngoyi Street for 5-10 minutes and arrives at Newtown Junction Mall at 7: 45 to 8:00 am. On his trip back home he walks to Bree taxi rank after work at 5:30 am, and then he waits at for the Pimville MBT for about 10-15 minutes.

He said that he only uses MBT: "I've used the taxi all my life and I get how it works, you know, these other ones, I don't know".

Vuyiswa's journey: from Pimville to Melrose Arch.



Transport Mode: MBT
Age: 26
Trip duration: 1:15 min

Gender: Female
Occupation: employed
Cost: Peak-hours: R11.00

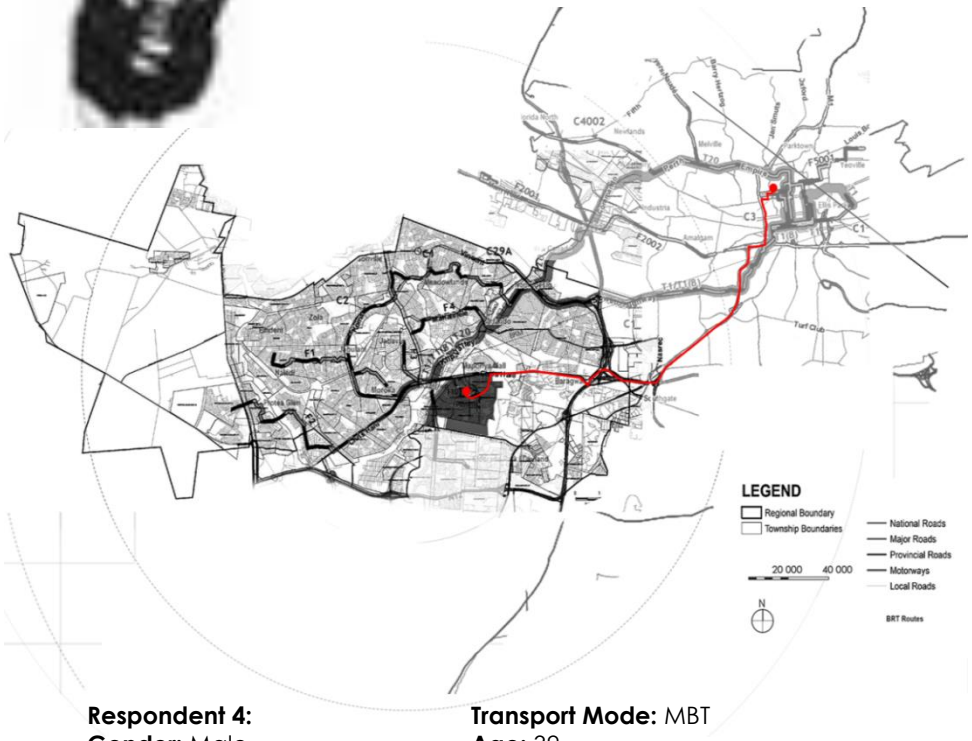
The third respondent was a 26 year old woman. I conducted an interview with her at the Bree Street taxi rank while standing in the queue for the Pimville MBT. Vuyiswa lives with her mother and her son in Pimville. She uses MBT every day to travel to the inner city although her final destination is Melrose Arch.

She begins her day at 5:00 am so that she can get ready to catch a MBT to the inner city by 6:00am. She takes two MBT taxis every day. On average, the trip takes an hour to the Bree taxi rank. She then boards a taxi to the Rosebank taxi rank, and this trip takes her 30 minutes. She then takes a taxi to her final destination at Melrose Arch. Her return journey follows the same pattern in reverse.

She no longer uses other transport modes. A Putco bus service operates in Pimville, but it would mean that she would have to wake up too early (4:30 am) in the morning and the service was not reliable.

Khanyiso's Journey from Pimville to Braamfontein Centre





Respondent 4:
Gender: Male
Occupation: employed
Cost: Peak-hours: R11.00

Transport Mode: MBT
Age: 39
Trip duration: 45 min

The fourth respondent I interviewed was a 39 year old man who works in Braamfontein. Khanyiso grew up in Pimville and lives with his younger sister and his daughter. He uses the MBT every day to travel to work in Braamfontein where he works at the Braamfontein Centre as a security guard, and has been doing so since 2014.

When he is due for his morning shift he need to be at work by 9:00 am and therefore wakes up at 7:00 am. When he is due for his night shift he needs to be at work at 6:00 pm so he has to be at the Pimville Square waiting for the MBT at 4:00 pm. He explained that there is a Braamfontein MBT available at Baragwanath taxi rank before 10:00 am that he can take to travel to work for his morning shift. When he is doing nightshift he has to take the MBT that travels straight to town that takes him to the Bree Street taxi rank.

In terms of using other modes of transport he explained that he either walks or takes the MBT to travel in the city. Because he was very familiar with MBT and he did not trust other transport modes.

Kgato's journey: from Pimville to Park Station



Respondent 4:
Gender: male
Occupation: employed
Cost: Peak-hours: R11.00

Transport Mode: MBT
Age: 46
Trip duration: 1hour

The last respondent was Kgato. Kgato lives in Pimville with his family and used the MBT to travel to Park Station every day. He uses the MBT to travel to work every day, and has been doing so ever since 2014. His day begins at 3:30 am in the morning so that he can get a minibus taxi by 4:00am. He takes the taxi that goes directly to the inner city and he disembarks at the MTN taxi rank. He then walks to his place of work in Wolmarans Street. He explains that is important for him to arrive early in the morning, because as a street trader he intends to capture customers who pass by his trading spot early in the morning.

On his return from work, he walks for 10-15 minutes back to the Bree Street taxi rank at around 08h30pm, to catch an MBT back home as MBTs operate until approximately 21:00 pm during weekdays. The MBT drops him within 500m of his house in Pimville.

He explained that he only uses the MBT as it was one of the few public transport modes in the neighbourhood available at 4:00am in the morning and after 10:00 pm in the evening.

4.3.5. Why do you use MBT?

Respondents expressed that the MBT was a symbol of more "flexibility" for them and that it was able to help ease the issues and limitations of other public transport modes.

Accessibility MBT convenience and flexibility

The main advantage of MBT expressed by respondents is its convenience. As Vuyiswa explains "the taxi is just by my gate. I just take it and go". The MBT offers a sense of freedom of movement and of control of personal schedule, therefore independence:

"I think it is unique; we are in our MBT and suddenly have an idea to go somewhere else and just go" (Kgato). "With MBT people can go anywhere they want" (Khanyiso). "I take the taxi everywhere" (Vuyiswa). "The other public transport service offered to me doesn't travel to the place I want to go to" (Kgato).

While traffic congestion is seen as a major issue, some respondents feel that MBT drivers are able to adjust their route to escape traffic. Moreover, they feel that congestion also affects buses so they are better off in a MBT which has more flexibility in choosing alternative routes:

"Traffic congestion is an issue, but then it is also a problem on the bus, having traffic jams and between going by bus or MBT, I prefer the MBT. Taxi drivers are good with understanding the roads in the city and they can change routes or manoeuvre ways to get pass traffic" (Vuyiswa).

Some respondents feel that it would be very difficult to live without a MBT. For them the MBT is seen as essential, because it was accessible to their place of work.

Time

An important aspect for respondents is the time that it takes to travel compared to other public transport modes. One respondent explains:

"On those days [when I use PUTCO] it is a problem! If other modes I won't be able to make it to work on time, or I would have to leave home very early. I have to wait 1 or 2 hours early. I hate it!" (Vuyiswa).

A key aspect of the choice to use the BRT over the MBT for these respondents is the lack of control of the MBTs over their trip duration. Therefore, they feel that if they use MBT, they might not be able to meet their schedules:

"[Waiting] is very frustrating, as there is no communication between taxi drivers and commuters. It depends on how long the taxi takes to fill up. Not knowing what to expect is the thing that worries me the most" (Khanyiso).

Loyalty and attachment

It became evident during field work that there is a sense of attachment between some MBT respondents and the use of MBT and that it would be difficult to change it as a primary mode. Some respondents feel that it would be very difficult to live without a MBT. For them the MBT is seen as essential.

Some respondents seem to have little intention to stop using the MBT, and they often have a very strong feeling about their choice: "I know and trust the taxi" (Vuyiswa). "With the taxi life you can negotiate the routes. For example, sometimes I'm short by one rand but have to work. I can sometimes negotiate with driver, you know" (Phindile).

Those who expressed that they would change, yet they believe that there are too many problems with travelling by other transport modes. They indicated that lack of information and the fact that the other modes did not reach their destinations were amongst the main reasons why they do not use them. Several respondents raised concerns about the lack of information concerning the BRT bus routes and timetables. They felt it is difficult to use and information is difficult to access. "It's very confusing for me [using the Rea Vaya], but then when I need to I ask someone" (Kgato). "I don't know what [BRT] bus I should catch! The information is on the internet and I don't have the internet" (Vuyiswa).

Khanyiso viewed Rea Vaya buses as too crowded during peak hours and uncomfortable to use. "There a lot of people inside the bus, I couldn't even sit down, and the bus was stopping and going, stopping and going. When I arrived at work I was tired and women's make up was on my shirt" (Khanyiso). However some respondents indicated that if they had good access to a BRT route, they would use it. They perceived it to be a far more relaxing form of transport. One respondent explained:

"It's much more relaxing, being on the BRT. To be able to study is pleasant than having to sit in a taxi where I need to pay attention on the road to alert the driver where I need to get off" (Kgato).

The findings essentially show the complexity and variation of commuters and the way they use the two different modes. The argument is that the responses relate strongly to spatial and cultural nuances of the city.

This demonstrates that although those individuals make the same travel choices, their attitudes, motivations and future intentions are considerably different. This indicates that analysis

on transport ought to emphasize attitudes and values and not depend solely on socio-demographic qualities.

5. CHAPTER FIVE: Analysis and discussion of findings: What commuter stories reveal about the transport system in Johannesburg?

5.1. Introduction

This chapter is an analysis and discussion of the findings of this study. The findings presented in the previous section have been useful in answering the central research question – How has the dual presence of MBT and BRT systems affected commuter mobility in Soweto?

Many important themes emerged from the interviews held with both BRT and MBT commuters and were presented in the previous chapter. These themes are examined, considered and evaluated concerning the investigation was undertaken for this study. Each theme will be discussed as it emerged from the interviews with the various participants elaborating on and clarifying the relevance of each theme to the research. Also, the respondents support and refute some of the claims made by literature review in the study. The role of both systems in the area received mixed responses.

Commuting duration and reliability play a fundamental role in travel choices, although time is dependent on the final destination of commuters. Time is valuable as commuters are people who are going to work or college where arriving on time is very important. Commuters want to feel in control of their travelling, and this means **short waiting times**, fast commuting **duration** and **reliable** modes. There is a preference for direct, frequent public transport and in general, people prefer not to have to make changes to transport during the journey, unless this is easy and fast.

Secondly, respondents reflected that they want to have safe, comfortable and relaxed travel, having a seat in the vehicle, free from unpleasant smells, and a smooth ride that is not overcrowded.

The decision is made before commuting and then becomes habitual. As argued in previous chapters, mobility is a broad concept that is defined differently by transport and social scientists. A more recent and relevant conceptualisation of mobility is that it does not only have a spatial dimension, but also social and psychological elements. This definition allows a better understanding of mobility and its politics, to better assess, for example, mobility aspects, such as transportation. This definition also relates to the normative position taken in this research, which considers the spatial influence of mobility, while acknowledging its social aspects. It is argued that the MBT and BRT both have unique roles to play in responding to mobility patterns of commuters in the city and the presence of both MBT and BRT in the Pimville area is providing commuters with more choice. On the one hand, the MBT offers flexible

and adaptability for commuters' travel patterns. On the other hand, the BRT offers more opportunity and greater certainty around accessing places.

MBT transport represents a significant component of the transportation systems in cities of the Global South. The concept of paratransit transport allows us to overtake the stigmatisation and inadequate categorising of MBT. Beyond negative discourses which assimilate them as a manifestation of backwardness, studies have underlined their key benefits, particularly limited costs for public authorities and their great flexibility regarding space and time (Ferro, Breuil, Allaire, 2015). Based on current growth trends and inhabitants' travel patterns in Johannesburg, a more flexible and demand-responsive system is likely to be a more efficient solution to mobility and accessibility needs.

Key reasons behind the use of BRT were time (because of certainty of travel time duration and frequency), safety, and comfort of stations. One of the main aims and rationales behind the development of the Rea Vaya system was to provide a safe, accessible, reliable form of transport for commuters (Mpofu, 2008). The results showed that one of the main sets of advantages of the Bus Rapid Transit system relates to providing enhanced accessibility for commuters by:

- putting public transport within closer reach of more people's homes; and
- extending the range of destinations (especially non-work) that might be reached during different times of the day or week.

5.2. Accessibility

The findings from Pimville showed mixed responses regarding the level of accessibility of the BRT. On the one hand, findings from BRT commuters revealed that MBT at present do not significantly enhance accessibility concerning the original point of departure of the commuter and the final destination. The MBT commuters' findings showed that BRT did improve accessibility regarding their commuting origin, but not regarding their destination. However, both results from MBT and BRT show that BRT is showing significant accessibility benefits regarding reaching a variety of activities, especially during off-peak times and weekends. The findings demonstrated that accessibility is linked to the commuters' final destination, familiarity with the city, travel time and cost. It is in these aspects where BRT seems to offer more substantive benefits, due to its specific emphasis on speed, network connectivity, and low fare prices.

Respondents were asked to estimate the walking time to MBT and BRT to give an idea of general accessibility to public

transport. All respondents indicated that MBT and BRT are very accessible and are within a 5-minute walk from their homes. Given the already high levels of public transport access in the area, it is clear that Rea Vaya does not, in general, provide any better accessibility within the neighbourhood than existing public transportation services, as BRT routes by design follow major corridors which are also typically used by existing MBT and other bus routes.

An interesting finding was that the MBT does not seem to be as accessible to all commuters. Most of the BRT users explained that they were former MBT users who changed to BRT because it was a constant burden to access their final destination with the MBT. Before the introduction of the Rea Vaya system commuters who had final destinations such as universities and corporate offices such as SABC highlighted that their commuter journeys were a burden as the taxis from Soweto, as demand responsive as they are, do not travel directly to certain parts of the city, such as Braamfontein. MBT only travels to these morning peak hours. As a result, commuters had to catch two MBTs to arrive at their final destinations, and most commuters were forced to travel to the Bree Street taxi rank and then catch a connecting taxi to their different final destinations.

If one considers the types of spaces in which the MBT are not as frequently available, one can link it back to the discussion made in Chapter 4 about the efforts undertaken by the apartheid government to restrict the movement of the MBT and black people in the city. This finding suggests that the MBT is at times has very limited capability to respond to all its users' mobility needs as its movement also shows some remnants of the historical and spatial politics of movement in the city. It is therefore important to consider the two aspects (history and spatial politics) when making proposals for the location of new transport routes or areas of transport stops for either MBTs or BRT options.

When analysing different urban forms, linear-shaped cities require less infrastructure-heavy public transportation corridors for extensive physical coverage as opposed to cities with sprawling urban forms (Gilbert, 2008). This means that the same length of a BRT service will cover more of the urban area of linear-shaped cities as opposed to cities that have sprawling urban forms, which suggests that the increased number of BRT routes will not necessarily result in the greater physical coverage that is needed. This, therefore, means that even though BRT implementation has significantly and positively changed the public transport system, its coverage is still relatively limited compared to that of the paratransit network.

In comparison, the MBT the commuters have the flexibility to choose where to be dropped off or picked up. However, this freedom of choice depends on the commuters' level of familiarity with the city and its transport systems. Some respondents have described the BRT as a semi-rigid system, with it being more flexible than a train system but more rigid than MBT (Vuchic, 2007).

The field work also shed light on in-migrants to Gauteng as a particular segment of commuters, in contrast to long-term Pimville residents who are very familiar with the city's transport system. One respondent was an in-migrant from KwaZulu-Natal. Being new to the city, he had little to no knowledge of the available transport systems and how they operated. He hence found the MBT particularly difficult to use due to his lack of knowledge on the different routes and the various hand signals he needed to use to get to his desired destinations.

This finding sheds light on the disadvantage of the MBT in terms of lack of knowledge or available information on MBT routes and signs. In contrast, the information on BRT is highly accessible on both the internet and social media (Twitter and Facebook), with easily identifiable routes, stops and stations, and fare prices. Therefore in as much as MBT is viewed as easily accessible by local users, it is often inaccessible to new residents or visitors of an area. New residents in an area are often forced to depend on fellow community members to learn about how and where to catch the desired MBT. "Providing greater access to service information and more interactive services (e.g., timetable and route information) may be a way to increase individuals' perceptions of control with public transport" (Gardner and Abraham, 2007).

All the MBT commuters interviewed pointed out that one of the valuable aspects of MBT is the ability to choose their drop-off points and that they were able to take alternative routes to escape traffic congestion. The MBT commuters also highlighted some disadvantages of using MBT, such as poor conditions of some vehicles and taxi ranks/stops, the violence of some MBT drivers, and having to wake up too early (3:00- 4:00 am) to be able to get to work or college on time. It seems that despite the flexible nature of MBT, commuters have doubts regarding their safety and ability to arrive at their destination timeously. However, they continued to use the service which means, certainty in its flexibility outweigh the aspects of comfort, safety and having to wake up in the early hours of the morning. Most of the respondents said that they were satisfied with commuting with the MBT. They see the MBT's flexibility and demand-responsiveness, as well as their relatively low cost as assets. Thus it can be argued that as commuters have chosen to use MBT and continue to do so, their positives (such as flexibility) outweigh their negatives.

Interesting findings also came from Rea Vaya commuters who shed light on the different segments of commuters regarding different types of destination in the inner-city. Firstly, it is important to note that the Rea Vaya routes follow existing high-demand corridors between Soweto and the Johannesburg CBD, which is already well-served by minibus-taxi, bus and rail modes. This is because BRT requires relatively high passenger volumes to perform optimally, and is thus more likely to be placed along existing public transport corridors. Therefore commuters who use the BRT are mainly able to use it because it gives them quick and easy access to nodal areas or points of interest (e.g. universities, hospitals and commercial centres) which are found along the BRT routes. Those who travel to isolated parts of the city that are not necessarily considered as nodal points or points of interest still rely highly on MBTs as the BRT system doesn't reach these areas.

After 1994 many opportunities opened up for previously disadvantaged people where spaces such as University of Johannesburg and Witwatersrand have become destination for inhabitants in the townships, and the BRT seems to be useful in connecting people in Pimville to previously inaccessible areas in the inner city. This point suggests that the introduction of the BRT has offered a sense of choice to those who were captive users of MBT or other modes in the past. This observation is in line with the vision of BRT as an essential mobility service as opposed to it just providing service to transport commuters from dormitory township word missing home to work. BRT serves a different transport demand, including educational, shopping and leisure activities during peak and off-peak hours, and thus offers services that aim to serve a broader set of livelihood purposes (Vaz and Venter, 2012). However as much has changed since 1994 much have remained the same, and many of the people in the townships are unskilled and are employed in manual labour in scattered locations across the city, hence their commuter patterns remain the same, which MBT seem to have a good sense of and cater well for.

The data indicates that, indeed, Rea Vaya appears to achieve the objective of fast, efficient, safe and affordable transport, but not for all its users. Regarding more wide-ranging benefits of Rea Vaya on community perceptions and satisfaction, it seems to make a modest contribution to commuters' satisfaction with the area in general. On average, Rea Vaya saves users between 10% and 15% of their travel times, which is a significant benefit. This implies that Rea Vaya is perceived as a positive intervention by the state in people's lives, and can leverage further social advantages in the future. However, it needs to expand to provide access or feed into other isolated areas in the city by connecting to MBTs as feeder networks for it to benefit a wider range of commuters.

5.3. Time duration of trip

BRT commuters highlighted that they were using BRT as their primary mode of transportation because of its high level of certainty in terms of time schedules and travel times. This is mainly due to BRT being complemented by its exclusive bus lanes that allow it to escape the congestion that comes with mixed traffic lanes which MBT is forced to navigate. The MBTs do not have exclusive lanes and infrastructure that help a them escape traffic congestion. MBT trip duration, therefore, fluctuate depending on the level of traffic congestion. In response MBT commuters have had to use mitigation tactics such as waking up in the early hours of the morning to avoid traffic peak hours so that they can arrive punctually at their destinations.

5.4. Comfortability, reliability and frequency

MBT users pointed out the fact that do not have to wait for extended hours to get an MBT during both off-peak and peak hours on the way to and from work compared to other modes.

Participants indicated fundamental limitations and disadvantages of BRT such as overcrowding during peak hours which affects the level of comfort on the bus. They simply did not like buses because they get crowded. They argued that one is guaranteed a seat during a taxi trip. The MBT has a set number of people allowed to be in it at a time (usually 15 or 16 passengers) and that number is usually kept. It is in seldom occasions, where one passenger is desperate to get to work on time, that the taxi driver negotiates for the extra person to share a seat in the taxi with someone.

Another disadvantage of the BRT system highlighted by respondents was the lack of reliability of the smart card system of Rea Vaya that is often offline. Respondents explained that they are often forced to pay more for their journey making them seek alternative transport modes.

5.5. Habitual

The findings also revealed that some MBT commuter choices were being made based on habit. They were not propelled to change from using MBT; they wanted to keep to their routines. Habits are defined as the repeated performance of behavioural sequences. Some respondents explained that they were sceptical of change. Given the uncertainty of job security, and obligation to be increasingly mobile, the commuters attest to wanting to maintain control over what little they can in their lives. This might be because the effort of searching for new alternatives is too high and the estimated gains linked with new alternatives too uncertain. In this situation, they maintain their usual transport modes choices to avoid unpredictable and risky outcomes.

5.6. Lack of choice

MBT users indicate that there are different segments of MBT commuters. Some seem to be captive users who do not appear to have any choice but to use MBTs as their desired destinations can only reached through MBTs if one does not have a private vehicle. These commuters usually did not choose a certain mode of transport because it would guarantee their arrival on time, but mostly because they had no choice or because it was more affordable or more convenient to use the MBT. These users said that they would choose to use BRT if it went to their desired destination because BRT stations and vehicles were cleaner and viewed as safer. They made sure that they would arrive on time at work by leaving earlier than necessary so that they would still be on time even if something unexpected happened on their journey. The choice to commute with MBT as a primary mode of transportation was also because no better alternatives were available to them. Three of the respondents reported that they used MBT due to the lack of any viable choice to travel to their final destination. One of the more notable features of the underlying choices of using MBT is driven by the fact that commuters seem to want as much certainty as they possibly can and often the MBTs give them this over the BRT.

These commuters indicated that the Rea Vaya system in the area is not a viable option for them, mainly because of its several transfer times and lack of accessibility at their places of employment in the inner city. This last element is of great importance. They highlighted that they work in remote areas in the city and thus cannot be accessed through the use of the Rea Vaya BRT system as it operates in a corridor network and the feeder routes supply routes with the highest demand.

This finding suggests that the greatest strength of MBT is the combination of its flexibility and accessibility. This combination is essential. While the dangers of bad driving habits and poor vehicle conditions associated with MBT certainly need to be addressed, it is important not to overlook its strengths. Integrating the MBT into a formal system may address its current weaknesses, but it would also eradicate its main strengths, those of true flexibility and vehicle size in everyday operations. The current plans of phasing out the MBT along BRT routes might disadvantage those who cannot use BRT as a viable option to get to their final destination, but more likely more MBTs may emerge to replace the scrapped ones.

5.7. Conclusion

In conclusion, from the responses discussed above it is clear that what is needed to improve mobility in the city is careful consideration of the advantages and weaknesses that both the BRT and MBT transport options may have. In response to violence and unlawful traffic habits of MBT system, for

example, many respondents put forward the installation of MBT lanes that would most likely address both issues. Doing so, however, would come with a loss of qualities of MBT such as flexibility of the routes and probably commuter stops. This could impact on one of the mode's important attractive qualities, its flexibility. Drivers would most likely be forced to keep to rigid lanes. Increasing the strength of the MBT in one aspect of its operation may result in the reduction of benefits in another. This would need to be weighed up to see if the benefits would outweigh the disadvantages.

Could the installation of MBT lanes make the MBT lose its fundamental aspects? Could it result in a different mode of the transport market moving in? Such questions can never be answered through the use of a simple analysis, as more complexities would emerge. For example, in some cases, where roads may not be able to accommodate transport lanes, they would continue with their current flexible nature, and thus the issues of MBTs having to break traffic laws to avoid traffic during peak hours would be maintained.

The introduction of the MBT lane would be useful, though, and its users may have less anxiety about being involved in road accidents, or late for work or waking up at extremely early hours of the morning. Consideration of these different trade-offs is important through any intervention, and an analysis of the current positive and negative aspects of using MBT is a valuable starting point. The direct response from commuters of both MBT and BRT as well as transport authorities in the city can be both highly involved throughout the planning process.

With regards to commuters using the two systems interchangeably, there were mixed responses. Commuters used both transportation modes interchangeably while commuting during the week. For example, some said that, during peak hours, they preferred the MBT. Some use the MBT as an alternative when there are system failures with BRT's smart card systems. Some commuters who used the BRT as the primary mode during the week made use of the MBT during the weekend because of the low frequency of the BRT on weekends and high frequency of the MBT.

Commuters that use MBT as their primary mode preferred the MBT during the week and BRT on the weekend because the BRT accessed major leisure and shopping nodes such as the Orlando Stadium and the Maponya Mall in Soweto. Those who used BRT said that they preferred the BRT in the morning because it meant that they did not have to wake up in early hours of the morning. However, some BRT commuters preferred using the MBT in the evening because it enabled them to relax and not feel discomforted about an overcrowded bus.

Most of the Rea Vaya users indicated they used MBT before their change to BRT. The MBT commuters explained that they usually make use of MBT during the week and on weekends when going for shopping where time is not of high importance they made use of the BRT. This finding illustrates how some people saw both systems as valuable and used for different reasons. The integration of the two systems can therefore be argued to be highly beneficial, however it remains a contested space, where the use of strict regulatory strategies is not encouraged, should this integration be attempted.

6. CHAPTER SIX: Conclusion and recommendations

6.1. Introduction

This chapter concludes the study by outlining the research focus, which is about exploring the underlying aspects of MBT and BRT commuters' transportation choices in Pimville. It aims to answer the research question and sub-questions, and to summarise the main findings of the research. The chapter then outlines recommendations based on the main findings about a transport system that recognises the role of both BRT and MBT. This chapter includes an outline of the limitations of the study and provides suggestions for future studies.

6.2. Summary of research

This research report was an investigation of underlying motives of commuter choice between MBT and BRT, through a discussion of different socio-economic, spatial aspects and perceptions that influence commuter choices. In essence, this research provides an insightful perspective of the everyday experiences of commuters and the roles of both BRT and MBT transport modes in metropolitan Johannesburg, focusing on Pimville commuters as a case study. The study, from a qualitative approach, sought to analyse the mobility of commuters in Pimville who make their way to the inner city every day. To investigate commuter choice in Pimville, the study relied on semi-structured interviews and observation. The interviews were conducted with both BRT and MBT commuters living in Pimville. The central research question for this study is, how has the dual presence of MBT and BRT systems affected commuter mobility in Soweto? In answering this question, Chapter One, which provided a background of the research, indicated what influenced the research. Chapter One also outlined the methodology and research strategy that was adopted and used for the study. The research took a qualitative approach and framed the research as a case study, that was explored through semi-structured interviews and observations that were used as primary data collection methods in the research.

Four sub-questions guided the research question. The first sub-question was; how can we assess mobility to make sense of commuter transport mode choices in Johannesburg? Chapter Two discussed urban mobility and people's travel behaviour and attitudes. It discussed three perspectives about the study's central theme of urban mobility. The conceptual framework diagram integrated the different key concepts emanating from the literature review and provided a basis for the fieldwork and analysing the empirical findings. This chapter was divided into two sections. The first section introduced the broad concepts of urban mobility and located the research within discourses. The chapter began by discussing urban

mobility, with the aim of giving a more comprehensive overview of how we can make sense of commuter choices.

The findings from the literature review revealed that the emerging conceptualisation of mobility includes choice concerning transportation, which is wrapped up in its socio-demographic, psychological and spatial aspects that are both political and historical. However, it became apparent that there is little to no literature that addresses the underlying issues that shape commuter choices in the context of the Global South. The second part of the chapter then explored the experience of the Global South. This section revealed that there is a mixture of both forms of institutional and paratransit transportation modes available for commuters.

The second sub-question was, what roles do the BRT and MBT play in contributing to meeting commuter travel patterns in Pimville, and what affects perceptions of the MBT and BRT in Pimville? In response, Chapter Three contextualised the study area, Pimville. It provided a brief history, demographic characteristics of the study area and the existing transport modes. This chapter aimed at producing a profile of the settlement and provide some indication of what socio-demographic, spatial, and transport issues might be motivating and shaping commuter choices and practices in the area. This chapter also presented the history of public transportation in Johannesburg. The development of the Rea Vaya in the context of MBT was also analysed in the chapter. It shed light onto urban transport and examined other BRT systems with paratransit systems.

The second sub-question was extensively explored in Chapter Four, which was based on interview material, imagery, literature and detailed descriptions emanating from fieldwork. It presented the everyday experiences of commuting from Pimville to inner city Johannesburg as a negotiation of time, distance and cost, with the commuters being active participants in this negotiation. Important themes emerged in the study that presented the different forms of commuter life from the participants interviewed in the Pimville area. This chapter revealed how commuters are responding to the increased transport options that are becoming available to them. The findings of this chapter confirmed some of the explored features that influence commuter choice.

Socio-demographic aspects, urban form and perceptions form important features that affect commuter choice. One of the most important aspects that affect commuters' choices is the difficulty in navigating Johannesburg's urban landscape, which highlights urban form as an important feature that influences commuter choices. It became apparent that MBT and BRT differ with regards to accessibility of the city's urban

form. Accessibility with regards to commuters' final destination in the inner city proved to be a particular feature that determined their choices. The BRT appeared to be highly accessible to major economic nodes in the city but was not accessible to places in-between or isolated away from the BRT corridor routes.

The third sub-question, which asked Is the increase in transport options increasing commuter mobility and accessibility to the city?, was further explored in Chapter Five, which was the analysis chapter assessing the findings in terms of the study's conceptual framework. This chapter provided an analysis of the data collected concerning the research questions that guided the study. It provided a discussion of the research findings on how commuters conceptualised BRT and MBT to suit their mobility needs. It also provided a discussion of the roles played by the Rea Vaya and MBT in the area and gave an overview of other existing dynamics between MBT and Rea Vaya commuters. The purpose was also to locate how commuters' everyday practices and modal choices fit into the bigger picture of urban mobility in Johannesburg. The chapter was also a reflection on the social, cultural and everyday experiences influencing modal choices of people in Pimville.

6.3. Recommendations

One of the main transport issues faced in South African cities is the lack of an integrated public transportation system that responds to people's transport need (Walters, 2008). There is an important difference in the public transit systems (paratransit and institutional services), and each provides a unique service offering a diverse choice to the population (Burckhart and Blair, 2009). Therefore, each system needs to be public in a manner that allows them to support each other as opposed to replacing one with the other (Shaw, 2006). However, commuters are not offered an integrated transport system due to, among other issues, the lack of research in this area of study and the challenges of meaningful engagement (Shaw, 2006). This study therefore offers an insight into commuters' perceptions on the roles of the BRT and MBT in their everyday lives to better understand township commuters' mobility in Johannesburg and the possibility that these systems could work together in a manner that better respond to their travel patterns. This research reveals that transport planning has to look further than the limits of best practices.

In South Africa, most discussion on the issues of integration between MBT and BRT focuses on the management and regulation aspects of how the two systems would integrate in terms of their management by their respective authorities (MBT associations and City public transport officials) (Bickford, 2014).

However, one of the key aspects that is almost always overlooked is integration that puts the interest of the users of the two systems at the centre. This research has shed some light on the perceptions of users and their use of the two modes to get an understanding how they imagine the integration of the system.

Public transport is a service that needs to be delivered in the most efficient ways and needs to be considerate of everyone who uses it and those who consider using it. There is a need to reform the understanding and perceptions of public transport. A transportation system that is effective requires public infrastructure that is interesting and provides people with a variety of choices.

Undeniably, institutional services in the form of BRT system play a significant role in the public transport systems of the Global South. Similarly, paratransit services have an important part to play in the public transport system of the Global South. Accessibility, demand-responsiveness, and flexibility are key features of MBT systems in urban contexts of the Global South. There is a need for research on integration between MBT and BRT. Currently, there are limited innovative models that envision the integration between institutional and paratransit modes (Ferro, Behrens and Wilkinson, 2013). To achieve a seamless co-existence of institutional and paratransit modes is a difficult task as, to a certain extent, they offer different operational systems. However, there are transformation approaches that recognise the role of paratransit services in the system implemented in the cities of the Global South (Ferro, Behrens and Wilkinson, 2013).

Ferro, Behrens and Wilkinson (2013) highlight the case of Accra in Ghana as an important case study, to draw from for other cities in Africa. Like Johannesburg, Accra's public transport system is dominated by MBT. ("The city's transport system is described as chaotic, disorganised and vulnerable due to paratransit services" (Ferro, Breuil and Allaire, 2015: 34). The Transport Department of the city initiated a programme in 2008 to incrementally improve the public transport system sector. The aim was to gradually enhance its public transportation system where each mode, namely the MBT, institutional buses and the BRT system, had its role to play. The idea was to reintroduce policy frameworks to improve the quality of vehicles, also the MBT industry was requested to organise into associations (Ferro, Behrens and Wilkinson, 2013).

Accra's approach to transforming its public transport system, which involved the introduction of BRT system, mainly involved maintaining the role of the paratransit system as the primary form of transportation in the city.

Accra represents a case where the government aims to recognise paratransit services officially. Cities such as Accra are beginning to define the role of both institutional and paratransit services in the city. Accra demonstrates possible integration and a complementary relationship between institutional and paratransit systems, in this case, BRT and MBT. Accra did not begin by placing paratransit services as key role players in its public transport transformation agenda (Ferro, Behrens and Wilkinson, 2013). Initially, the government, in collaboration with a consultant firm began a process that aimed at implementing a BRT system as a solution to public transport problems in the city. A document that "evaluated design options and prepared cost estimates for a proposed implementation of many BRT corridors in the city" was produced (Ferro, Behrens and Wilkinson, 2013).

It is important that the idea of integrating transport systems should be determined by the context as specific conditions concerning the urban environment and policy agendas have an important influence in appropriate solutions. As Ferro, Behrens and Wilkinson (2013:131) report, "Accra is illustrating that the implementation of BRT projects does not mean the scrapping of paratransit services and that paratransit and institutional services can complement each other as opposed to diminishing each other's role". Further research is required as it may provide valuable information on possibilities of a relationship between paratransit and institutional transportation. From understanding and analysing other cities, such as Accra, that have introduced BRT systems similar to Johannesburg, can provide important lessons for South African cities.

Figure 8 illustrates four main options that have emerged for the possible relationship between BRT and MBT services (Ferro, Breuil and Allaire, 2015). Each one of these options proposes different roles for paratransit and institutional services within the public transport system and call for varying levels of change (Ferro, Breuil and Allaire, 2015). In each option, there are differences in terms of the degree of integration between MBT and BRT, varying from an option with least interaction to a choice with the highest interaction between the two modes.

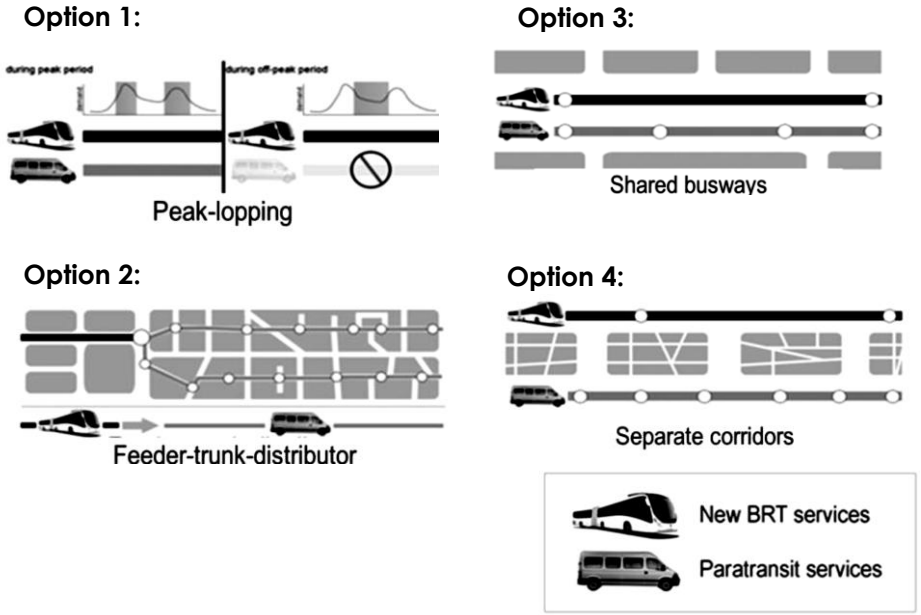


Figure 8: BRT and MBT models interactions that currently hold the greatest

Option 1 is known as the peak-lopping system. Few cases have formally made use of this option in either the Global South or Global North. This system allows MBT to use BRT exclusive lanes only during peak periods to increase the overall route capacity. It is hoped that the greater the public transport service available on the roads, the higher the public transport frequencies and the higher overall system capacity. **Option 2** is referred to as the trunk-and-feeder approach. This option is where BRT services operate on main, longer distance transport corridors, and are served by MBT as smaller capacity at particular points in the network. The difference with the first option is that there are interchange points between MBT and BRT systems as facilitated points between the services (Ferro, Behrens and Wilkinson, 2013). **Option 3** is referred to as shared lanes, where exclusive lanes are shared by MBT and BRT services at all times, where both modes operate away from general traffic. Delhi in India has adopted an example of this system. **Option 4** is known as parallel services or separate corridor system. In this system, the aim is to maximise operating speeds in two parallel lanes, where BRT serves the metropolitan demand and MBT services are limited to serve local demand. BRT systems are largely associated with higher capacities and longer distances, while MBT services are characterised by smaller vehicles with lower capacities, and not appropriate for high density, high demand routes (Browning, 2001, cited in Ferro, Behrens and Wilkinson, 2013).

Before deciding on and introducing a solution, the public transport problem to be addressed within a particular urban context needs to be first clearly defined (Ferro, Behrens and Wilkinson, 2013). The challenge of the public transportation process is finding the appropriate interventions and the appropriate policy schemes to preserve the benefits of both MBT services and the BRT. It is difficult to realise the importance of paratransit services because there are often political pressures to provide a quick and comprehensive solution to urban transport problems. Accra serves as an important example, where there was an early appreciation of the role of MBT, which involved an incremental and flexible approach to regulating the MBT service. The city officials proposed the transformation of the public transport system that involves the implementation of BRT on high capacity corridors based on policy framework grounded in actual conditions (Ferro, Behrens and Wilkinson, 2013).

6.4. Further research

This research report on the subject of the commuter use of paratransit service and BRT is the starting point for future, more in-depth research to investigate user perceptions and the social issues associated with this transport.

Different elements can be considered in order to provide a better understanding of integration. Further research will need to explore the limitations to, and prospects of implementing interventions to integrate paratransit and institutional transport systems and how they should operate together in response to commuter needs.

An idea for further research stemming from this topic would be to find out how space and politics affects these modes of public transport. With the contested nature of space in Johannesburg, I imagine that there would be different forms of negotiating space between MBT and BRT. How has Rea Vaya affected MBT in the Johannesburg and how have that affected commuters?

6.5. Limitation of research

Although the approach taken in this study has provided some insightful findings, it has its limitations. This section looks at the weaknesses of this study.

One limitation is with regards to the interview sample of the field work. This study included a total of 10 participants, and is by no means comprehensive or representative of all BRT and MBT commuters in Pimville. There are many other stakeholders (drivers, planning professionals and public transport officials) who are integral to understanding the effectiveness of the available transport modes on commuter mobility in Pimville, and their perspectives have not been represented in this research. Furthermore, the research has highlighted that commuters are by no means a homogenous group. One might find particular stakeholders in each group which have different understandings and appreciation for commuting with different objectives and goals. However, this study provides an initial impression of the experiences, perceptions and attitudes towards the MBT and BRT system in the area. The research provides a set of insights around viewpoints from commuters, but it cannot be seen as a comprehensive overview of how the effects of the dual system in being understood by various stakeholders in Pimville. There is always the risk that the commuters interviewed might not have been the most appropriate representatives of the whole Pimville area. More research is required around the issue of different public transport groups that make use of BRT and MBT. It is suggested that an in-depth study that includes more stations as research sites could be conducted. This study could also have used both quantitative and qualitative methods of data collection.

Another limitation was that the research focused on investigating only the Rea Vaya and MBT, and during the investigation, it became evident that it is difficult to ignore other modes of public transport because they all play different roles in moving commuters around and were used as alternatives by some of the participants. An approach that

included the other public transport modes might have added value to the research.

6.6. Reflections

The report focused on demonstrating how commuters located in township areas of the city of Johannesburg are using current transport systems available to them to travel to the inner city and the underlying aspects informing their everyday public transport decisions. It has used the theoretical concepts of urban mobility, to analyse commuter choices in cities within the Global South. It draws on existing literature and analyses the implication of socio-demographic and spatial aspects in influencing everyday commuter choices. The report also presents a set of recommendations and areas for further research in how the BRT and MBTs can operate along the corridor in ways that better suit the mobility needs of their everyday users.

The aim is, therefore, to draw conclusions about the ways in which the MBT and BRT system complement (or fail to complement) each other from the perception of everyday users and how this relationship could be improved in future. I draw conclusions on the possible impacts of the way the minibus taxi and BRT systems may complement each other on meeting commuter mobility needs in the city. It also presents a set of recommendations on how the future of BRT and Minibus Taxi operations along the corridor can be better conceptualised to suit the mobility needs of their everyday users.

It does this by exploring the everyday decisions of commuters who make the journey between Soweto and the Johannesburg CBD and the spatial and socio-demographics aspects that influence their choice of either using the BRT or the MBT (or both). Findings from commuters using the different modes are discussed in two separate sections. It displays findings of the journeys of the MBT and BRT (with five respondents each). The research question for this report was, how has the dual presence of MBT and BRT systems affected commuter mobility in Soweto? In answering this question, several research sub-questions were posed. The findings from fieldwork highlight the need to recognise paratransit systems as an important part of the public transport systems in most cities in the Global South. The benefits regarding spatial access and service frequency are thought to matter more to users than the drawbacks of vehicle quality and comfort.

In conclusion, this study thus prompts us to revisit the prevalence of roles between paratransit and institutional transport, according to context. Instead of pointing the institutional transportation a primary transportation option and the paratransit services as a mode that only fills the gaps, one

could reverse this approach and consider that paratransit as a key transport mode. The role of transport official is not to do away with but to regulate it, or to replace it by institutional transport when it reaches the limits.

7. REFERENCES

Adey, P. (2010). Aerial Life: Spaces, Mobilities, Affects. Oxford: Wiley-Blackwell.

Algers, S., J. Eliasson and L.-G. Mattsson. (2005). Is it time to use activity-based urban transport models? A discussion of planning needs and modelling possibilities, Annals of Regional Science, 39 (4). 767 – 789.

Amin, A and Thrift, N. (2002). Cities: Reimagining the Urban. Cambridge: Polity.

Beg, F., Bickford, G., Denoon-Stevens, S. P., Harber, J., Jitsing, A., Moosajee, R., and Schmidt, D. (2014). How to Build Transit-oriented Cities: Exploring Possibilities. Johannesburg: SACN. Available from: http://www.thehda.co.za/uploads/files/SACN_How_to_build_transit-oriented_cities.SouthAfricanCitiesNetwork.pdf [Accessed 21 May 2016].

Behrens, R. and Behrens, R. (2004). Understanding Travel Needs Of The Poor: Towards Improved Travel Analysis Practices in South Africa. Transport Review, 24(3), 317-336.

Behrens, R. and Del Mistro, R.D. (2010). Shocking Habits: Methodological Issues in Analysing Changing Personal Travel Behaviour over Time. International Journal of Sustainable Transportation, 4(5), 253-271.

Behrens, R. and Del Mistro, R.F. (2006). Methodological problems in the analysis of changing habitual travel behaviour over time. 25th Southern African Transport Conference, Pretoria.

Beirão, G. and Cabral, J.S. (2007). Understanding attitudes towards public transport and private car: A qualitative study. Transport Policy, 14(6), 478-489.

Bertolini, L. (2012). Future of Transport?-Future of Cities! PROMET - Traffic and Transportation, 2-3(11), 89-95.

Best, H.and Lanzendorf, M. (2005). Division of labour and gender differences in metropolitan car use: An empirical study in Cologne, Germany. Journal of Transport Geography, 13(2), 109-121.

Bickford, G. (2014a). Literature Review on Public Transport and Mobility in Municipalities. Johannesburg: South African Cities Network. Available: http://sacitiesnetwork.co.za/wp content/uploads/2014/07/public_transport_and_mobility_in_south_africa_.pdf [Accessed 16 April 2016].

Bickford, G. (2014b). BRT impacts at a Neighbourhood Level: Insights from Diepkloof. Transport and Urban Development: Two Studies from Johannesburg. University of the Witwatersrand: Johannesburg.

Boarnet, M. G.and Sarmiento, S. (1998). Can Land-use Policy Really Affect Travel Behaviour? A Study of the Link between Non-work Travel and Land-use Characteristics. Urban Studies, 35(7), 1155 - 1169.

Bongwe, L. (2014). A Gap in Housing Finance Provisioning In South Africa: A Study of an Extended Household in Pimville, Soweto. Master of Built Environment (Housing) Dissertation. University of Witwatersrand, Johannesburg.

Büscher M., Urry, J. and Witchger K. (2010). Mobile Methods. London and New York: Routledge.

Cervero, R. (2000). Informal Transport in the Developing World, United Nations Centre for Human Settlements (Habitat), UNCHS, Nairobi. Accessed on: http://www.unhabitat.org/pmss/getElectronicVersion.aspx?nr=1534&alt=1. (20/06/2016)

Cervero, R. (2002). Built environments and mode choice: toward a normative framework. Transportation Research Part D: Transport and Environment, 7(4), 265-284.

Cervero, R. B. (2013). Linking urban transport and land use in developing countries. Journal of Transport and Land Use, 6(1), 7-24.

Charlton, S. and Kihato, C. (2006). Reaching the poor? An analysis of the influences on the evolution of South Africa's housing programme in Democracy and Delivery: Urban Policy in South Africa, 252 – 282, HSRC press, Cape Town.

City of Johannesburg (CoJ). (2009). Rea Vaya goes travelling [online]. Available on: http: www.joburg.org.za. [Accessed 25 January 2016]

City of Johannesburg (CoJ). (2011a). Joburg 2040: Growth and Development Strategy. Available on: http://www.joburg.org.za/ gds2040/pdfs/joburg2040_gds.pdf [Accessed 23 April 2016].

City of Johannesburg (CoJ). (2011b). Rea Vaya/ BRT-Transforming the face of public transportation. End of term report 2006-2011[online]. Available on: http//www.joburg-archive.co.za. [Accessed15 May 2016].

City of Johannesburg (CoJ). (2013). Strategic Integrated Transport Plan Framework for the City of Joburg (pp. 1–120). Johannesburg: City of Joburg. Available on: http://www.joburg.org.za/images/stories/2013/May/CoJ%20SITPF%20Draft%2013%20May%202013.pdf [Accessed on 26 May 2016].

Clark, P. and Crous, W. (2002). Public transport in metropolitan Cape Town: Past, present and future. Transport Review, 22(1), .77-101.

Cresswell, T. (ed.). (2001). Mobilities. New Frontiers, 43, .4-28.

Cresswell, T. (2010). Towards A Politics of Mobility. Environment and Planning D: Society and Space, 28(1), 17-31.

Cresswell, T. and Merriman, P. (eds). (2011). Geographies of Mobilities: Practices, Spaces, Subjects. Farnham and Burlington,: Ashgate.

Creswell, J. (2003). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Thousand Oaks: Sage Publications.

Creswell, J. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, (3rd ed.). SAGE Publication: Los Angeles.

Curtis, C. and Perkins, T. (2006). Travel behaviour: A review of recent literature. Perth: Urbanet, Curtin University of Technology.

de Vos, A., Strydom, H., Fouche, C., and Delport, C. (2005). Research at Grassroots for the Social Sciences and Human Service Professions. Pretoria: Van Schaik Publishers.

Del Mistro, R. and Bruun, E. (2012). Appropriate operating environments for feeder-trunk-distributor public transport services. 31st Southern African Transport Conference: Getting Southern Africa to Work, Pretoria.

Del Mistro, R.F., Behrens, R., Lombard, M.C. and Venter, C.J. (2007). The triggers of behaviour change and implications for TDM targeting: Findings of a retrospective commuter travel survey in Cape Town. incomplete

Department of Transport. (DoT) (2007). Public Transport Strategy. Available from: www.gov.za/ documents/download.php? f=127080 [Accessed on 22 May 2016].

Department of Transport (DoT). (2012) Department of Transport annual report 2011/2012 [online]. Available on http://www.transport.gov.za/Portals/0/Annual%20Reports/12%20DoT%20Annual%20Report.pdf. [Accessed 03 August 2016]

Simpson, Z., McKay, T., Patel, N., Sithole, A., van den Berg, R. and Chipp, K. (2012). Past and present travel patterns in the Gauteng city-region.

Edensor T. (2011). Commuter: Mobility, rhythm, commuting. In Cresswell, T. and Merriman, P. (eds) Geographies of Mobilities: Practices, Spaces, Subjects. Farnham and Burlington: Ashgate, 189–204.

Edensor, T. (2014). Rhythm and arrhythmia. The Routledge Handbook of Mobilities. London and New York: Routledge, 163-171.

Ferro P.S., Breuil L. and Allaire J. (2015) Paratransit: a key element in a dual system, Paris, AFD, CODATU.

Ferro, P. S., and Behrens, R. (2015). From direct to trunk-and-feeder public transport services in the Urban South: Territorial implications. The Journal of Transport and Land Use, University of Minnesota Centre for Transportation Studies. 8 (1), 123–136.

Ferro, P.S. and Behrens, R., (2013). Paratransit and Formal Public Transport Operational Complementarity: Imperatives, Alternatives and Dilemmas. Centre for Transport Studies, University of Cape Town. Available from http://www.wctrs.leeds.ac.uk/wp/wp-content/uploads/abstracts/rio/general/1466.pdf [Accessed 22 May 2016]

Ferro, P.S., Behrens, R. and Wilkinson, P. (2013). Hybrid urban transport systems in developing countries: Portents and prospects. Research in Transportation Economics, 39(1) .121-132.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. Qualitative Inquiry, 12(2): 219–245.

Frankel, P. (1979). Municipal Transformation in Soweto: Race, Politics, and Maladministration in Black Johannesburg. African Studies Review, 22(2), 49-63.

Friman, M. and Gärling, T. (2001). Frequency of Negative Critical Incidents and Satisfaction with Public Transport Services. Journal of Retailing and Consumer Services, 8 (2), 105–114.

Fujii, S. and Kitamura, R. (2003). What does a one-month free bus ticket do to habitual drivers? An experimental analysis of habit and attitude change. Transportation, 30(1), 81-95.

Gardner, B. and Abraham, C. (2007). What drives car use? A grounded theory analysis of commuters' reasons for driving. Transportation Research Part F: Traffic Psychology and Behaviour, 10(3), 187-200.

Gauthier, A. and Weinstock, A. (2010). Africa Transforming Paratransit into BRT. Built Environment, 36(3), 317-327.

Gauteng City Region Observatory (GCRO). (2012,). Key Findings from Statistics South Africa's 2011 National Census for Gauteng. Available on Gauteng City-Region Observatory: http://www.gcro.ac.za/sites/default/files/databrief_2_key_highlights_for_gauteng_from_census_2011.pdf [Accessed 23 August 2016].

Gibbs, J. (2013). Putting Joburg's Public Transport to the Test. The Citizen. [Online] 5 November 2013. http://citizen.co.za/79919/transport-features/ [Accessed: 16 June, 2016]

Golub, A., Behrens, R. and Ferro, P.S., (2012). Planned and Paratransit Service Integration through Trunk and Feeder Arrangements: An International Review. 31st Southern African Transport Conference, Pretoria

Grütter, J. (2011). BRT Rea Vaya Phase 1A and 1B, South Africa, VCS Project Document, Version 1.2, Reinach.

Hadebe, T. (2010). Township Home-Based Enterprises: The Case of Pimville. Master of Science in Development Planning Dissertation. University of Witwatersrand, Johannesburg.

Handy, S., Cao, X., and Mokhtarian, P. (2005). Correlation or causality between the built environment and travel behaviour? Evidence from Northern California. Transportation Research incomplete

Hannam, K., Sheller, M., and Urry, J. (2006). Editorial: Mobilities, immobilities and moorings. Mobilities, 1(1), 1-22.

Hensher, D.A. Stopher, P. Bullock, P. (2003). Service Quality: Developing a Service Quality Index in the Provision of Commercial Bus Contracts, Transportation Research Part A, 37 (6), 499–517

Hiscock, R., Macintyre, S., Kearns, A., and Ellaway, A. (2002). Means of transport and ontological security: Do cars provide psycho-social benefits to their users? Transportation Research Part D: Transport and Environment, 7(2), 119-135.

Jensen, O. B. (2009). Flows of Meaning, Cultures of Movements – Urban Mobility as Meaningful Everyday Life Practice. Mobilities 4 (1), 139–158.

Jensen, O. B. (2010). Negotiation in Motion: Unpacking Geography of Mobility. Space and Culture 13 (4): 389–402.

Kaufmann, V. (2002). Re-thinking mobility: Contemporary Sociology. Burlington: Ashgate,.

Kaufmann, V. (2007). On transport history and contemporary social theory. The Journal of Transport History, 28(2), .302-306.

Kaufmann, V. (2012). Mobility. [Online]. Available from: http://en.forumviesmobiles.org/marks/mobility-450 [Accessed 30 of August 2016].

Kaufmann, V. (2014). Mobility as a tool for sociology. Sociological, 8(1). [Online]. Available on https://www.rivisteweb.it/doi/10.2383/77046 [Accessed 10 of August 2016].

Kihato, C. W. (2009). Migration, gender and urbanisation in Johannesburg (Doctoral dissertation). University of South Africa, Pretoria, Available from http://hdl.handle.net/10500/2693 [Accessed 22 May 2016]

Leedy, P. D., and Ormrod, J. E. (2010). Practical research: Planning and design (8th ed.). Upper Saddle River, NJ: Prentice Hall.

Lefebvre, H. (1991). The production of space, Oxford: Blackwell Publishing.

Lefebvre, H. (2004). Rhythm analysis: Space, Time and Everyday Life, London and New York: Continuum.

Levinson, H., Zimmerman, S., Clinger, J., Rutherford, S., Smith, R.L., Cracknell, J. and Soberman, R. (2003). Bus Rapid Transit: Volume 1: Case studies in Bus Rapid Transit [online]. Available from: http://www.nbrti.org/docs/pdf/tcrp_rpt_90v1.pdf.TCRP Report 90 [Accessed 15 March 2016].

Lewis, P.R. (1966). A City within a City: The Creation of Soweto. South African Geographical Journal, 48(1).45-85.

Litman, T. (2007). Developing indicators for comprehensive and sustainable transport planning. Transportation Research Record: Journal of the Transportation Research Board, (2017), pp.10-15.

Lomme, R. (2008). Should South African mini-bus taxis be scrapped? Formalizing informal urban transport in a developing country [online]. Available from: www.codatu.org. [Accessed 15 May 2016].

Makhubele W. (2016). Another electricity tariff increase for Joburg residents. Available from: www.SABCNews.com.

Marshall, C. and Rossman, G. B. (2006). Designing qualitative research (4th ed.). Thousand Oaks: Sage Publication.

Marshall, M. (1996). Sampling for Qualitative Research. Family Practice, 13(6): 522-525.

Maunganidze, L. (2012). The role of bus rapid transit in improving public transport levels of service, particularly for the urban poor users of public transport: A Case of Cape Town, South Africa, Masters Research Report, Faculty of Engineering and the Built Environment Centre for Transport Studies, University of Cape Town, and Cape Town. Available from: http://www.acet-uct.org/wp-content/ uploads/2011/09/Maunganidze-20111.pdf [Accessed 18 May 2016].

Mbembé, J. A., and Nuttall, S. (2004). Writing the world from an African metropolis. Public culture, 16(3), 347-372.

McCarthy, J. and Swilling, M. (1985). The Apartheid City and the Politics of Bus Transportation. Cahiers d'études africaines. 25 (99). 381-400. [online]. Available on: http://www.persee.fr/web/revues/home/prescript/article/cea_0008-0055_1985_num_25_99_1736.

McCaul, C. and Ntuli, S. (2011). Negotiating the deal to enable the first Rea Vaya Bus Operating Company: Agreements, Experience and Lessons. Proceedings: 30th incomplete

Murray, M.J. (2011). City of extremes: The spatial politics of Johannesburg. Duham: Duke University Press.

Hensher, D. A. and King, J. (2001). Parking demand and responsiveness to supply, pricing and location in the Sydney central business district. Transportation Research Part A: Policy and Practice, 35(3), 177-196.

Pieterse, E. (2009) Post-Apartheid Geographies, Why Are Urban Divides So Persistent' Interdisciplinary Debates on Development and Cultures: Cities in Development- Spaces, Conflicts and Agency, Leuven University, Draft Paper.

Pillay, K. and Seedat, I. (2007). Towards 2020: public transport strategy and action plan. Proceeding of 26th Southern African Transport Conference, Pretoria.

Quantec. (2013). EasyData. Retrieved September 29, 2016, from Census 1996, 2001 & 2011 (2011 census demarcation, sub place level). Available: http://www.easydata.co.za/ in

Rahim, H. (2014). The Social and Economic Effects of the Rea Vaya Bus Rapid Transit System (BRT) In the Gauteng Province. (Master of Science dissertation). University of South Africa, Pretoria.

Roy, A. (2005). Urban informality: toward an epistemology of planning. Journal of the American Planning Association, 71(2), 147-158.

Schalekamp, H. and Behrens, R. (2013). Engaging the paratransit sector in Cape Town on public transport reform: Progress, process and risks. Research in Transportation Economics, 39(1), 185-190.

Scott, J. C. (1998). Seeing like a state: How certain schemes to improve the human condition have failed. New York: Yale University Press.

Seidman, I. E. (1991). Interviewing as qualitative research guide for research in education and the social studies. New York: Columbia University Teachers College Press.

Simmel, G. (1903). The metropolis and mental life; in The City Cultures Reader Second Edition, London: Routledge.

Simone, A. M. (2004). People as Infrastructure: Intersecting Fragments in Johannesburg, Public Culture 16(3): 407–429.

Simone, A. M. and Abouhani, A., (eds.). (2005). Urban Africa: changing contours of survival in the city. Darkar: CODESRIA/ London: Zed Books: University of South Africa Press.

Simpson, Z., McKay, T., Patel, N., Sithole, A., van den Berg, R. and Chipp, K., (2012). Past and present travel patterns in the Gauteng city-region. incomplete

Soja, E. W (1997). Six Discourses on the Postmetropolis. In Sallie Westwood and John Williams (eds.) Imagining cities: scripts, signs memory. Oxford: Routledge.

Stake, R. E. (1995). The art of case study research. Thousand Oaks, Sage.

Statistics South Africa. (2005). www.statsa.gov.za. [Accessed on 20 December 2013]

Strauss, A. and Corbin, J. (2008). Basics of qualitative research: techniques and procedures for developing grounded theory.3rd ed. Los Angeles: Sage Publications.

Taaffe, E.J., Gauthier, H.L. and O'Kelly, M.E. (1996). Geography of transportation. 2nd ed. New Jersey: Prentice Hall.

Thrift, N. (2008). Non-Representational Theory: Space, Politics, Affects, New York: Routledge,.

Turok, I. (2011). Deconstructing Density: Strategic Dilemmas Confronting the Post-Apartheid City. Cities, 28, 470-477.

United Nations Human Settlements Programme (UN-Habitat). (2013). Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013. Taylor & Francis Limited (Routledge). New York

Urry, J. (2000) Sociology beyond Societies: Mobilities for the Twenty-First Century, London: Routledge.

Urry, J. (2002). The global complexities of September 11th. Theory, Culture and Society, 19, 57-70.

Vanderstoep, S. W. and Johnston, D. D. (2008). Research Methods for Everyday Life. San Francisco: Jossey-Bass,.

Vasconcellos, E.A., (2002). Urban Transport, Environment and Equity. The Case for Developing Countries. Public Transport International, 51(1).

Vaz, E. and Venter, C. (2012). The effectiveness of bus rapid transit as part of a poverty-reduction strategy: some early impacts in Johannesburg. Paper presented at the 31st Annual Southern African Transport Conference 9-12 July 2012 "Getting

Southern Africa to Work", CSIR International Convention Centre, Pretoria.

Venter, C. (2011). Transport expenditure and affordability: The cost of being mobile. Development Southern Africa Vol. 28.1: 121-140.

Vuchic, V.R. (2007). Urban transit Systems and technology. Hoboken: John Wiley and Sons.,.

Watson, V. (2003) Conflicting Rationalities: Implications for Planning Theory and Ethics, Planning Theory and Practice, 4,. 4, 395–407.

Whittemore, R., Langness, L. and Koegel, P. (1986). The life history approach to mental retardation in L. Langness and H. Levine (eds) Culture and Retardation, Dordrecht: D. Reidel Redial

Wilkinson, P. (2002), September. Integrated planning at the local level? The problematic intersection of integrated development planning and integrated transport planning in contemporary South Africa. Paper presented at Planning Africa Conference. Durban

Wood, A. (2014) Moving policy: global and local characters circulating bus rapid transit through South African cities. Urban Geography 35.8, 1238–54., [Accessed 21st June 2016)

Wray, C. and Gotz, G. (2014) Mobility in the Gauteng City-Region. Johannesburg: Gauteng City-Region Observatory Publications. Available: http://www.gcro.ac.za/media/reports/mobility_report_july_28_2014_medium_res_2.pdf. [Accessed 20 May 2015].

Wright, L. (2011). Bus rapid transit: a review of recent advances. in H. Dimitriou and R. Gakenheimer, (eds). Urban transport in the developing world: a handbook of policy and practice, Cheltenham, Edgar Elgard, ,421-455.

Yin, R. K. (1994). Case study research. Design and methods. Thousand Oaks: Sage,.

Yin, R.K. (2003). Case study research: Design and methods. Thousand Oaks: Sage Publications..