Gauteng Province

HOUSEHOLD TRAVEL SURVEY REPORT

2019/20

REGIONAL REPORT FOR THE CITY OF EKURHULENI

GAUTENG PROVINCE
ROADS AND TRANSPORT
REPUBLIC OF SOUTH AFRICA

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FOREWORD

This report documents the high-level results of the 2019/20 Gauteng Household Travel Survey (GHTS) carried out by the Gauteng Department of Roads and Transport for the City of Ekurhuleni. The survey was managed and undertaken by a multi-disciplinary team, including officials from metropolitan and district municipalities in the province.

Apart from fulfilling legislative imperatives, the survey work improves government accountability to the citizens of Gauteng Province. Now that three sets of household travel surveys have been carried out in the five regions of Gauteng since 2002, trends relating to travel by residents can be reliably assessed.

Indications are that households in the City of Ekurhuleni pay the most, compared to households in other parts of the Gauteng Province, to use public transport. Travel times to access public transport are also high. The settlement patterns of the City of Ekurhuleni are especially challenging for public transport service delivery. The City of Ekurhuleni has had multiple municipal councils in the past, each being a microcosm of an unequal society.

The need to coordinate transport service delivery through the Gauteng Transport Authority is self-evident. This is because the transport network in Gauteng Province functions as one. However, this does not take away the responsibility of local government, such as the City of Ekurhuleni, to fulfil its mandated transport functions. Greater efforts to formulate and implement uniform norms and standards for public transport service delivery in the province would make programmes such as those of the Gauteng Transport Authority even more meaningful.

COVID-19 has had a severe impact on transport systems and operations, especially in eroding confidence in travelling by public transport. In this regard, the Gauteng Department of Roads and Transport will continue to monitor the situation closely with follow-up surveys to inform more innovative approaches to delivering services in the interest of public safety and to support the financial viability of operations.

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Mr Jacob Mamabolo

MEC: Roads and Transport

KEY FINDINGS

The Gauteng Household Travel Survey (GHTS) is designed to measure metrics relating to weekday household and individual travel choices, experiences and constraints. Out of a total sample of 37 000 households for the province, the City of Ekurhuleni was targeted to have a sample of 8 000 households, but 7 213 responses were obtained. While lower than the target, the response is relatively high for surveys of this magnitude.

For the City of Ekurhuleni, the following key findings are notable:

- About 66% of households spend more than 10% of their household income on public transport, which is the highest level of expenditure in Gauteng Province.
- Alberton and Kempton Park are particularly characterised by relative affluence, while areas such as Daveyton, Kwatsaduza, and Tembisa/Clayville are characterised by poverty. About 66% of households have no person who is employed full-time. About a quarter of the employed people work more than 5 days a week. Transport services, including fare structures, should take these observations into consideration.
- The CoE household car access of 0.44 cars per household is higher than the national figure of 0.31, and the average figure of 0.398 for metropolitan municipalities. Household car ownership levels average 1.82 cars per household at the higher income levels. Over 71% of households do not have access to a car, making public transport service delivery a basic need.
- About 44 000 people in the CoE live with some form of disability requiring transport infrastructure and services that are designed for universal access.
- Walking all the way remains the predominant mode of travel in the CoE, followed by the use of a car as the driver. Safe and sufficient non-motorised transport facilities to cater for the already large volumes of the population walking is as much a need as quality roadways for cars.
- On average, accessing public transport from trip origin takes 23 minutes. On the other hand, accessing destinations from public transport stops take an average of 19 minutes. The relatively high access times indicate a disconnect between transport services and land use.
- Household members are relatively satisfied with bus services. However, household members are generally dissatisfied with train and minibus taxi services, particularly on issues relating to security, the behaviour of taxi drivers, overcrowding in trains and long train travel times.
- Travel, in terms of the volume of trips, within the City of Ekurhuleni is much higher than travel to and from other municipalities in the province. This requires the City of Ekurhuleni to continue its focus on improving transport service delivery within its jurisdiction while collaborating with the Gauteng Transport Authority.

A more detailed analysis of the survey data is necessary to develop responsive transport plans. Furthermore, for the CoE, several anomalous observations warrant more in-depth investigations. The limitations of physical household surveys, including threats to the security of field survey staff, warrant that additional and more innovative survey methods be explored to enhance data quality.

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ABBREVIATIONS AND ACRONYMS

CAPI – Computer Assisted Personal Interviews

CS 2016 – Community Survey 2016

CoE – City of Ekurhuleni

CSIR – Council for Scientific and Industrial Research

DF – Dwelling Frame

GDRT – Gauteng Department of Roads and Transport

GPS – Geographic Positioning System

GTI – Dwelling Frame

GHTS – Gauteng Household Travel Survey

GTI – GeoTerraImage

GTS – Gauteng Transport Study 2000

ITP – Integrated Transport Plan

HTS – Household Travel Survey

IDP – Integrated Development Plans

IPTN – Integrated Public Transport Network

NHTS – National Household Travel Survey

NLTA – National Land Transport Act

PSC – Project Steering Committee

PTNS – Public Transport Network & Systems

StatsSA – Statistics South Africa

TAZ – Transport Analysis Zone

QR – Quick Response

1 INTRODUCTION

Section 9 of the National Land Transport Act (NLTA) 5 of 2009 requires the MEC responsible for transport to:

- Monitor the implementation of provincial land transport policy;
- Assist municipalities that lack the necessary resources to perform their land transport functions; and,
- Regularly report on the state of transport affairs in the provinces.

In this regard, the 2019/20 Gauteng Household Travel Survey (GHTS) forms part of a series of provincial surveys conducted by the Gauteng Department of Roads and Transport (GDRT) to improve understanding of changes in the relationship between the demand and supply of transport services and infrastructure at a household level and its implications for transport service delivery. The information is also necessary for improved planning and to support evidence-led decision-making.

This regional report provides outcomes of the 2019/20 GHTS for the City of Ekurhuleni. Where necessary, comparisons have been made with the results of the previous surveys for the City. The detailed datasets, provided by these surveys, will allow the City to carry out further analyses as part of its transportation planning process and to develop responsive transport models in line with Section 11 of the NLTA.

The report structure is as follows:

- Section 1 introduces the report
- Section 2 presents the overall project scope
- Section 3 explains the sampling process
- Section 4 covers the fieldwork methodology and data control procedures
- Sections 5 to 9 present various thematic findings from the survey
- Section 10 provides some concluding remarks.

The results presented in the report are of a high-level nature. It may be necessary to carry out detailed analyses of the survey datasets to conclusively inform transport planning and management interventions.

The survey was completed before the widespread emergence of the COVID-19 pandemic which has enormously impacted travel patterns globally. Therefore, the results of the 2019/20 survey represent a baseline that can be used when assessing the relative impact of and recovery from the pandemic.

2 OVERALL PROJECT SCOPE

The data collected by the 2019/20 GHTS – from 20 May 2019 to 7 August 2019 – allows authorities to:

a) Undertake better and improved transport planning;

b) Update strategic transport models;

c) Measure performance against set standards;

d) Inform decisions relating to the financing of transport infrastructure and services; and,

e) Assess household attitudes towards transport services and infrastructure.

The project was carried out by a multi-disciplinary team led by the GDRT through a Steering Committee comprising all cities and district municipalities in the province. The project team composition is summarised in Table 1.

Table 1: Project team

Organisation	Team Members	Role in the project
Gauteng Department of Roads and Transport (GDRT)	Project Manager: Integrated Planning Project Leader: Malebo Ndamase	Client
Council for Scientific and Industrial Research (CSIR)	Project Managers, Project Leaders and Researchers specialising in • Statistics • GIS • Transport planning • Transport Economics. • Information Technology • Data mining and analytics	Implementation agent
CAIREG Trading	• Survey Specialist • Fieldwork Manager • Fieldwork Coordinator • Fieldworkers	Provided overall support for the fieldwork
Project Steering Committee (PSC)	Municipal officials in Sedibeng, West Rand, Johannesburg, Ekurhuleni, Tshwane and GDRT officials	Joint oversight and fieldwork facilitation

The City of Ekurhuleni (CoE) survey distribution sample is illustrated in Figure 1.

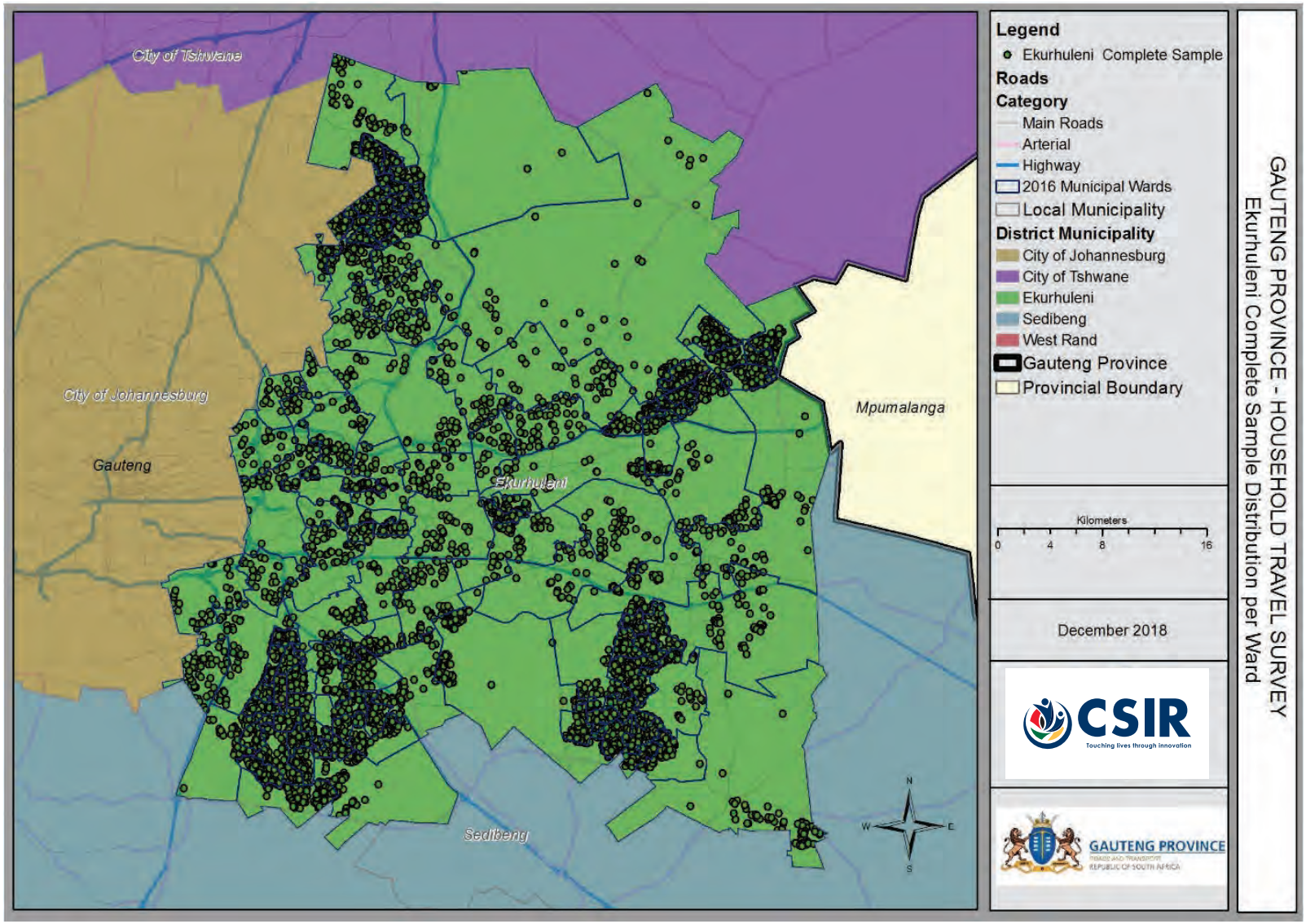

Figure 1: Ekurhuleni survey sample distribution across municipal wards

3 SAMPLING METHODOLOGY

3.1 Dwelling Frame (DF)

A Dwelling Frame (DF) is a spatially referenced framework of all built structures (residential and non-residential) which facilitates the drawing of a sample. The process to obtain a dwelling frame for the survey entailed a request to Statistics South Africa (StatsSA) to access its dwelling frame. However, StatsSA indicated that it does not share its dwelling frame. Therefore, the CSIR team developed a dwelling frame for this study using a variety of secondary data that includes: GeoTerraImage (GTI) Dwelling Points 2010; GeoTerraImage (GTI) Dwelling Points 2018; Census 2011 household data; and the Gauteng Provincial Boundary.

As illustrated in Figure 2, the dwelling points were assigned to spatial layers from which they were further located using (1) Main-places; (2) Sub-places; and (3) Wards and Transport Analysis Zones (TAZs) as levels of reporting. A sampling frame (see Figure 3) with the abovementioned spatial variables including GPS coordinates and exact street addresses for multi-units was subsequently produced. The output was packaged in the form of a GIS shapefile and associated database. The GTI[1] building counts for both 2011 and 2018 were acquired to guide the representation of all structures in the province. The data was further classified in terms of land use. The GTI datasets were particularly useful in enhancing the robustness of the sampling method. The resulting DF is illustrated in Figure 4 and is reflective of all the growth areas identified since 2010.

3.2 Exclusions

Public institutions were excluded from the sample. These included a) Retirement Villages / Old Age Homes; b) Student Hostels; c) Orphanages, Children's Homes and Places of Safety; and, d) Correctional Services (Warden Housing - Cluster).

Owing to ethical considerations, persons less than 18 years were not directly interviewed. A person was considered a household member only if he or she had spent four consecutive nights in the same household.

[1] GTI is a database or catalogue that categorizes the built environment in terms of settlements and into 70 different types of structures in South Africa by identifying every structure according to a set of comprehensive land use definitions (see Annexure A). The residential points sub-dataset for main buildings is further disaggregated into 17 tertiary classes and these were selected to form the basis of the survey sampling frame development.

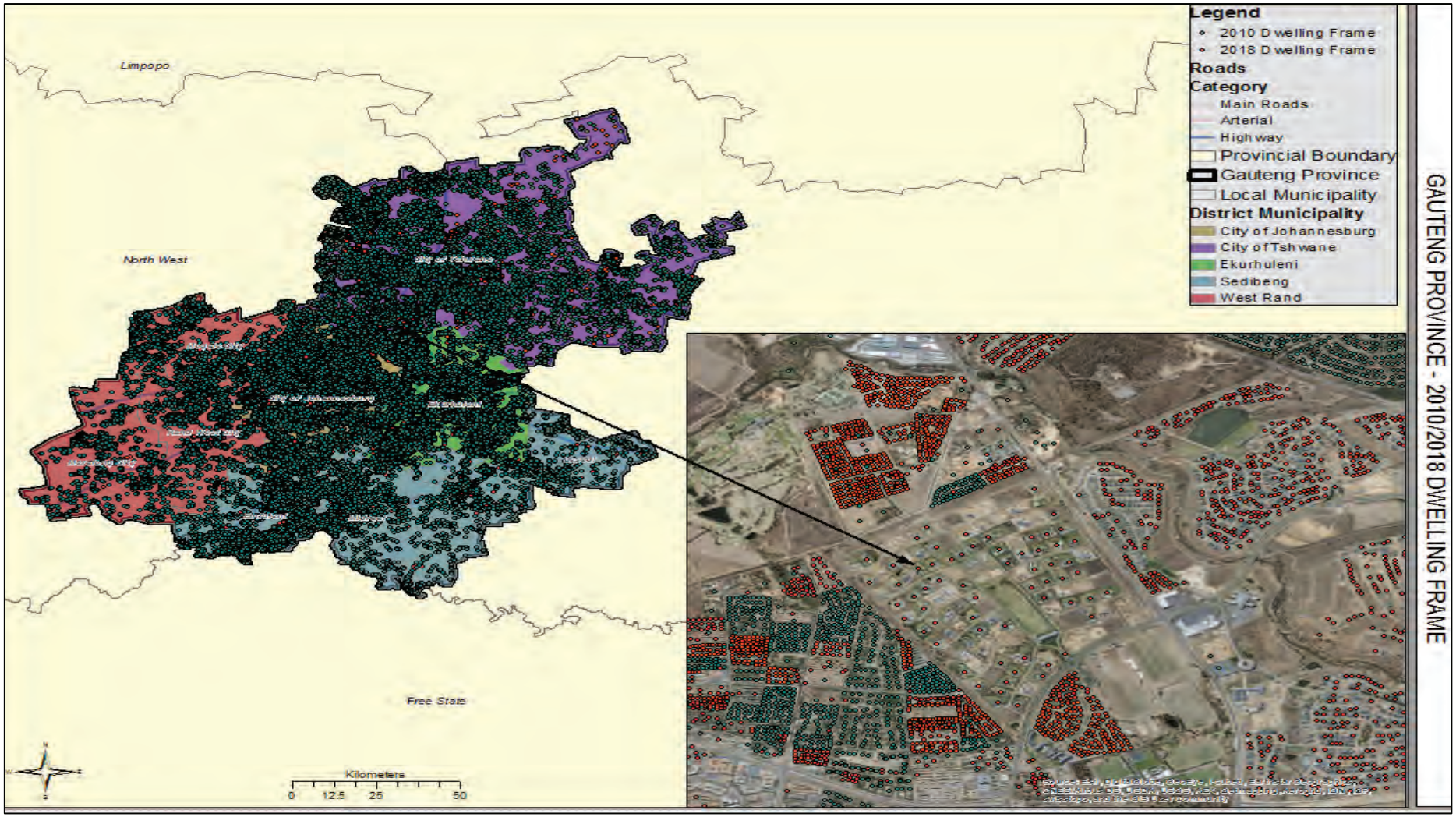

Figure 2: Dwelling points growth over an eight-year period (Year 2010 Green Points – Year 2018 Red Points)

3.3 Target sample

A sample size of 8 000 households was planned for the survey in the CoE, which is equivalent to about a fifth of the total provincial sample.

3.4 Selection of the main sample

The selection of a sample of dwelling units was done through multi-stage sampling. The first stage involved a proportional random selection of the required number of dwelling units, as presented in Figure 3 – via stratification by Transport Analysis Zone (TAZ) and main-place –to allow for adequate coverage at the spatial level.

A selected list of dwelling units was evaluated to identify and isolate “multiple-dwelling” units from individual “single-dwelling” units. Multiple-dwelling units were those units that represented a group of dwelling units, such as clustered residential units within complexes, flats, security estates and villages.

3.5 Weighting

A stratified sampling approach encompassing a proportional allocation sample across areas (census main places and TAZs) was implemented for random selection of households based on the dwelling frame developed. This selection consisted of assigning sampling weights to each of the households. The weights were computed to improve the estimation of relevant population parameters and enable inferences to be deduced from the sampled households to represent both the Gauteng and the regional profiles as well as to correct for possible sample bias.

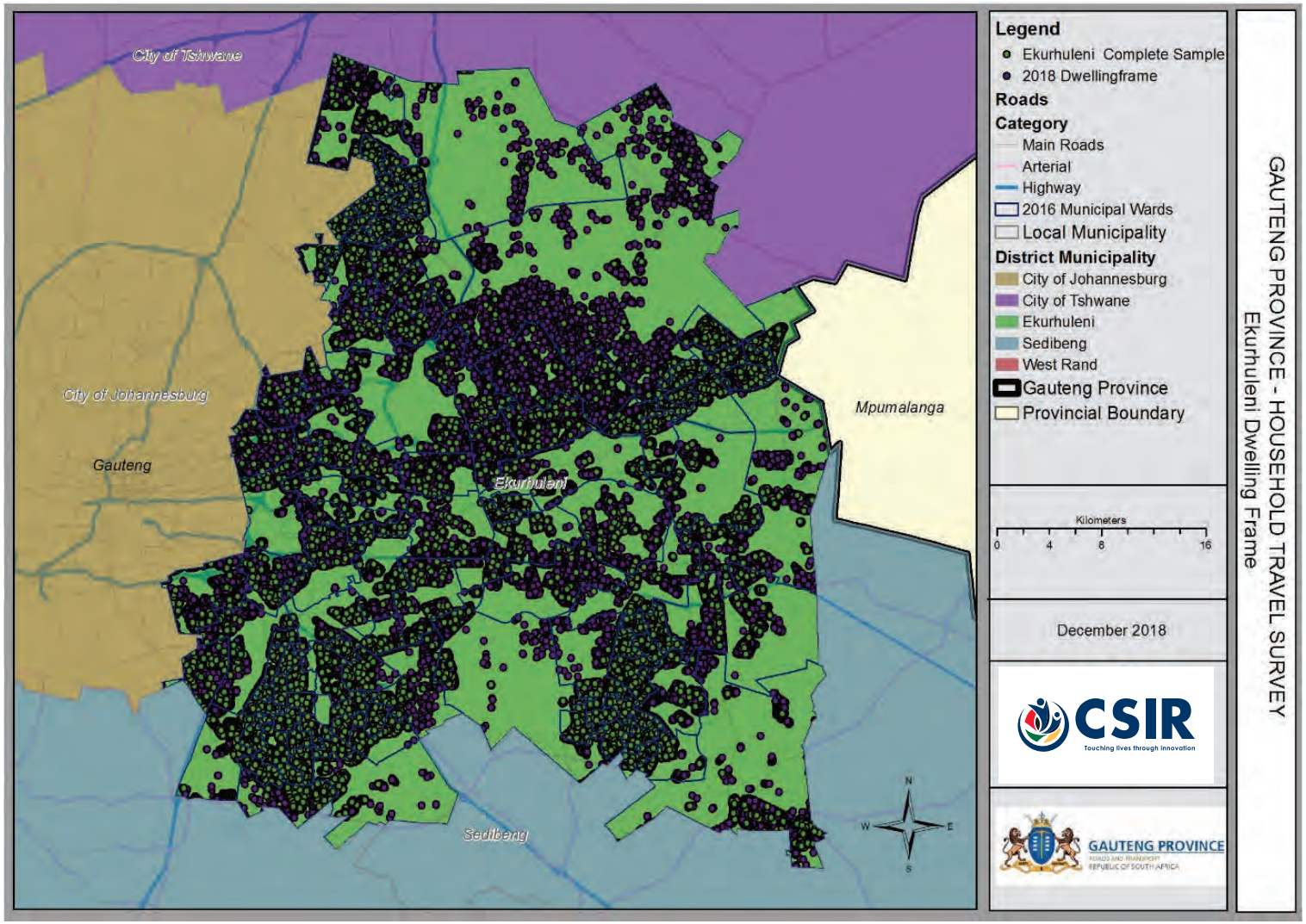

Figure 3: Survey sample overlaid to dwelling frame 2018

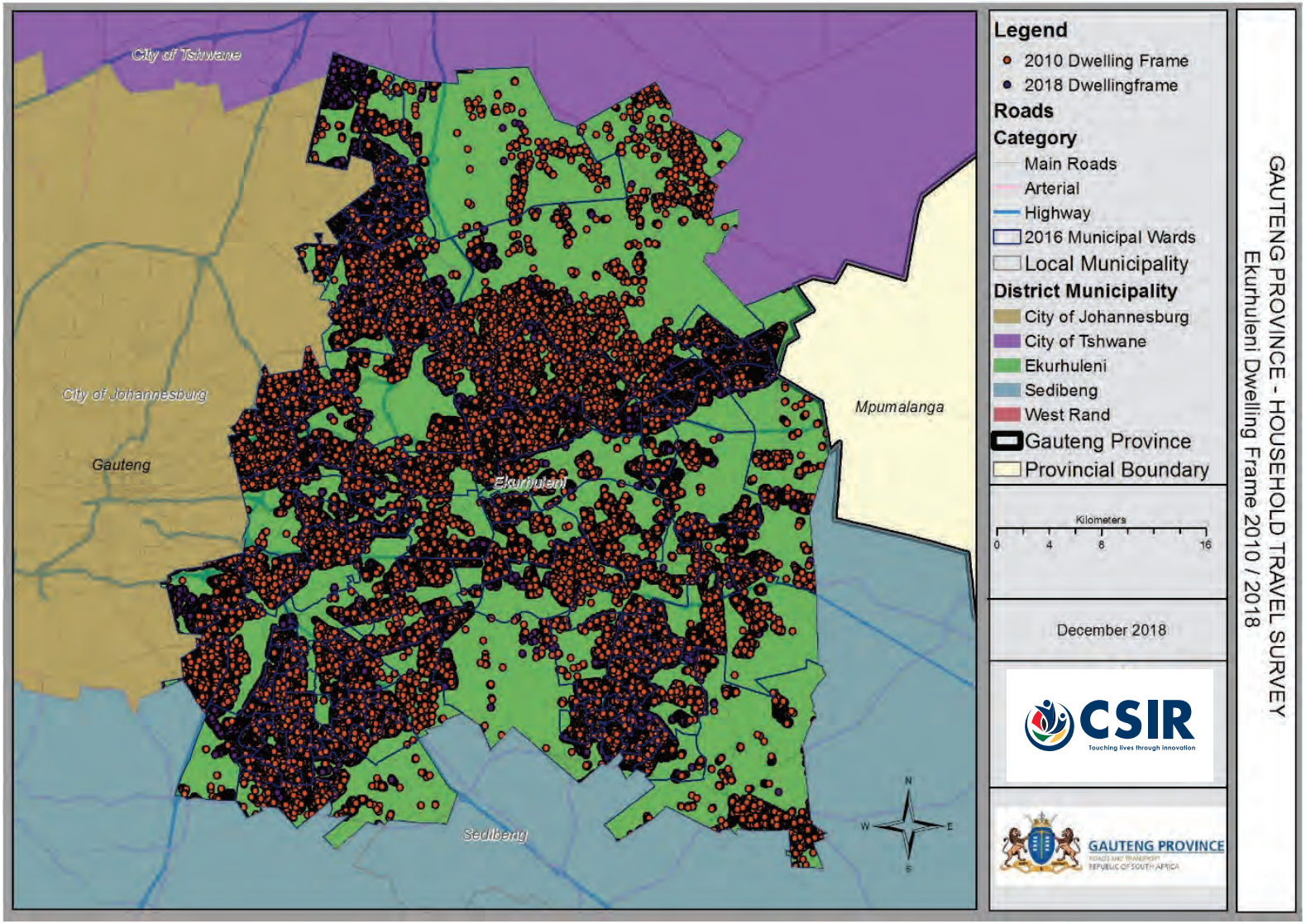

Figure 4: Dwelling Frame – A distribution of the dwelling points across Ekurhuleni

3.6 Data quality control

Household questionnaire validation and verification tools were developed to assist the geo-referencing of visiting points and to maintain control of where interviews were undertaken in the field. These tools enabled the data management team to detect possible and probable discrepancies in the field by, for example, correlating enumeration points to enumerator location when completing or interviewing suitable members within different households.

The interview trip data required a combination of automation and manual data cleaning methods to enable correction and conversion, where practical, of text descriptions from discrete destination responses, i.e., geocoding of destination addresses to a GIS-compatible format (coordinates).

3.7 Substitutions

During sampling, a comprehensive list of additional samples (about 40% of the main sample) was set aside to allow for possible replacement or substitution of inaccessible or non-responsive households during the survey. Figure 5 provides a map showing the spatial distribution of these samples.

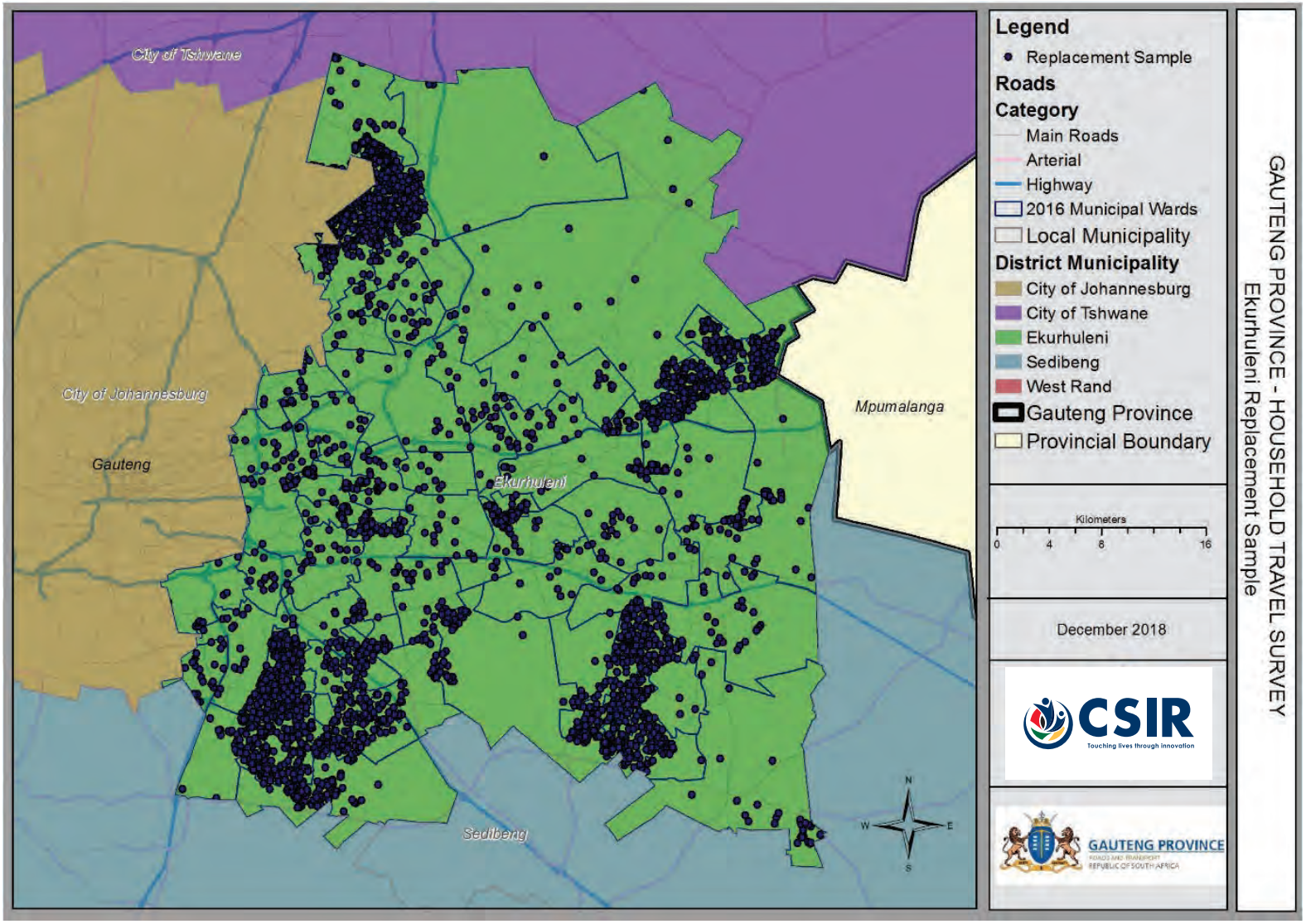

Figure 5: Replacement sample

4 FIELDWORK IMPLEMENTATION

4.1 Questionnaire design

To enable comparisons between the current and the previous surveys and monitor trends, the survey maintained a similar questionnaire, with only minor alterations. These included improving the flow of questions by shifting some around and removing a few irrelevant ones. One of the recommendations based on the experiences of previous surveys was to reduce the time it took to complete an interview. The average time to complete a survey in the past was reported to have been around 45 minutes; the aim was to reduce this time by at least 10 minutes.

Several technical workshops were hosted to refine the methodology of previous surveys and to finalise the questionnaire. The outcome included the decision to use portable devices for data collection instead of paper-based surveys. Much effort went into the design and specifications for this paperless data collection tool, particularly to establish security protocols around the collection and storage of data.

Ultimately the questionnaire was hosted on mobile devices in the form of a web application and was structured to capture information for the following sections:

a) Household characteristics

b) Population characteristics

c) Employment characteristics

d) Trip information

e) Use of and attitude towards public transport services.

4.2 Training of enumerators

The "train-the-trainer" programme was designed to acquaint and equip fieldworkers with the necessary tools to execute a study of this nature. The training sessions involved the trainers, enumerators and survey managers (who were to be responsible for the supervision of enumerators). The trainers equipped the enumerators with the skillset required to achieve the objectives of the GHTS project. The following were the primary training objectives:

a) Understanding of ethical procedures

b) Familiarising enumerators and survey managers with the interview questions and the web application-based survey tool

c) Supply survey managers and the enumerators with necessary information around the objectives of the study to enable them to accurately convey the objectives of the GHTS to household representatives

d) Outline terms and conditions relating to replacement tokens, consent forms, etc.

The outcomes of the training session were implemented through a pilot survey project that comprised 10% of the total sample size.

4.3 Pilot survey sample

The pilot study was conducted primarily to gauge the practicality of the survey methodology adopted, survey instruments selected, digital data collection using the existing telecommunication network, and to determine the resources required to successfully complete the full survey. A similar sampling approach to that of the pilot was adopted in the full survey. The pilot constituted 10% (800 dwelling units) of the main sample allocated to the CoE.

The results of the pre-testing exercise provided valuable insights into several potential challenges that could be encountered during the execution of the main field survey. The issues identified during the pilot were subsequently used to conduct further enumerator training. A detailed summary of the timeframes leading to the main survey execution in CoE is provided in Table 2

Table 2: Project schedule

Activity	Date
Stakeholder inception meeting	5 March 2019
Preparation of devices	6–11 March 2019
Enumerator recruitment	12–15 March 2019
CSIR Train-the-trainer	22 March 2019
Pilot project	30 March–7 April 2019
Main survey	20 May–7 August 2019

4.4 Principal survey sample

A sample size of 8 000 households is consistent with previous surveys. However, a total of 7 213 households successfully participated in this survey.

4.5 Survey method

Data collection took the form of Computer-Assisted Personal Interviews (CAPI) in which the fieldworkers used tablet computers to record the responses of households. The consent to participate in the study was sought from suitable adult members of the households who responded on behalf of all applicable household members. Handicapped people, adults who were unable to participate and child-headed households were excluded from the survey. Trips generated by minors below 6 years of age were also excluded.

Household visits were conducted from Wednesday to Sunday to interview households regarding their travel patterns undertaken from Tuesday to Thursday. A household was expected to be visited three times before it qualified to be replaced by another household in the same region.

The survey was initially planned to start before the official commencement date of 20 May 2019 but unforeseen disruptions during April 2019 delayed the start. These disruptions included political campaigning for the General Elections of 8 May 2019, as well as the winter school holidays that started on 12 June 2019.

Precautionary measures were put in place in case criminals took advantage of the programme and invaded people's premises in the name of the GHTS. Reflector jackets were redesigned with exclusive features to help minimise the possibility of criminal invasions. These reflector jackets were front branded with logos of the relevant stakeholders; namely, the GDRT and the CSIR as well as the name badge of the enumerator. The name badge of the enumerator consisted of an identity photograph of the enumerator, the ID number of the enumerator as well as a Quick Response (QR) code which, when scanned, revealed the contact details of the project manager at the CSIR. The QR code was attached to both the name badge and the reflector jackets separately. On the rear, the reflector jacket was branded with the project name – "Gauteng General Household Travel Survey 2019".

In addition to the aforementioned safety measures, major media campaigns were held through CSIR communications departments as well as other platforms such as radio broadcasts and social media. The aim was to sensitise people about the GHTS and to empower the public on how to authenticate the enumerators.

Consent forms were designed by the CSIR to form part of the ethical compliance for GHTS. During training and workshops, service providers were instructed to only proceed with interviews when consent forms were completed and signed by both parties.

4.6 Survey Challenges

4.6.1 Survey Disruptions

The disruptions of trip patterns caused by school closures and other public holidays necessitated delays in fieldwork activities on several occasions. The school break in June, the Easter holidays and the national and provincial elections that occurred in April and May, respectively, are examples of some of the challenges encountered. Other survey challenges were those associated with enumeration fatigue, unavailability of members of households and refusal to participate (partial or complete).

4.6.2 Technological Challenges

Lack of sufficient Geographic Positioning System (GPS) coverage for some telecommunication network services in some parts of the province presented challenges. The use of live navigation services was required to enable enumeration teams to locate sampled points. However, telecommunication signal coverage in remote areas was at times poor. Most of the low to medium specification mobile devices were found to be problematic in executing digital data collection while high-end specification devices using advanced network efficiency were able to resolve the connectivity challenges.

4.6.3 Non-responsive households

During the planning phase, it was anticipated that the substitution or replacement of households would be necessary for a variety of reasons. These included perceived difficulties in gaining access to gated communities and complexes, where multiple-dwelling units were required to be visited. This was one of the issues identified during the pilot study. Also, refusals and the incapacity of households to participate would necessitate substitution.

The CSIR adopted a set of rules to improve the chances of gaining access to gated communities and complexes; namely, seeking permission to access such communities before field visits with the understanding that should permission not be granted a substitution would be necessary. The substitution of multiple dwelling units in instances where access was not achieved posed significant challenges and delays to fieldwork activities. Frequently, Body Corporates (property management agencies) would deny the enumerators access, citing a variety of reasons for refusals, thus making it impractical to undertake enumeration without consent from the property managers of the sample gated population.

The number of dwelling units in gated communities differed significantly and so it was unlikely that a replacement multiple dwelling unit would be of an exact size to that which it was meant to replace. In occurrences where questionnaires were found to be incomplete, a replacement sample was allocated to substitute the incomplete questionnaire. In certain instances, a replacement was difficult to pursue, and a compromise was reached. A compromise entailed a mutual agreement between the CSIR and field teams to no longer substitute inaccessible households that refused to participate partially or completely and report these as a non-response. Common reasons for replacing households are provided in Table 3.

Table 3: Reasons for household replacement

Reason for replacement	Number of replacements
Selected respondent / Nobody at home after three calls	49 (13%)
Vacant house	13 (3%)
Respondent cannot communicate with interviewer	7 (2%)
Refusal	191 (50%)
Other	124 (32%)
Total	**384 (100%)**

4.7 Stakeholder engagement

To enable fieldworkers to efficiently solicit interviews with the households, relevant procedures were adopted. This included putting into place fieldwork protocols and liaising with relevant stakeholders including community structures (where possible) for increased awareness and to lessen safety and security concerns. Community engagements would have been difficult to facilitate in the absence of municipal representation. The involvement of municipal representatives in the Project Steering Committee (PSC) helped facilitate awareness and in communicating project objectives to ward councillors, communities and stakeholders.

4.8 Data quality control

The validation and verification tool was developed to assist in geo-referencing the visiting points and so maintain control of where interviews were undertaken in the field. This tool enabled the data management team to detect possible discrepancies in the field; for example, correlating enumeration points to enumerator location when interviewing members within different households.

The analysis of individual trip information was an extremely tedious and challenging task. The interview trip data required a combination of automation and manual data cleaning methods to enable correction and conversion, where practical, of text descriptions from discrete destination responses; that is, geocoding of destination addresses to Geographic Information Systems (GIS) compatible format (coordinates).

4.8.1 Weighting and analysis

As the whole planned sample was not able to be surveyed, the planned design weights would not be directly applicable during the analysis since they were calculated in proportion to the overall sample. To compensate for a smaller number of households than the required sample sizes being visited in certain areas, particularly those along the major transport corridors, a decision was made to include the pilot data in the main survey.

A pilot sample of approximately 800 households was implemented. Since no changes were made to the questionnaire after the pilot, all the fully completed pilot survey interviews were used in the data analysis along with the main survey interviews. Hence, it was possible to incorporate the pilot sample into the main sample for analysis.

The weights had to be adjusted because the households selected in the pilot phase had design weights that differed from the design weights of the main survey. Therefore, post-stratification adjustments were built, including using auxiliary data from the 2016 Community Survey (CS) survey (Statistics South Africa, 2016).

The CS is one of the largest nationwide surveys conducted between census periods (2011 and 2021) to provide updated information on population and household characteristics at the municipal level (the lowest administrative dissemination layer). Certain variables were adjusted using weights based on known population estimates (Lavallée & Beaumont, 2015) from CS 2016; while in cases where no such information was available, extrapolation by adjusting the sample results was done. For this task, the estimates were produced using the sampling frame data (e.g. including the total number of households from the lowest spatial resolution (main places or sub-regions) and aggregating the results to the desired spatial layers.

The sampling frame contained geographic information from the sub-place level, and this information had been updated to include growth areas and recent developments that have occurred since the 2011 census dwelling frame and also made use of a variety of data sources to provide the 2018 status quo. Therefore, the analysis contains two sets of results, those that were weighted by CS 2016 and those extrapolated from the sample of the results to match the current (2018) status.

The results estimated from smaller samples may be susceptible to large variances and so should be used cautiously, particularly for lower spatial resolutions.

5 FINDINGS: HOUSEHOLD CHARACTERISTICS

To maintain consistency with the previous surveys, some of the CoE results are presented in terms of sub-regions as depicted in Figure 6. However, the datasets can be spatially configured to other forms of sub-regions.

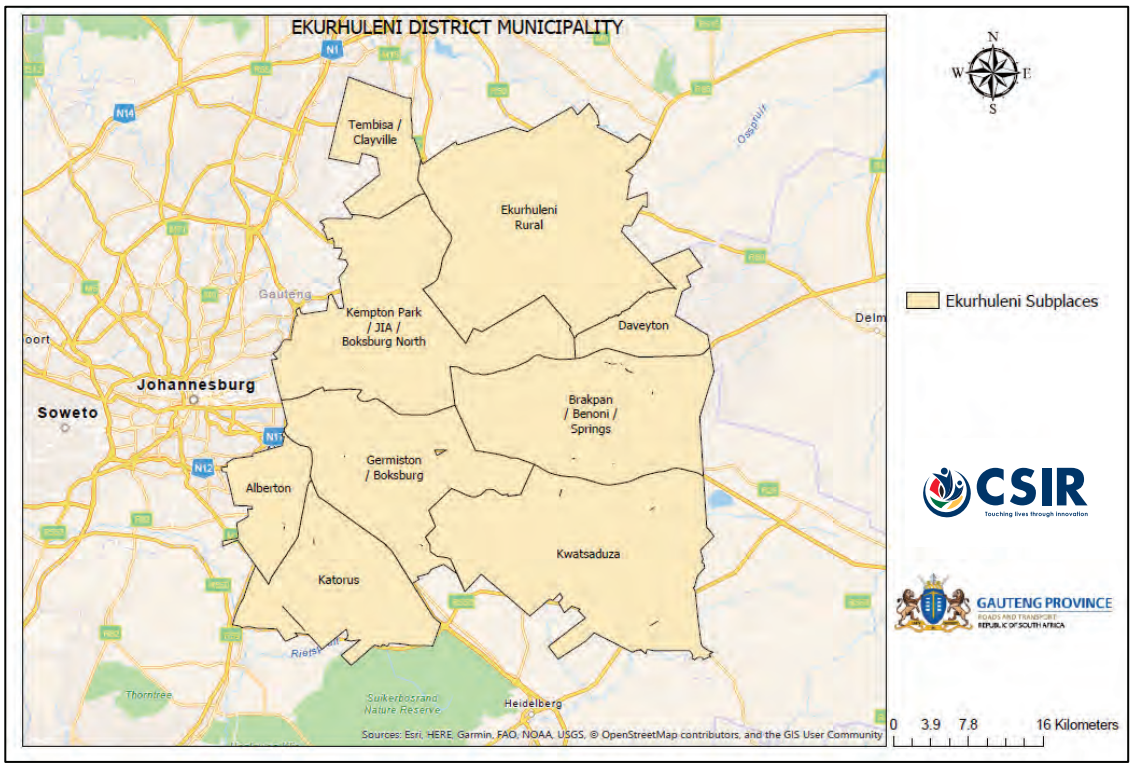

Figure 6: City of Ekurhuleni sub-regions

Relative to a target sample of 8 000 households, 7 213 households successfully participated in the survey, which is equivalent to a 90% response rate. The response rate is relatively high compared to some of the key national surveys carried out by Statistics South Africa. For example, the 2020 national household travel survey in Ekurhuleni that was carried out by Statistics South Africa could only achieve a response rate of 87%[2]. Similarly, the 2018 StatsSA General Household Survey in the City of Ekurhuleni had a response rate of 81.4%[3]. The main reason for non-responses is a refusal to participate in the survey.

Table 4 shows the distribution of both the sampled and weighted dwelling unit types in the CoE. Close to 64% of households in the City of Ekurhuleni lived in stand-alone brick houses. Informal dwellings accounted for about 19% of households, and formal backyard dwellings constituted nearly 10% of households. The proportion of informal dwellings is significantly high, implying also that travel from informal dwellings cannot be ignored for transport planning purposes. The situation

[2] http://www.statssa.gov.za/publications/P0320/P03202020.pdf
[3] http://www.statssa.gov.za/publications/P0318/P03182018.pdf

warrants that the City develops appropriate methods for providing transport services in less formal settlements.

Table 4: Main types of dwelling units in the City of Ekurhuleni

Dwelling type	No. of households sampled	% of households sampled	Weighted number of households	Weighted % of households
Stand-alone brick house	5 574	78.2	828 661	63.8
Shack dwelling	617	8.7	242 499	18.7
Formal dwelling in backyard	461	6.5	133 782	10.3
Flat or apartment in block of flats	82	1.2	44 580	3.4
Cluster house in complex	30	0.4	14 967	1.2
Townhouse	255	3.6	17 062	1.3
Semi-detached house	64	0.9	5 268	0.4
Other	17	0.2	9 222	0.7
Traditional dwelling/hut	18	0.3	2 248	0.2
Caravan or tent	6	0.1	1 112	0.1
Total	**7 124**	**100**	**1 299 401**	**100**

Table 5 shows the distribution of the number of persons per household. Over 82% of households had four or fewer persons; with 53% of households only having one or two members. The weighted household size is 2.86 persons per household.

Table 5: Household size for CoE

Number of persons in household	Number of households sampled	% Households sampled	Weighted number of households	Weighted % households
1	2 992	42.0	392 212	30.2
2	2 045	28.7	291 746	22.5
3	1 148	16.1	209 861	16.1
4	578	8.1	174 797	13.5
5	230	3.2	108 510	8.4
6	128	1.8	56 895	4.4
7	1	0.0	29 271	2.3
8	1	0.0	16 201	1.2
9	0	0.0	8 992	0.7
10+	1	0.0	11 005	0.8
Total	**7 124**	**100.0%**	**1 299 490**	**100**

Table 6 depicts the income distribution of households in the CoE. Over 3% of the households indicated that they had no source of income, 78% disclosed some level of income and 18.5% either refused to disclose their income or did not know the total household income. As has been the case with other surveys, disclosed household income is becoming a less reliable statistic.

Table 6: Household Income distribution

Income range	Number of households (sample)	Weighted number of households	% Households
0	263	42 247	3.2
R1 - R200	21	3 406	0.3
R201 - R500	194	31 920	2.4
R501 - R1000	370	63 138	4.7
R1 001 - R1 500	626	112 685	8.5
R1 501 - R2 500	844	149 034	11.2
R2 501 - R3 500	603	111 271	8.4
R3 501 - R4 500	586	113 312	8.5
R4 501 - R6 000	561	107 459	8.1
R6 001 - R8 000	509	99 361	7.5
R8 001 - R11 000	396	78 813	5.9
R11 001 - R16 000	334	72 328	5.4
R16 001 - R30 000	296	69 631	5.2
R30 001 or more	121	30 612	2.3
Don't know	203	33 348	2.5
Refused to answer	1 197	213 052	16.0
Total	**7 124**	**1 331 618**	**100.0**

Table 7 presents the median monthly household income by sub-region. The overall median household income is R4 045. The highest median income is in Alberton, followed closely by Kempton Park. The Katorus sub-region has the lowest median household income. Other sub-regions with low average household incomes are Daveyton, Kwatsaduza, and Tembisa/Clayville.

Table 7: Median monthly household income by sub-region

Municipality	Sub-regions	Number of households	Percentage	Median monthly income (Rand)
Ekurhuleni	Alberton	42 218	0.8	6 215
	Brakpan / Benoni / Springs	120 744	2.3	3 811
	Daveyton	81 171	1.5	2 676
	Ekurhuleni Rural	86 749	1.6	4 322
	Germiston / Boksburg	189 984	3.5	5 476
	Katorus	299 022	5.6	2 324
	Kempton Park / JIA / Boksburg North	218 393	4.1	6 001
	Kwatsaduza	180 994	3.4	2 868
	Tembisa / Clayville	189 449	3.5	2 714
	Total	**156 525**	**2.92**	**4 045**

Table 8 shows the relationship between monthly household income and household car access. Car ownership or access to a car remains highly correlated with income. It is notable, however, that some higher-income households do not have access to a car, implying some dependence on

public transport provision. Households refusing to disclose their income have 0.5 cars per household, implying that these households are likely to have a middle-income status. The CoE household car access of 0.44 cars per household is significantly higher than the national figure of 0.31 and the average national figure for metropolitan municipalities in South Africa of 0.398[4].

Table 8: Car ownership by income and average car ownership per household

Income range	Weighted number of households	Weighted Number of households with access to a car	% of households per income group with access to a car	Average number of cars per household	Weighted estimated number of cars
Nothing	5 895	686	11.6	0.29	19 058
R1 - R200	1 646	58	3.5	0.05	618
R201 - R500	42 507	5 621	13.2	0.08	6 261
R501 - R1 000	84 045	15 525	18.5	0.08	16 330
R1 001 - R1 500	37 019	5 363	14.5	0.26	30 681
R1 501 - R2 500	92 356	17 409	18.8	0.22	52 040
R2 501 - R3 500	146 862	39 095	26.6	0.26	45 470
R3 501 - R4 500	149 660	45 141	30.2	0.55	53 517
R4 501 - R6 000	142 102	45 635	32.1	0.43	55 839
R6 001 - R8 000	131 186	54 381	41.5	0.49	67 558
R8 001 - R11 000	103 384	58 561	56.6	0.74	74 426
R11 001 - R16 000	16 042	10 552	65.8	0.96	81 970
R16 001 - R30 000	9 717	6 187	63.7	1.17	98 364
R30 001 or more	5 141	3 146	61.2	1.82	57 415
Don't know	44 170	19 553	44.3	0.55	23 764
Refuse to answer	287 758	99 507	34.6	0.50	137 562
Total	**1 299 490**	**426 419**	**33.5**	**0.44**	**820 872**

Many people in the CoE do not hold a driver's licence. Table 9 shows that 41% of households had no members with driving licences. About 38% of households had one member with a driver's licence and about 21% of households had at least two members with a driver's licence.

[4] http://www.statssa.gov.za/publications/P0318/P03182019.pdf

Table 9: Number of licensed drivers in a household

Number of licenced drivers in household	Weighted number of households	Percentage of households
0	547 862	41.1
1	499 076	37.5
2	208 229	15.6
3	53 085	4.0
4+	23 365	1.8
Total	**1 331 618**	**100.0**

Table 10 shows the distribution of household-owned vehicles in the CoE (excluding motorcycles). About 71% of households owned no vehicle. Notwithstanding an above average household car ownership in comparison to the country as a whole, the majority of households in the CoE do not have access to a car and are therefore dependent on public transport.

Table 10: Vehicle ownership per household

Number of vehicles owned by households	Weighted number of households	Percentage of households
0	946 937	71.1
1	272 529	20.5
2	91 778	6.9
3	14 580	1.1
4+	5 795	0.4
Total	**1 331 618**	**100.0**

Table 11 represents the distribution of employer-owned vehicles within the CoE households. About 98% of the households in the CoE did not have access to employer-owned vehicles, showing that where households have access to a vehicle it is more likely to be privately owned.

Table 11: Employer-owned vehicles per household

Number of employer-owned vehicles	Weighted number of households	Percentage of households
0	1 306 758	98.1
1	21 683	1.6
2	2 056	0.2
3	374	0.0
4+	748	0.1
Total	**1 331 618**	**100.0**

Table 12 presents the distribution of vehicle access and licensed drivers across sub-regions. In line with the positively correlated relationship between household income and access to a private vehicle, sub-regions with higher average household incomes are likely to have higher levels of private car access – these include Alberton and Kempton Park.

Table 12: Vehicle distribution by sub-region

Municipality	Sub-region	No. of households	Percentage of households with car access	Average car access per household	Average number of licenced drivers per household
Ekurhuleni	Alberton	42 218	0.8	0.78	0.18
	Brakpan / Benoni / Springs	120 744	2.3	0.44	0.13
	Daveyton	81 171	1.5	0.25	0.15
	Ekurhuleni Rural	86 749	1.6	0.43	0.15
	Germiston / Boksburg	189 984	3.5	0.52	0.14
	Katorus	299 022	5.6	0.33	0.12
	Kempton Park / JIA / Boksburg North	218 393	4.1	0.63	0.2
	Kwatsaduza	180 994	3.4	0.31	0.1
	Tembisa / Clayville	189 449	3.5	0.52	0.21
Total		**1 408 724**	**26.30**	**0.47**	**0.15**

6 FINDINGS: POPULATION CHARACTERISTICS

Figure 7 shows the age distribution for the CoE in five-year intervals. The City is characterised by a population with a large proportion of young people. Younger people tend to be more mobile, implying that the City should gear itself to providing demand-responsive services. Population representation in the age groups 0–5 and 21–40 years is particularly high, confirming the need for demand-responsive transport services, given the generally high mobility rates of younger populations.

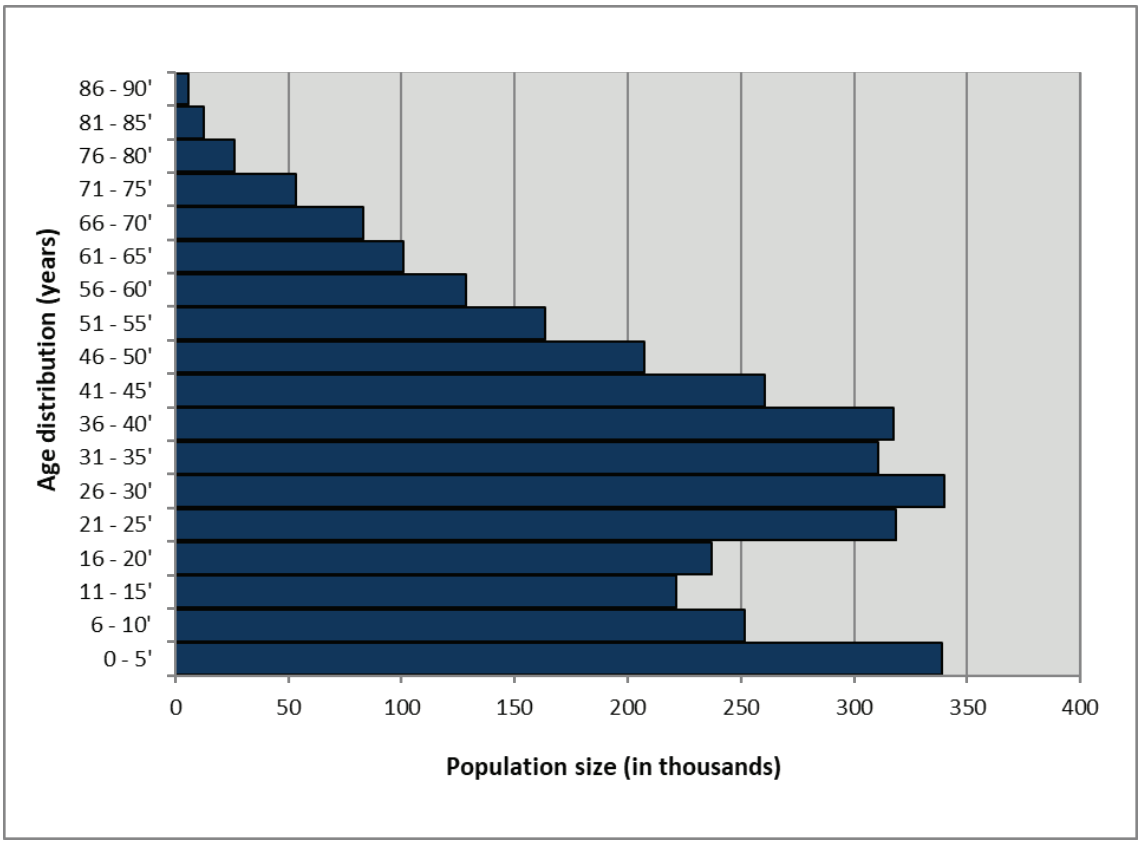

Figure 7: Age distribution of the population in the City of Ekurhuleni

Table 13 presents the profile of disabilities and physical difficulties reported by the respondents in the CoE survey. A total number of 43 877 persons, representing 1.3% of the population in the CoE, live with some form of disability or some form of mobility constraint. The predominant form of impairment was related to mobility where the use of crutches was necessary for about 0.29% of the population.

Table 13: Persons living with mobility constraints

Disability or Difficulty	Weighted number of people	% Population
Climbing stairs	2 293	0.07
Hearing	7 985	0.24
Mentally handicapped	3 637	0.11
Needs wheelchair	6 324	0.19
Other	5 850	0.17
Sight impaired or blind	5 376	0.16
Speech impairment	1 502	0.04
Travels with a baby	1 186	0.04
Uses crutches or stick	9 724	0.29
No mobility constraint	3 335 229	98.70
Total	**3 379 104**	**100.00**

Table 14 presents the profile of occupations for CoE household members. About 19% were in full-time employment, while about 4% were employed on a part-time basis. The percentage of unemployed people who wished to work was reported as being just over 28%. The number of unemployed people is significantly high warranting an assessment in the CoE's transport plan on how they travel. Based on these numbers, the CoE could also decide the budget required to support concessionary fares, if required.

Table 14: Occupational status

Occupational Status	Weighted number of Persons	Percentage
Child staying at home	120 168	3.6
Fulltime worker	655 762	19.4
Housewife or househusband	140 202	4.1
Learner: High school learner	110 982	3.3
Learner: Preschool child	23 195	0.7
Learner: Primary school	122 560	3.6
Learner: University or College student	51 100	1.5
Other	226 617	6.7
Part-time worker	137 770	4.1
Pensioner or retired	373 811	11.1
Unable to work handicapped or ill	73 362	2.2
Unemployed would like to work	953 865	28.2
Unspecified	389 710	11.5
Total	**3 379 104**	**100.0**

Table 15 categorises the CoE population in terms of the highest level of education attained. Just over 44% of the population had completed high school, while only about 20% of the population had some tertiary education qualification.

Table 15: Educational level attained

Educational level	Weighted number of people	Percentage of population
None	191 254	5.6
Some primary school	249 598	7.3
Completed primary school	149 133	4.4
Some high school	614 460	18.0
Completed high school	1 500 433	43.8
Diploma with no matric	40 129	1.2
Diploma with matric	270 374	7.9
University or college	407 553	11.9
Total	**3 422 933**	**100.0**

Figure 8 compares the cumulative distributions of household expenditure on public transport between the CoE and Gauteng province. On average, households in the CoE spend relatively more on public transport. Significantly, about 66% of households in the CoE spend more than 10% of their income on public transport, the highest in the province.

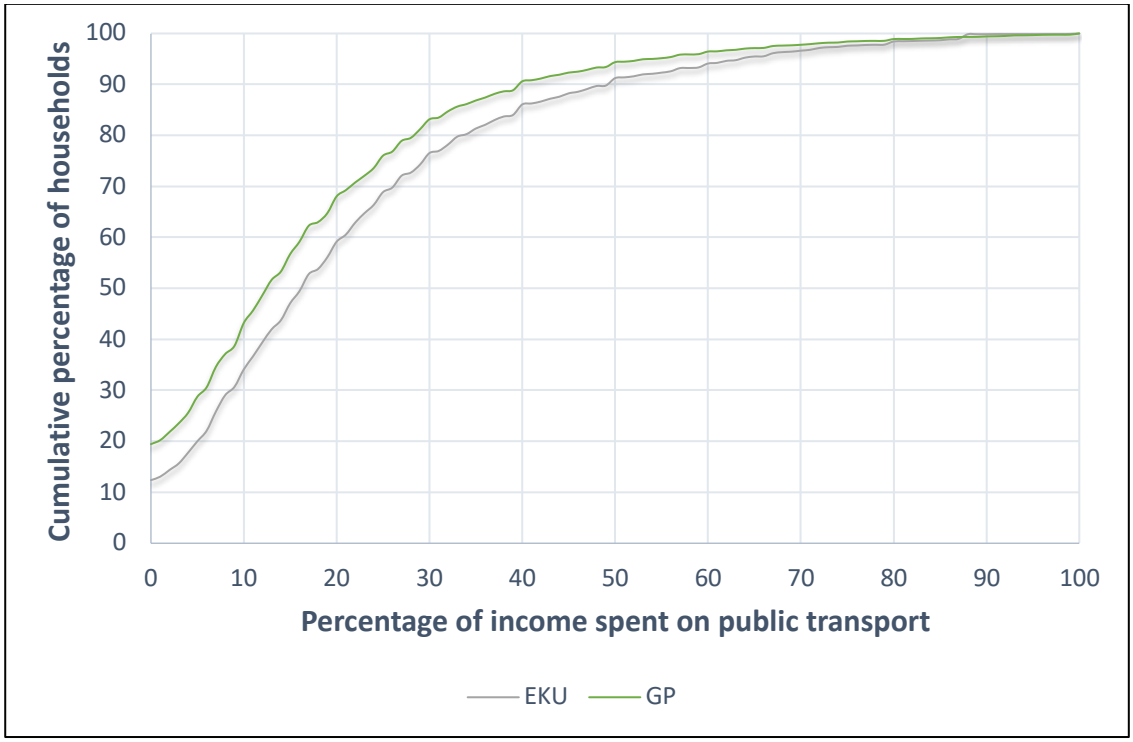

Figure 8: Comparison of cumulative distributions of household expenditure on public transport

Table 16 shows the weighted gender distribution in the CoE and Gauteng provinces. Generally, the gender distribution is similar for the province and the City, with marginally more males than females in the CoE. Travel patterns for males and females tend to be different. Therefore, using the detailed survey datasets, the CoE will be in a position to understand the associated planning implications.

Table 16: Gender split

Area	Male	Female	Total
City of Ekurhuleni	51.4%	48.6%	100%
Gauteng Province	50.4%	49.6%	100%

Table 17 shows the population of CoE and Gauteng in terms of population groups. Blacks / Africans comprise 82% of the population, followed by whites at 14%. For historical reasons, the population groups are generally correlated with affluence.

Table 17: Population groups

Area	Black/African	White	Coloured	Indian/Asian	Total
City of Ekurhuleni	82.0%	14.0%	2.0%	2.0%	100%
Gauteng	80.4%	13.6%	3.3%	2.7%	100%

More than anything, the above population statistics are useful for confirming the reliability of the survey sample. Often these variables need to be used in conjunction with others to offer a better explanation of travel behaviour.

7 FINDINGS: EMPLOYMENT CHARACTERISTICS

Table 18 shows the distribution of the number of full-time employed persons per household. About 66% of the households do not contain any full-time employed person. The design of services, including fare policy, should recognise that the majority of the population is not fully employed.

Table 18: Number of full-time employed persons

Number of full-time employed persons per household	Weighted number of households	% Of households
0	872 680	65.5
1	385 034	28.9
2	66 532	5.0
3	6 401	0.5
4+	969	0.1
Total	**1 331 618**	**100.0**

Table 19 illustrates the distribution of employment across the CoE. Overall, the ratio of employment to unemployment is 43:57. Sub-regions with high unemployment, such as Daveyton, may require attention in the form of subsidised transport services. Other interventions that include directing employment opportunities to such areas would also provide some relief.

Table 19: Employment status by sub-region

Municipality	Sub-region	Number of households	% Employed	% Unemployed
Ekurhuleni	Alberton	42 218	61	39
	Brakpan / Benoni / Springs	120 744	37	63
	Daveyton	81 171	24	76
	Ekurhuleni Rural	86 749	38	62
	Germiston / Boksburg	189 984	56	44
	Katorus	299 022	35	65
	Kempton Park / JIA / Boksburg North	218 393	55	45
	Kwatsaduza	180 994	43	57
	Tembisa / Clayville	189 449	42	58
Total		**1 408 724**	**43**	**57**

Table 20 shows the number of days workers in the CoE travel to work by household income. About 65% of the workers worked five days a week. However, almost a fourth of the workers reported working more than five days a week. This observation is important for fare policy formulation.

Table 20: Days worked per week by household monthly income

Household income	Weighted number of trips	0	1	2	3	4	5	6	7
Nothing	7 488	0.0%	0.0%	0.0%	4.3%	13.3%	61.4%	14.8%	6.2%
R1 - R200	582	0.0%	0.0%	0.0%	0.0%	46.4%	0.0%	0.0%	53.6%
R201 - R500	1 382	0.0%	0.0%	0.0%	13.3%	13.3%	63.5%	0.0%	9.9%
R501 - R1 000	7 735	0.0%	5.9%	7.6%	38.0%	8.8%	27.2%	2.3%	10.4%
R1 001 - R1 500	6 757	0.0%	0.0%	0.0%	12.7%	6.6%	54.2%	8.7%	17.8%
R1 501 - R2 500	21 593	0.0%	0.0%	0.0%	4.4%	8.1%	63.2%	19.6%	4.8%
R2 501 - R3 500	39 207	0.9%	0.0%	0.4%	6.4%	14.2%	50.9%	15.8%	11.4%
R3 501 - R4 500	50 170	0.0%	0.0%	0.9%	4.2%	6.1%	59.8%	24.3%	4.6%
R4 501 - R6 000	64 996	0.0%	0.0%	1.2%	4.1%	6.1%	67.5%	15.2%	5.9%
R6 001 - R8 000	66 734	0.0%	0.0%	0.0%	1.8%	8.5%	67.1%	19.8%	2.7%
R8 001 - R11 000	67 814	0.0%	0.0%	0.9%	2.4%	6.6%	70.6%	17.2%	2.3%
R11 001 - R16 000	60 992	0.0%	0.0%	0.0%	0.7%	5.3%	71.4%	21.2%	1.4%
R16 001 - R30 000	59 299	0.0%	0.0%	0.0%	1.0%	6.6%	66.5%	23.5%	2.4%
R30 001 or more	22 510	0.0%	0.0%	0.0%	0.0%	12.1%	50.4%	30.2%	7.3%
Don't know	21 012	0.0%	0.0%	0.0%	13.6%	7.1%	53.8%	12.5%	13.0%
Refuse to answer	103 718	0.0%	0.2%	0.8%	2.9%	4.8%	69.0%	17.4%	4.9%
Total	**601 988**	**0.1%**	**0.1%**	**0.6%**	**3.7%**	**7.2%**	**64.5%**	**18.9%**	**4.9%**

8 FINDINGS: TRIP INFORMATION

The morning peak period travel refers to a trip that starts between 06:00 and 09:00. Table 21 presents the estimated number of morning peak trips by purpose. Work trips accounted for 39% of total morning peak period trips, and education-related trips for about 8%. It is, however, possible that education trips were underreported by households, resulting from ethical considerations associated with reporting on minors.

Table 21: Morning peak trips by purpose

Trip purpose	Number of peak trips (sample)	Weighted number of peak trips	Weight of peak trips by purpose	Percentage of trips
Drop or pickup someone	42	0.9	12 190	1
Educational	298	6.5	86 491	8
Looking for work	193	4.2	56 016	5
Medical purposes	328	7.1	95 198	9
Other	205	4.5	59 499	6
Recreational	27	0.6	7 836	1
Shopping	367	8.0	106 518	10
To go home	452	9.9	131 188	13
Traditional healer visit	25	0.5	7 256	1
Visiting friend or relative	131	2.9	38 021	4
Welfare offices	54	1.2	15 673	1
Work at usual workplace	1 223	26.7	354 963	34
Work somewhere else	182	4.0	52 824	5
Worship	81	1.8	23 509	2
Total	**3 608**	**78.6**	**1 047 183**	**100**

Table 22 presents the mode used during the morning peak. Walking all the way is the predominant mode of travel, followed by car as driver and minibus taxi passenger. Gautrain, cycling and motorcycle are some of the least used modes. The reasons for walking rather than cycling require further investigation.

Table 22: Morning peak trip by mode

Mode of transport	Number of peak trips (sample)	Weighted number of peak trips	Weight of peak trips by purpose	Percentage of trips
Bicycle	14	0.3	4 063	0
Bus	65	1.4	18 866	2
Car as a driver	799	17.4	231 901	22
Car as a passenger	166	3.6	48 180	5
Commuter or minibus taxi	731	15.9	212 165	21
Company transport	22	0.5	6 385	1
Gautrain	3	0.1	871	0
Gautrain Bus	5	0.1	1 451	0
Lift club driver	17	0.4	4 934	0
Lift club passenger	23	0.5	6 676	1

Mode of transport	Number of peak trips (sample)	Weighted number of peak trips	Weight of peak trips by purpose	Percentage of trips
Metered taxi	327	7.1	94 908	9
Motorcycle	8	0.2	2 322	0
Other	135	2.9	39 182	4
School bus	53	1.2	15 383	1
Train	59	1.3	17 124	2
Walk all the way	1 130	24.6	327 970	32
Total	**3 560**	**77.6**	**1 033 252**	**100**

Table 23 shows the average travel time for peak-period trips. The weighted average travel time is 57 minutes. Generally, CoE residents tend to experience long travel times. However, the long travel time by Gautrain is an outlier with a small sample size. A concern is walking times averaging as long as one hour.

Table 23: Average total travel time for peak-period trips (unidirectional)

Mode of transport	% peak trips	Average travel time (hours)
Bicycle	0.6	01:20
Bus	1.0	02:28
Car as a driver	27.3	00:54
Car as a passenger	4.5	00:57
Commuter or minibus taxi	17.6	00:53
Company transport	0.8	01:19
Gautrain	0.0	04:00
Gautrain bus	0.0	00:30
Lift club driver	0.2	01:24
Lift club passenger	0.7	01:30
Metered taxi	7.0	01:01
Motorcycle	0.1	00:30
Other	5.5	00:34
School bus	1.5	00:46
Train	0.8	01:44
Walk all the way	32.4	00:59
Total	**100.0%**	**00:57**

Table 24 shows the distribution of departure times for morning peak-period trips by trip purpose. A third of trips were made between 07:00 and 07:59 and a further third between 08:00 and 09:00. While most travel is mainly for work purposes, trips after 08:00 are mostly for shopping purposes.

Table 24: Departure times by trip purpose

Trip purpose	Number of trips (sample)	% of Peak trips	Weighted number of trips	Before 06:00	06:00 – 06:59	07:00 – 07:59	08:00 – 09:00
Drop or pickup someone	49	1.1	14 222	0.4	1.2	1.2	1.2
Educational	306	6.7	88 813	1.4	7.8	12.5	2.1
Looking for work	237	5.2	68 787	7.5	6.0	4.6	4.6
Medical purposes	364	7.9	105 647	3.7	9.1	8.8	8.3
Other	387	8.4	112 323	6.1	5.8	8.0	12.6
Recreational	34	0.7	9 868	0.6	0.4	0.8	1.1
Shopping	495	10.8	143 668	3.9	4.4	6.8	23.6
To go home	555	12.1	161 083	9.6	10.2	13.2	14.4
Traditional healer visit	27	0.6	7 836	0.2	0.3	0.7	0.9
Visiting friend or relative	181	3.9	52 533	3.9	1.7	3.4	6.7
Welfare offices	63	1.4	18 285	1.0	1.2	1.6	1.6
Work at usual workplace	1 448	31.6	420 267	50.8	45.3	31.1	16.1
Work somewhere else	223	4.9	64 723	10.4	5.5	4.9	2.6
Worship	109	2.4	31 636	0.6	1.2	2.4	4.2
Total	**4 478**	**97.6**	**1 299 692**	**11.4**	**25.2**	**32.6**	**30.8**

Table 25 shows morning peak-period departure times according to household income. Most travel is from middle-income households who tend to travel relatively earlier.

Table 25: Trip departure times by income category

Household income	Number of trips (sample)	% of peak trips	Weighted number of trips	Before 06:00	06:00 – 06:59	07:00 – 07:59	08:00 – 09:00
0	126	2.7	36 570	1.2	1.1	2.7	4.9
R1 - R200	5	0.1	1 451	0.2	0.3	0.1	0.0
R201 - R500	101	2.2	29 314	2.4	2.0	2.4	2.3
R501 - R1 000	190	4.1	55 145	2.0	3.5	4.5	5.4
R1 001 - R1 500	366	8.0	106 228	3.5	6.6	8.1	11.2
R1 501 - R2 500	488	10.6	141 637	7.1	10.6	10.5	12.9
R2 501 - R3 500	364	7.9	105 647	7.3	7.4	7.5	9.7
R3 501 - R4 500	364	7.9	105 647	10.8	8.2	6.8	8.4
R4 501 - R6 000	358	7.8	103 906	13.3	8.1	8.1	5.8
R6 001 - R8 000	343	7.5	99 552	12.2	9.5	7.5	4.7
R8 001 - R11 000	297	6.5	86 201	9.2	9.1	6.5	3.8
R11 001 - R16 000	242	5.3	70 238	8.4	6.6	5.4	3.3
R16 001 - R30 000	200	4.4	58 048	5.5	5.8	5.1	2.3
R30 001 or More	81	1.8	23 509	2.0	1.6	2.2	1.5
Don't know	151	3.3	43 826	4.9	3.5	3.2	2.9
Refused to answer	802	17.5	232 772	10.2	16.1	19.2	20.8
Total	**4 478**	**97.6**	**1 299 692**	**11.4**	**25.2**	**32.6**	**30.8**

Table 26 shows the average number of trips – for various purposes – that were made during the morning peak period per household and by income group.

It is worth noting that households that reported zero income made a relatively high number of trips.

Household members who refused to disclose their income made a relatively high number of trips – a further indication that they are likely to be in higher-income categories. While trip underreporting appears prevalent, the reduced trip rate at an income above R11 000 is especially anomalous.

Table 26: Number of daily trips per household by income group (unidirectional)

Household income	Average number of trips	Going home	Going to school	Going to work	Shopping	Other
Don't know	2.64	0.59	1.05	1.27	0.6	0.23
Nothing	0.62	0.17	1.5	0.83	0.36	0.22
R1 - R200	0.81	0.64	1.81	1.0	1.0	0.06
R201 - R500	0.89	0.64	2.1	1.02	0.48	0.24
R501 - R1 000	0.98	0.64	2.44	1.04	0.56	0.24
R1 001 - R1 500	0.76	0.47	2	0.62	0.27	0.43
R1 501 - R2 500	0.88	0.64	2.09	0.83	0.49	0.36
R2 501 - R3 500	0.81	0.63	1.69	0.87	0.56	0.28
R3 501 - R4 500	0.82	0.81	1.79	0.8	0.5	0.21
R4 501 - R6 000	0.91	0.78	2.11	0.81	0.69	0.18
R6 001 - R8 000	1.1	0.72	3.17	0.91	0.54	0.16
R8 001 - R11 000	2.13	1.22	7.5	0.95	0.74	0.24
R11 001 - R16 000	1.66	1.5	5.0	0.89	0.75	0.14
R16 001 - R30 000	1.49	1.2	4.0	0.93	1.2	0.1
R30 001 or more	1.34	1.5	3.20	0.89	0.5	0.16
Refused to answer	1.17	0.91	2.94	1.03	0.7	0.27
Average number of trips	**1.19**	**0.82**	**2.77**	**0.92**	**0.62**	**0.22**

Table 27 shows the proportion of morning peak-period trips by trip purpose. A large proportion of trips in the CoE were undertaken for work purposes.

Shopping related trips are also high for the CoE. A further investigation into the reasons for the trip split anomaly in the COE is warranted. The anomaly relates particularly to the unusually low number of educational trips.

Table 27: Morning peak trips by purpose

Trip purpose	Number of peak trips (sample)	% Of weighted peak trips	Weighted number of peak trips
Work at usual workplace	1 223	26.7	354 963
To go home	452	9.9	131 188
Shopping	367	8	106 518
Medical purposes	328	7.1	95 198
Educational	298	6.5	86 491
Other	205	4.5	59 499
Looking for work	193	4.2	56 016
Work somewhere else	182	4	52 824
Visiting friend or relative	131	2.9	38 021
Worship	81	1.8	23 509
Welfare offices	54	1.2	15 673
Drop or pickup someone	42	0.9	12 190
Recreational	27	0.6	7 836
Traditional healer visit	25	0.5	7 256
Total	**3 608**	**78.6**	**1 047 183**

Peak period trip making by trip purpose is differentiated by transport mode in Table 28. The distribution indicated of trips in CoE appears generally anomalous especially in relation to low education trips being reported and warrants a more detailed investigation.

Table 28: % Modal split distribution according to travel purpose

Mode of travel according to purpose of trip	Bicycle	Bus	Car as a driver	Car as a passenger	Commuter or minibus taxi	Company transport	Lift club driver	Lift club passenger	Metered taxi	Motorcycle	Other	School bus	Taxi	Train	Walk all the way	% Total
Drop or pickup someone	0	0	3	2	0	1	10	0	0	0	0	0	0	0	3	**2**
Educational	0	5	1	3	3	1	0	7	4	33	5	87	0	0	10	**6**
Looking for work	8	0	1	9	8	0	0	0	3	0	4	0	0	0	3	**4**
Medical purposes	19	0	5	18	6	0	10	2	5	0	7	0	0	0	10	**8**
Other	8	6	8	9	5	1	0	2	10	0	25	1	0	0	9	**9**
Recreational	4	0	1	1	0	0	0	0	1	0	2	0	0	0	1	**1**
Shopping	8	3	21	21	20	0	10	2	20	33	13	1	25	14	12	**16**
To go home	8	8	7	5	14	16	10	9	25	0	9	9	13	0	13	**12**
Traditional healer visit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Visiting friend or relative	12	3	4	6	3	0	0	0	7	0	3	1	13	9	17	**9**
Welfare offices	4	0	0	1	2	0	0	0	0	0	0	0	13	0	1	**1**
Work at usual work place	23	77	44	16	34	78	60	74	17	33	26	1	25	27	14	**28**
Work somewhere else	4	0	3	2	3	2	0	0	1	0	2	0	0	0	2	**2**
Worship	4	0	4	9	2	0	0	2	7	0	4	0	13	0	5	**4**
% Total	**1**	**1**	**24**	**8**	**18**	**2**	**0**	**1**	**5**	**0**	**5**	**2**	**0**	**0**	**35**	**100**

Table 29 shows the average walking times of users of public transport to access their first mode of public transport and to reach their final destination during the morning peak period by transport mode.

At 23 minutes and 19 minutes, respectively for the start and trip end walking times, the average access times are particularly high in the CoE. Albeit with a small sample size, Gautrain had the longest access times in CoE.

Reasons for the high travel times in Ekurhuleni warrant a more detailed investigation.

Table 29: Walking time to and from public transport by transport mode

Mode of transport	Weight of peak trips	Average walking time at start (min)	Average walking time from trip end to destination (min)
Bus	25 541	26.5	24.4
Commuter or minibus taxi	334 646	12.6	11.6
Gautrain	1 161	38.8	29.0
Gautrain bus	1 161	17.5	10.5
Metered taxi	152 666	18.3	18.3
Train	27 282	24.2	22.0
Total	**542 457**	**23.0**	**19.3**

Table 30 shows the average walking time of users of public transport to access their first mode of public transport and to reach their final destination during the morning peak period by income group (limited to records where all information was provided).

Lower-income households tend to have longer access times. Households with monthly incomes above R30 000 have the lowest access times.

Table 30: Walking time to access public transport according to household income

Household monthly income	Estimated total number of trips	% trips	Average walking time at trip start (min)	Average walking time from trip end (min)
Don't know	42 652	9.1%	9.4	8.0
Nothing	6 528	1.4%	8.3	8.3
R1 - R200	218	0.0%	30.0	30.0
R201 - R500	1 958	0.4%	16.7	17.2
R501 - R1000	6 964	1.5%	12.2	16.5
R1001 - R1500	20 891	4.4%	12.4	19.4
R1501 - R2500	29 813	6.3%	14.5	18.0
R2501 - R3500	38 517	8.2%	13.5	13.4
R3501 - R4500	53 532	11.4%	13.3	11.7
R4501 - R6000	60 931	13.0%	12.8	10.6
R6001 - R8000	45 481	9.7%	13.2	11.2
R8001 - R11 000	24 808	5.3%	12.1	9.5

Household monthly income	Estimated total number of trips	% trips	Average walking time at trip start (min)	Average walking time from trip end (min)
R11 001 - R16 000	15 886	3.4%	11.0	10.8
R16 001 - R30 000	4 787	1.0%	13.2	12.7
R30 001 or More	653	0.1%	5.3	4.0
Refused to answer	116 422	24.8%	10.1	9.3
Total	**470 039**	**100.0%**	**13.0**	**13.2**

Table 31 shows morning peak period access times for education trips by transport mode at the trip start and trip end. Trips for educational purposes have average access times of 12.7 minutes at the trip start and 11.8 minutes at the trip end. Train users have the longest access times, followed closely by bus users.

Table 31: Walking time for peak-period trips for educational purposes according to mode of travel

Public transport mode	Weighted number of trips	% trips	Walking time to trip start (min)	Walking time from trip end to destination (min)
Bus	1 995	15.4	15.1	18.6
Commuter or minibus taxi	1 473	11.4	12.0	10.7
Other	2 783	21.5	8.7	8.3
School bus	76	0.6	6.4	6.1
Train	6 615	51.1	21.3	15.3
Total	**12 942**	**100.0**	**12.7**	**11.8**

Table 32 shows the estimated walking times for learners using public transport by household income (limited to records where all information was available). Cases with particularly long access times warrant further investigation.

Table 32: Access times for education-related trips during peak period by household income (public transport)

Household monthly income	Weighted number of trips	% trips	Average walking time at trip start (min)	Average walking time from trip end to destination (min)
Nothing	182	1.6	5.0	5.0
R201 - R500	1 735	15.1	21.5	15.0
R501 - R1 000	103	0.9	30.0	6.6
R1 001 - R1 500	5 083	44.1	11.9	10.0
R1 501 - R2 500	387	3.4	15.6	11.2
R2 501 - R3 500	176	1.5	5.7	13.3
R3 501 - R4 500	796	6.9	15.6	14.4
R4 501 - R6 000	141	1.2	17.5	13.5

R6 001 - R8 000	310	2.7	24.3	17.9
R8 001 - R11 000	150	1.3	10.0	14.0
R11 001 - R16 000	644	5.6	20.0	30.0
R16 001 - R30 000	1 514	13.1	10.0	30.0
Don't know	182	1.6	6.3	4.4
Refused to answer	115	1.0	0	0
Total	**11 520**	**100.0**	**14.2**	**13.7**

Table 33 shows the estimated origin and destination trip distribution matrix in Gauteng Province for a typical weekday in 2019/20. Intra-municipal trips continue to be highest in Johannesburg, followed by Tshwane and Ekurhuleni. Inter-municipal trips originating from the CoE were mostly destined for Johannesburg, and vice versa. The trips reported in this table are highly sensitive to underreporting and trip origin-destination sampling and are therefore only indicative.

Table 33: Gauteng origin and destination matrix

Trip origin	Trip destination							
	Region	**Ekurhuleni**	**Johannesburg**	**Sedibeng**	**Tshwane**	**West Rand**	**Outside Gauteng**	**Total**
	Ekurhuleni	1 724 992	136 100	1 055	10 550	0	9 495	1 882 193
	Johannesburg	66 456	3 092 909	9 879	37 718	58 374	14 369	3 279 705
	Sedibeng	1 786	23 212	1 346 277	1 786	1 786	10 713	1 385 559
	Tshwane	11 989	5 994	0	2 225 944	0	8 992	2 252 919
	West Rand	0	295 037	0	3 598	1 501 571	482 134	2 282 340
	Outside Gauteng	224	224	0	0	0	0	449
	Total	**1 805 447**	**3 553 476**	**1 357 211**	**2 279 596**	**1 561 730**	**525 703**	**11 083 165**

9 FINDINGS: ATTITUDES TOWARDS PUBLIC TRANSPORT USE

Table 34 provides indicative levels of satisfaction with buses across various service attributes. Respondents were generally more satisfied than dissatisfied with bus services and were particularly satisfied with the travel time on buses.

Table 34: Satisfaction with various bus service attributes

Bus attributes	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Behaviour of the bus drivers to passengers	8%	11%	41%	31%	8%
Bus fare	9%	20%	34%	32%	5%
Bus service overall	12%	19%	39%	25%	5%
Distance of the bus stop from home	10%	19%	41%	28%	2%
Distance of the bus stop from work	8%	14%	39%	32%	7%
Facilities at the bus stop	9%	18%	38%	26%	9%
Level of crowding in the bus	9%	19%	32%	34%	5%
Off-peak frequency of buses	7%	22%	41%	24%	6%
Peak-period frequency of buses	8%	17%	39%	28%	7%
Perceived accidents of the bus	8%	21%	38%	27%	5%
Punctuality of buses	7%	18%	38%	31%	6%
Road worthiness of buses	12%	23%	34%	26%	4%
Security at the bus stop	7%	18%	39%	31%	5%
Security on the bus	9%	17%	39%	31%	5%
Security on walk to bus	11%	16%	32%	34%	6%
Travel time in the bus	7%	16%	33%	34%	11%
Grand Total	**9%**	**18%**	**37%**	**30%**	**6%**

Table 35 provides reasons given by household members for not using bus services. The general unavailability of bus services tends to be the main reason for not using buses.

Table 35: Reasons for not using buses

Reasons bus not used	Percentage
No bus available	50.1
Bus not available often enough	15.8
Buses do not go where needed	7.0
Bus not available at the right time	5.7
Bus stop too far from destination	4.7
Buses are crowded	4.7

Reasons bus not used	Percentage
Bus stop too far from home	4.6
Buses always late	4.3
Bus too expensive	2.7
Travel time too long or too slow	0.2
No knowledge of timetable and routes	0.2
Prefer taxi	0.0
Too much crime/dangerous	0.0
Prefer private transport	0.0
Total	**100.0**

Table 36 provides indicative levels of satisfaction by household members with various minibus taxi service attributes. Respondents were generally more dissatisfied than satisfied with minibus taxi services and were particularly dissatisfied with fares, security when accessing services, and the behaviour of taxi drivers.

Table 36: Satisfaction with minibus taxi services

Taxi attributes	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Behaviour of the taxi drivers to passengers	13%	22%	43%	18%	3%
Distance of the taxi stop from home	10%	24%	45%	19%	2%
Distance of the taxi stop from work	8%	22%	47%	21%	2%
Facilities at the taxi ranks or stops	10%	22%	46%	19%	3%
Level of crowding in taxis	8%	22%	47%	20%	3%
Off-peak frequency of taxis	8%	21%	49%	20%	2%
Peak-period frequency of taxis	7%	22%	46%	21%	3%
Perceived accident rates of taxis	10%	22%	48%	18%	3%
Punctuality of taxis	9%	22%	45%	20%	3%
Roadworthiness of taxis	11%	22%	45%	19%	2%
Security at the taxi rank or stop	9%	22%	46%	21%	3%
Security in taxis	9%	25%	44%	20%	3%
Security on walk to access taxis	9%	27%	42%	19%	3%
Taxi fares	13%	23%	43%	19%	2%
Taxi service overall	11%	22%	46%	17%	3%
Travel time in the taxi	9%	23%	45%	20%	2%
Waiting time for taxis	11%	19%	47%	19%	4%

Total	**10%**	**23%**	**46%**	**19%**	**3%**

Table 37 provides the main reasons disclosed for not using taxis. Surprisingly, the leading reason for not using taxis in the CoE is that they are infrequent; followed by taxis being too expensive (where the predominant reason is indicated as a preference for private transport, followed by taxis being too expensive); and crowding in taxis. The least cited reason for not using taxis is that they do not go to where service is needed.

Table 37: Reasons for not using taxis

Reasons taxi not used	Percentage
Taxi not available often enough	18.6
Taxi too expensive	13.9
Taxis are crowded	13.2
Taxi not available at the right time	11.2
No taxi available	10.5
Too much crime or dangerous	8.3
Taxi stop too far from destination	7.4
Travel time too long or too slow	5.8
Prefer train	3.7
Taxis always late	3.7
Taxis do not go where needed	3.7
Total	**100.0**

Table 38 provides indicative levels of satisfaction of household members with various train service attributes. Household members tend to be more dissatisfied than satisfied with train services. The household members are mainly dissatisfied with levels of crowding on trains, security inside trains, and travel time by train. Household members are mostly satisfied with train fares.

Table 38: Level of satisfaction with train services

Train attributes	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Distance of station from home	11%	26%	37%	20%	6%
Distance of station from work	11%	24%	35%	23%	7%
Facilities at stations	12%	23%	38%	20%	7%
Level of crowding in the train	19%	27%	31%	19%	4%
Off-peak frequency of trains	11%	22%	40%	24%	3%
Peak-period frequency of train	12%	24%	40%	21%	4%
Perceived accidents of the train	11%	19%	40%	25%	5%
Punctuality of trains	15%	23%	36%	18%	7%
Security at the station	15%	25%	38%	19%	4%
Security on the train	18%	27%	32%	20%	4%
Security on walk to train	16%	24%	38%	17%	5%
The train service overall	7%	26%	41%	22%	4%
Train fares	10%	19%	39%	23%	9%

Travel time by train	12%	33%	30%	20%	4%
Total	**13%**	**24%**	**37%**	**21%**	**5%**

Table 39 provides the reasons disclosed by household members for not using trains. The main reason is the unavailability of the services. Other notable reasons are crime, long travel times and overcrowding.

Table 39: Reasons for not using trains

Reasons trains not used	Percentage
No train available at all	25.5
Too much crime or dangerous	11.0
Travel time too long or too slow	10.9
Trains are crowded	10.4
Train stop too far from home	8.8
Train not available at the right time	7.5
Trains always late	5.7
Train not available often enough	4.9
Train stop too far from destination	4.1
Have to change transport	3.0
Prefer taxi	2.9
Train too expensive	2.0
Trains do not go where needed	1.7
Prefer private transport	1.1
Other	0.6
Total	**100.0**

10 CONCLUDING REMARKS

Household travel surveys are instrumental for an improved understanding of travel behaviour by members of households. The report provides a high-level overview of the responses received from some 7 213 households in the City of Ekurhuleni (CoE) regarding transport and travel.

Unlike other cities, the CoE has multiple poverty-stricken areas characterised by high levels of unemployment and low household incomes. On the one hand, areas such as Alberton and Kempton Park are characterised by relative affluence and, on the other extreme, areas such as Daveyton, Kwatsaduza, and Tembisa/Clayville are characterised by poverty. On average, households in Ekurhuleni spend the most on public transport in Gauteng Province. Walking times to and from the nearest public transport service tend to also be higher in the CoE relative to other areas in the province. Household members are particularly dissatisfied with the quality of train and minibus taxi services, particularly on issues relating to security, the behaviour of taxi drivers, overcrowding in trains and long train travel times.

The survey encountered several challenges, some of which impacted the quality of the data. These include the prevalence of crime encountered by enumerators, which resulted in “no-go areas” for fieldworkers. The refusal of some households to participate, particularly in gated communities, also presented an enormous challenge. The increased distrust of households for this mode of measuring household characteristics warrants the introduction of less intrusive measurement approaches. Trip underreporting presents a particular challenge for off-peak travel. Underreporting of trip destinations also compromises the trip matrices for transport modelling purposes.

For the City of Ekurhuleni, it is recommended that:

- All datasets are made available for more detailed and targeted analyses.
- Transport policy targets are set in a manner that facilitates the measurement of backlogs.
- Further investigations are carried out to increase the understanding of the nature of anomalies associated with household trip making characteristics.

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12 ANNEXURES

12.1 ANNEXURE A: THE MAIN RESIDENTIAL CLASSES OF THE RESIDENTIAL POINT DATASET

Class No	Class Name	Class Description
7	Residential	Residential
7.1	Formal	Free Hold Formal houses
7.2	Informal	Informal Structures
7.2.1	Informal	All Informal housing structures
7.2.2	Transitional	Housing structures that are difficult to classify as either Informal or Formal
7.2.3	Backyard Structures	All Backyard structures associated with formal housing that may be used for housing purposes (formal or informal)
7.3	Cluster/Complexes	Cluster/Complexes
7.3.1	Flats	Typical Flats, includes single or more levels of flats above commercial buildings
7.3.2	Hostels	Mainly worker hostels, typical or mining areas, etc.
7.3.4	Townhouses	Includes Townhouses and housing complexes
7.3.5	Duet	Formal Duet Housing
7.4	Estates	Small Holdings / Agriculture
7.4.1	Estate Gate ID	Point placed at the estate gate with the name (no unit count)
7.4.2	Estate Housing	Every individual estate house receives a point with the estate name
7.5	Security Villages	Security Estates
7.5.1	Security Village gate	Point placed at the Security Village gate with the name (no unit count)
7.5.2	Security Village Housing	Every individual Security Village house received a point with the village name
7.6	Smallholdings / Agriculture	Small Holdings / Agriculture
7.6.1	Smallholdings	Smallholding Housing Units (Excludes labour housing)
7.6.2	Farmsteads	Farmstead Housing Unit (Excludes labour housing)
7.7	Rural Workers Housing	Includes all rural workers housing on smallholdings, farms, forestry areas, etc.
7.8	Villages	Villages as found mainly in KZN and the Eastern Cape Province

12.2 ANNEXURE B: SURVEY QUESTIONNAIRE

PARTICULARS OF THE DWELLING

1 Number of dwelling units on this stand

…….. Select dwelling

1.1

1.2 Indicate the type of main dwelling that the household occupies: (Drop down list)

1.	Dwelling/house or brick/concrete block structure on a separate stand or yard or on farm
2.	Traditional dwelling/hut/structure made of traditional materials
3.	Flat or apartment in a block of flats
4.	Cluster house in complex
5.	Town house (semi-detached house in complex)
6.	Semi-Detached house
7.	Dwelling/house/flat/room in backyard
8.	Informal dwelling/shack in backyard
9.	Informal dwelling/shack Not in backyard, e.g. in an informal/squatter settlement or on farm
10.	Room/ flatlet on a property or a larger dwelling/servant's quarters/granny flat
11.	Hostel – Family unit
12.	Hostel – Students
13.	Hostel – Single gender
14.	Caravan/tent
15.	Other (Specify)

2 Dwelling unit number of selected dwelling unit

…….. (generated by program)

3 Total number of households at selected dwelling unit

…….. Select dwelling

4 Household number of selected household

…….. (generated by program)

5 Preferred method of contact for selected household

……..

1 HOUSEHOLD INFORMATION (ALL QUESTIONS IN 1 ARE ANSWERED BY MAIN RESPONDENT)

1.1 Are you the head of the household?

O Yes

O No

1.2 How many people in total (including yourself) usually stay in this household for at least four nights per week?

RECORD ONE NUMERICAL ANSWER

……..

1.2.1 Is there any other person usually residing in this household, for at least four nights a week, other than those already mentioned?

1 HOUSEHOLD INFORMATION (ALL QUESTIONS IN 1 ARE ANSWERED BY MAIN RESPONDENT)

1.4 From your home, how long do you think it will take me to walk to the nearest bus stop?

And to the nearest taxi service/rank?

And to the nearest train station?

RECORD ONE NUMERICAL ANSWER IN MINUTES FOR EACH SERVICE

Mode	Minutes	Don't know	No Service
Bus			
Taxi			
Train Station			

1.5 How do members of your household get to the nearest of each of the following facilities?

And how long does it take to get there in minutes (from this household to the facility, door to door)?

(IF MORE THAN ONE MEMBER OF THE HOUSEHOLD TRAVELS TO A FACILITY, RECORD THE TYPE OF TRANSPORT USED BY THE PERSON WHO GOES THERE MOST OFTEN. IF MORE THAN ONE TYPE OF TRANSPORT IS USED, MARK THE ONE USED OVER THE LONGEST DISTANCE) (MARK ONLY ONE MODE FOR EACH FACILITY)

Drop down list: Walk, Train, Gautrain, Bus, Gautrain bus, Taxi, Metered taxi, Car/Bakkie/,Truck/Lorry, Tractor/Trailer, Motorcycle/Scooter, Bicycle, Can't get there, Do not need to go there

Service	Mode	Minutes
Grocery shop		
Other shops		
ATM's/banks		
Medical Services (Health services)		
Post Office/Agent		
Welfare(social services e.g. SASSA) office		
Police Station		
Municipal Office		
Tribal Authority		

Community hall		
Communal water point (		
Others		

1 HOUSEHOLD INFORMATION (ALL QUESTIONS IN 1 ARE ANSWERED BY MAIN RESPONDENT)

1.6 How many of the following vehicles (in working order) do members of this household have available for private use?

Vehicle	Quantity
Bicycles	
Motor cycles and motorised scooters	
Cars/bakkies/station-wagons/combis owned by employer/company	
Cars/bakkies/station wagons/combis owned by household	
Other Specify	

1.7 What are the sources of income for this household?

READ ALL THE OPTIONS – MULTIPLE RESPONSES POSSIBLE

☐ Salaries/wages/commission

☐ Income from own business

☐ Remittances/ including child maintenance

☐ Pensions

☐ Grants

☐ Sales of farming products and services

☐ Income from UIF

☐ Other income sources e.g. rental income, interest

1.8 Which one of the above income sources usually provides the most money for the household? (CHOOSE ONLY ONE SOURCE)

……

Drop down list:

Salaries/wages/commission

Income from own business

Remittances/ including child maintenance

Pensions

Grants

Sales of farming products and services

Income from UIF

Other income sources e.g. rental income, interest

1.9 (SHOW CARD) What is the total monthly income in a typical monthfor this household? Include the salaries, wages, pensions and other income (such as interest and rent) for all members of the household before deductions.

Drop down list

1. Nothing
2. R 1 – R 200
3. R 201 – R 500
4. R 501 – R 1000
5. R 1 001 – R 1 500
6. R 1 501 – R 2 500
7. R 2 501 – R 3 500
8. R 3 501 – R 4 500
9. R 4 501 – R 6 000
10. R 6 001 – R 8 000
11. R 8 001 – R 11 000
12. R 11 001 – R 16 000
13. R 16 001 – R 30 000
14. R 30 001 or more
15. Don't know
16. Refused

1.11 What is this household's monthly expenditure on public transport in a typical month for the following purposes? (Include the expenditure of all household members)

Work ……..

Education ……..

Other ……..

Total …….

The total monthly expenditure on public transport is: _____. Is that correct?

2. PARTICULARS OF EACH OF THE ……. PERSONS IN THE HOUSEHOLD

Add person

2.1 First Name				
2.2 Surname				
2.3 Gender				
2.4 Age (in completed years)				
2.5 Race				

Delete person	Delete person	Delete person	Delete person

Interview Person	Interview Person	Interview Person	Interview Person
Interview done	Interview done	Interview done	Interview done

2.3 Drop down list Gender

Male

Female

2.4 Drop down list Age

0-1 years = 0

888 = Refused to answer

999 = Don't Know

2.5 Drop down list Race

Black/African

Coloured

Indian / Asian

White

Other Specify

Refused to answer

2.6 Do you/ does…… (HOUSEHOLD MEMBER NAME) have any condition that limits their ability to travel? IF NO, SKIP TO QUESTION 2.9

O Yes

O No

2.7 What is the nature of the condition?

☐	Blind/severe visual limitations	☐	Deaf, profoundly hard of hearing
☐	Needs wheel chair	☐	Uses crutches/walking stick/can't walk far
☐	Has problems with stairs	☐	Mentally handicapped
☐	Travels with small children and/or baby	☐	Other Specify
☐	Not applicable		

2.8 What is the highest level of education that you /…(HOUSEHOLD MEMBER NAME) have successfully completed?

Drop down list

None

Some primary school

Primary school complete (Grade 7 or Standard 5)

Some high school

High school complete (Grade 12 or Standard 10)

Some university/college

Diploma with less than Grade 12

Degree or Diploma with Grade 12

Other post-matric qualification (specify)

Other Specify

2.10 Do you/does ….. (HOUSEHOLD MEMBER NAME) have a driver's license?
Drop down list

No

Yes

Not applicable

2.10.1 Which of the following licence type do you have (can choose more than one option)?

	A/A1 (motorcycle)		B (car)
	C / C1 (Small Truck)		EB/EC/EC1
	PrDP (Professional Driving Permit)		Other, specify

2.11 What is your …..(HOUSEHOLD MEMBER NAME)'s main occupation?
Drop down list

Full-time worker

Part-time worker

Unemployed, would like to work

Unable to work (chronically ill/mentally handicapped/physically handicapped)

Pensioner/retired

Housewife/husband

Student at university or college (post-matric)

High school learner

Primary school learner

Child attending pre-school/nursery school/crèche/day-mother

Child staying at home

Other Specify

3. EMPLOYED (BUSINESS)

3.1 Do you/does …have a job/run a business or did he/she do any work in the past seven days, even if he/she was absent from work due to leave or illness?

Drop down list

Yes – formal sector (registered)

Yes – Informal sector

No

Not applicable

3.2 Do you/does … work for ……...?

Yourself

Another organization/person

Not applicable

3.2.1 Do you/ does ….. work from home?

Drop down list

Yes

No

Not applicable

3.3 In which industrial sector are you/ is …… employed or running a business?

Drop down list

Agriculture, forestry and fishing

Mining/Quarrying

Electricity, gas or water supply

Construction

Tourism/hospitality

Wholesale & Retail

Transport, storage & communication

Financial, insurance and business services

Services, including government

Domestic work

Other Specify

3.4 What is your/ …'s occupation category?

Drop down list

Managers

Professionals

Technician and trade workers

Machine operators and drivers

Sales workers

Labourers

Community and personal service workers

Clerical and administrative workers

Other Specify

Not applicable

3.6 What is the full physical address of your/…..'s employer/business?

Enter address IF THE RESPONDENT WORKS AT DIFFERENT PLACES ON DIFFERENT DAYS, RECORD THE ADDRESS OF THE PLACE WHERE HE/SHE WORKED ON TRAVEL DAY. IF HE/SHE DID NOT GO TO WORK ON TRAVEL DAY, RECORD THE ADDRESS OF THE PLACE WHERE HE/SHE WORKS MOST OFTEN

3.7 How many days per week do you/ does …..usually work?

……

999 = Not applicable

3.8 Do you have/ does ….fixed or flexible working hours?

Drop down list

Fixed

Flexible

Not applicable

3.9 At what time do you/ does …. usually start work?

…… : …… AM/PM

3.10 At what time do you/ does …. usually end work?

…… : …… AM/PM

3.11 What is your/ …'s total salary/pay/earnings at your/his/her main job? Choose per week, per month or per year (SHOW CARD)

Choose weekly		Choose monthly		Choose annually	
1.	None	1.	None	1.	None
2.	R1 – R46	2.	R1 – R200	2.	1 – R2 400
3.	R47 – R115	3.	R201 – R500	3.	R2 401 – R6 000
4.	R116 - R231	4.	R501 – R1 000	4.	R6 001 – R12 000
5.	R232 - R346	5.	R1 001 – R1 500	5.	R12 001 – R18 000
6.	R347 - R577	6.	R1 501 – R2 500	6.	R18 001 – R30 000
7.	R578 - R808	7.	R2 501 – R3 500	7.	R30 001 – R42 000
8.	R809 - R1 039	8.	R3 501 – R4 500	8.	R42 001 – R54 000
9.	R1 040 - R1 386	9.	R4 501 - R6 000	9.	R54 001 – R72 000
10.	R1 387 - R1 848	10.	R6 001 – R8 000	10.	R72 001 – R96 000
11.	R1 849 - R2 540	11.	R8 001 – R11 000	11.	R96 001 – R132 000
12.	R2 541 - R3 695	12.	R11 001 – R16 000	12.	R132 001 – R192 000
13.	R3 696 - R6 928	13.	R16 001 – R30 000	13.	R192 001 – R360 000
14.	R6 929 OR MORE	14.	R30 001 OR MORE	14.	R360 001 OR MORE
15.	Don't know	15.	Don't know	15.	Don't know
16.	Refuse	16.	Refuse	16.	Refuse

3.12 Does your/…'s employer/business give you/him/her an allowance to cover transport costs e.g. cash for public transport tickets, car allowance or fuel coupons?

Drop down list

Yes

No

Not applicable

3.12.1. If any, what type of allowance or support do you/is…. receive from employer/business?

3.13 How much is this worth per month?

R……..

-999 = Not applicable

4. LEARNER

4.1 Name of pre-school/school/college/university

…….

4.2 Address of pre-school/school/college/ university

Enter address

4.3 How many days a week is pre-school/school/college/university attended?

……

4.4 Start time of pre-school/school/college/university

…… : …… AM/PM

4.5 End time of pre-school/school/college/ university

…… : …… AM/PM

5. GENERAL TRIP INFORMATION

5.0. Thinking of ……, where were you/…. at 3 AM?

Drop down list

Home

Work

Other

5.1 Did you/ …… leave the premises (…..) any time on …….. to go somewhere else, such as going to work, home, school or shops or to visit a friend?

Drop down list

Yes

No

5.2 What is the main reason why…….. did not make any trips/travel on ……...?

Drop down list

Did not need to travel

Usual transport not available

No available public transport

Disabled: transport inaccessible

Public transport too expensive

Public transport too far

Strike action/Conflict in transport sector

Unwell, sick

Leave

Other (specify)

5.3 Is …. available to answer questions about her/his trips on ……..?

Drop down list

Yes

No

PLEASE TELL ME WHERE YOU WENT ON TRAVEL DAY (DO NOT SKIP ANYTHING, EVEN IF YOU DO NOT THINK IT IS IMPORTANT) SUMMARISE ALL THE PLACES THAT ALL HOUSEHOLD MEMBERS WENT TO ON THE TRAVEL DAY. THE RESPONDENT SHOULD USUALLY RETURN TO THE PLACE WHERE THE FIRST TRIP STARTED.

USE THE TRIP AID DOCUMENT.

TRIP	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8	Person 9
First departure point	Name:	Name:	Name:	Name:	Name:	Name:	Name:	Name:	Name:
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

5. PERSONAL TRIP INFORMATION

+ Add trip	X Remove last trip	← Previous trip	Next trip →

5.4 Where did the trip start?

Drop down list

Home

Usual workplace

Work place

Educational institution

Friend/relative's house

Recreational place

Health centre

Place of worship

Welfare offices

Other Government offices

Shops/shopping centre

Other Specify

5.5 Please give the name and physical address of the place where the trip started

…….. Enter address

5.6 At what time did you leave there?

…… : …… AM/PM

5.7 Where did the trip end?

Drop down list

Home

Usual workplace

Work place

Educational institution

Friend/relative's house

Recreational place

Health centre

Place of worship

Welfare offices

Other Government offices

Shops/shopping centre

Other Specify

5.8 Please give the name and physical address of where the trip ended

…….. Enter address

5.9 At what time did you arrive there?

…… : …… AM/PM

5.10 What were the modes of transport for the trip in order of use?

Choose mode of transport 1 Choose mode of transport 2 Choose mode of transport 3 Choose mode of transport 4 Choose mode of transport 5 Choose mode of transport 6

Walk all the way

Commuter taxi/minibus taxi

Bus (BRT/Rea Vaya)

School bus

Bus (other)

Gautrain bus

Train

Gautrain

Company transport

Metered taxi

Lift club driver

Lift club passenger

Car, as driver

Car, as passenger

Motor cycle

Bicycle

Other Specify

5.11 What was the main purpose of the trip?

Drop down list

Work at usual workplace

In the course of work, but not at usual workplace

Visiting friends/relatives

To drop someone off/ to pick someone up

Educational

Shopping

Looking for work

Medical/health purposes

Traditional healer

Welfare offices

Recreational

To go home

Worship

Other Specify

5.12 How much do you pay for each mode? R.....

HERE ASK FOR ANSWER IN UNITS (RANDS)

Include the options “I do not pay (meaning "free" travel)" coded as -888 and "Not applicable (meaning no out of pocket costs expected)" coded as -999

5.13 Unit of payment

Drop down list of possible answers:

Per single trip

Per return trip

Per week

Per month

Not applicable

5.14 How long (in minutes) did you walk at the start of the trip (to your first transport)?

……

5.15 How long (in minutes) did you walk at the end of the trip (from your last transport to your destination)?

…….

5.16 State whether the information was provided in person or by another household member?

Drop down list

In person

Another household member

5.17 Did you/he/she go anywhere else after that?

Drop down list

Yes

No

ATTITUDES/PERCEPTIONS/STATED PREFERENCE SECTION (THIS SECTION OF THE QUESTIONNAIRE IS TO GAUGE THE TRADE-OFFS DONE BY PUBLIC TRANSPORT USERS)

5.18 If there were disruptions in the transport system, how else would you have travelled for the main purpose trip? What would be the modes of transport for the trip in order of use?

Choose mode of transport 1 Choose mode of transport 2 Choose mode of transport 3 Choose mode of transport 4 Stranded

5.19 How long in minutes would the trip had taken using the alternative option?

5.20 How much would you pay for each of the alternative modes? R.....

HERE ASK FOR ANSWER IN UNITS (RANDS)

Include the options “I do not pay (meaning "free" travel)" coded as -888 and "Not applicable (meaning no out of pocket costs expected)" coded as -999

5.21 Unit of payment

Drop down list of possible answers:

Per single trip

Per return trip

Per week

Per month

Not applicable

5.22 How long (in minutes) would you walk at the start of the trip (to your first transport)?

……

5.23 How long (in minutes) would you walk at the end of the trip (from your last transport to your destination)?

5.24 What are the two most important transport problems experienced by this household?

Problem1……
……

Problem2……
……

OPEN ENDED – PROBE THOROUGHLY (SEEK A "MODE-RELATED" ANSWER AS FAR AS POSSIBLE E.G. "TAXIS ARE EXPENSIVE" INSTEAD OF "TRANSPORT IS EXPENSIVE")

RECORD ONLY ONE ANSWER IN EACH SPACE.

IF THE RESPONDENT HAS NO PROBLEMS, RECORD NONE FOR PROBLEM 1

6. SATISFACTION WITH ATTRIBUTES OF BUSES, RAIL AND TAXIS

INTERVIEW THE HEAD OF THE HOUSEHOLD IF EMPLOYED, OTHERWISE SELECT ONE EMPLOYED HOUSEHOLD MEMBER AT HOME AT THE TIME OF THE INTERVIEW, TO RESPOND. IF NOBODY IN THE HOUSEHOLD WORKS, INTERVIEW ANY ADULT.

6.0 Select the name of the respondent of Section 6 of the questionnaire

……

6.1 Have you used a publicly operated BUS in the past month?

Drop down list

Yes

No

6.1.1 (SHOW CARD) Thinking about your recent BUS trip or trips, how satisfied are you with the …
READ OUT EACH ATTRIBUTE IN TURN AND RECORD ONE ANSWER FOR EACH

Distance of bus stop from home	Choose satisfaction level	Drop down list
Distance of bus stop from work	Choose satisfaction level	Very satisfied
Travel time in the bus	Choose satisfaction level	Satisfied
Security on walk to bus	Choose satisfaction level	Neither satisfied nor dissatisfied
Security at the bus rank or bus stops	Choose satisfaction level	Dissatisfied

Security on the bus	Choose satisfaction level	Very dissatisfied
Level of crowding in the bus	Choose satisfaction level	
Safety from accidents when traveling by bus	Choose satisfaction level	
Peak-period frequency of buses	Choose satisfaction level	
Off-peak frequency of buses	Choose satisfaction level	
Punctuality of buses	Choose satisfaction level	
Bus fares	Choose satisfaction level	
Facilities at bus ranks or bus stops	Choose satisfaction level	
Roadworthiness of buses	Choose satisfaction level	
Behaviour of bus drivers towards passengers	Choose satisfaction level	
Bus service overall	Choose satisfaction level	

6.1.2 How important are the following to you?

Distance of bus stop from home	Choose importance level	Drop down list
Distance of bus stop from work	Choose importance level	Very important
Travel time in the bus	Choose importance level	Important
Security on walk to bus	Choose importance level	Not important
Security at the bus rank or bus stops	Choose importance level	
Security on the bus	Choose importance level	
Level of crowding in the bus	Choose importance level	
Safety from accidents when traveling by bus	Choose importance level	
Peak-period frequency of buses	Choose importance level	
Off-peak frequency of buses	Choose importance level	
Punctuality of buses	Choose importance level	
Bus fares	Choose importance level	
Facilities at bus ranks or bus stops	Choose importance level	
Roadworthiness of buses	Choose importance level	
Behaviour of bus drivers towards passengers	Choose importance level	
Overall quality of bus service	Choose importance level	

6.1.3 Give two reasons why you did not use a BUS in the past month?

……

Drop down list

No bus available at all

Bus not available often enough

Bus not available at the right times

Bus too expensive

Too much crime (Too dangerous)

Travel time to long/Too slow

Buses too crowded

Buses always late

Buses don't go where needed

Bus stop too far from home

Bus stop too far from destination

Have to change transport (transfer)

6.2 No knowledge of timetable and routes

Too many accidents

Prefer private transport

Prefer taxi

Prefer train

Can walk

Have you used a TAXI during the past month?

Drop down list

Yes

No

6.2.1 how Too many accidents

Other Specify

(SHOW CARD) Thinking about your recent TAXI trip or trips, satisfied are you with the …

READ OUT EACH ATTRIBUTE IN TURN AND RECORD ONE ANSWER FOR EACH

Distance of taxi service from home	Choose satisfaction level
Distance of taxi service from work	Choose satisfaction level
Travel time in the taxi	Choose satisfaction level
Security on walk to taxi	Choose satisfaction level
Security at ranks/stops	Choose satisfaction level
Security in the taxi	Choose satisfaction level
Level of crowding in the taxi	Choose satisfaction level
Safety from accidents when traveling in the taxi	Choose satisfaction level
Peak-period frequency of taxis	Choose satisfaction level
Off-peak frequency of taxis	Choose satisfaction level
Waiting time for taxis	Choose satisfaction level
Taxi fares	Choose satisfaction level
Facilities at taxi ranks	Choose satisfaction level
Roadworthiness of taxis	Choose satisfaction level
Behaviour of taxi drivers towards passengers	Choose satisfaction level
Taxi service overall	Choose satisfaction level

Drop down list

Very satisfied

Satisfied

Neither satisfied nor dissatisfied

Dissatisfied

Very dissatisfied

6.2.2 How important are the following to you?

Distance of taxi service from home	Choose importance level
Distance of taxi service from work	Choose importance level
Travel time in the taxi	Choose importance level
Security on walk to taxi	Choose importance level
Security at ranks/stops	Choose importance level
Security in the taxi	Choose importance level
Level of crowding in the taxi	Choose importance level

Drop down list

Very important

Important

Not important

Safety from accidents when traveling in the taxi	Choose importance level
Peak-period frequency of taxis	Choose importance level
Off-peak frequency of taxis	Choose importance level
Waiting time for taxis	Choose importance level
Taxi fares	Choose importance level
Facilities at taxi ranks	Choose importance level
Roadworthiness of taxis	Choose importance level
Behaviour of taxi drivers towards passengers	Choose importance level
Overall quality of taxi service	Choose importance level

6.2.3 Give two reasons why you did not use a TAXI in the past month?

……

Drop down list

No taxis available at all
Taxis not available often enough
Taxis not available at the right times
Taxis too expensive
Too much crime (Too dangerous)
Travel time too long
Taxis too crowded
Have to wait too long for/in taxis
Taxis don't go where needed
Taxis too far from home
Too much violence/ wars
Have to pay cash
Drivers are rude
Taxis not roadworthy
Too many accidents
Drivers drive recklessly
Prefer private transport
Prefer train
Prefer bus
Other Specify

6.3 Have you used a TRAIN during the past month?

Drop down list

Yes

No

6.3.1 (SHOW CARD) Thinking about your recent TRAIN trip or trips, how satisfied are you with the …
READ OUT EACH ATTRIBUTE IN TURN AND RECORD ONE ANSWER FOR EACH

Distance of station from home	Choose satisfaction level
Distance of station from work	Choose satisfaction level
Travel time by train	Choose satisfaction level
Security on the walk to/from the station	Choose satisfaction level

Drop down list

Very satisfied

Satisfied

Neither satisfied nor dissatisfied

6.3.2

Security at the station	Choose satisfaction level
Security on the train	Choose satisfaction level
The level of crowding in the train	Choose satisfaction level
Safety from accidents	Choose satisfaction level
Peak-period frequency of trains	Choose satisfaction level
Off-peak frequency of trains	Choose satisfaction level
Punctuality of trains	Choose satisfaction level
Train fares	Choose satisfaction level
Facilities at stations	Choose satisfaction level
The train service overall	Choose satisfaction level

Dissatisfied

Very dissatisfied

How important are the following to you?

Distance of station from home	Choose importance level
Distance of station from work	Choose importance level
Travel time by train	Choose importance level
Security on the walk to/from the station	Choose importance level
Security at the station	Choose importance level
Security on the train	Choose importance level
The level of crowding in the train	Choose importance level
Safety from accidents	Choose importance level
Peak-period frequency of trains	Choose importance level
Off-peak frequency of trains	Choose importance level
Punctuality of trains	Choose importance level
Train fares	Choose importance level
Facilities at stations	Choose importance level
Overall quality of the train service	Choose importance level

Drop down list

Very important

Important

Not important

6.3.3 Give two reasons why you did not use a TRAIN in the past month?

……

……

Drop down list

No train available at all

Train not available often enough

Train not available at the right times

Train too expensive

Too much crime (Too dangerous)

Travel time to long/Too slow

Trains too crowded

Trains always late

Trains don't go where needed

Station too far from home

Station too far from destination

Have to change transport (transfer)

No knowledge of timetable and routes

Prefer private transport

Prefer taxi

Prefer bus

Can walk

Other Specify

6.4 In your opinion, how should public transport be improved in your area?

Drop down list

1 Must be more affordable

2 Improved security (security from crime)

3 Improved safety (safety from accidents)

4 Must be reliable/punctual/show up on time

5 More regular/frequent

6 Direct services from origin to destination (don't want to change bus/train/taxi en route)

7 Services must be made available

8 Vehicles must be roadworthy/ in good condition

9 More services in the off-peak periods (day and night off peak)

10 Must cater for my physical limitations (disability/age etc.)

11 Travel time should be lower

12 Other

888 N/A; Missing; Don't know; Refused

999 NONE - do not use public transport

NOTES

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