MARKETING RESEARCH FOUNDATION

MAPS TECHNICAL REPORT

July 2022 – June 2023

PLUS 94 RESEARCH

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MRF Objectives and Business

The Core Business of the Company

The Marketing Research Foundation (MRF) is tasked with facilitating, co-ordinating, and determining the joint industry research needs of its stakeholders and to ensure that these needs are met within the limitations of the funding available for this activity.

The Marketing Research Foundation is an independent non-profit company, acting as the custodian and repository of research expertise for marketers and their advertising industry partners. Its core objectives are to establish, commission, and manage comprehensive, valid, reliable, independent, transparent, and continual consumer behaviour research, surveys, investigations, and reports that provide data for targeting and segmentation, as well as multi-product/brand usage and multi-media information that reflects the totality and complexity of the South African society.

Main Objectives

The main objective of the Company is:

To provide tools for targeting and segmentation of markets as well as to establish, commission, and manage comprehensive, valid, reliable, independent, transparent, and continuous media, consumer and product usage research, surveys, investigations, and reports that provide comparable multi-media and multi-product/brand usage information that reflects the totality and complexity of the South African society.

Ancillary Objectives

The ancillary objectives of the Company are:

1. To co-ordinate joint industry research amongst the advertising, marketing, and media industries;

2. To investigate any research techniques, whether in practice or proposed, and to establish the degree of validity and reliability of the results obtained thereby; to seek improved methods in consumer behaviour and product usage research and to provide improved tools for targeting and segmentation of markets;

3. To act as a liaison between the advertising, marketing, and media industry and universities, media audience, demographic, and product usage research as well as tools for targeting and segmentation of markets;

4. To arrange seminars and courses directly or indirectly sponsored by the Marketing Research Foundation on any or all aspects of MAPS™ data and the utilisation thereof including tools for market sizing, targeting, and segmentation of markets;

5. To act as mouthpiece of the industry on matters pertaining to marketing, consumer behaviour and product usage research as well as tools for targeting and segmentation of markets;

6. To promote and maintain fair, reasonable, and proper standards of media, consumer behaviour and product usage research as well as targeting and segmentation tools;

7. To maintain and augment a library containing information concerning media audience, product usage, and related research as well as on tools for targeting and segmentation of markets, and to make it accessible to members and students;

8. To do all such other acts including the publication, in print or electronic format, of books, memoranda, journals, magazines, circulars, reports, and any documents or databases as the Marketing Research Foundation may consider expedient to promote the interests of its members;

9. Likewise, to do all things and carry on any activity related, connected to, or associated with any of the above objects and purposes; and

10. To finance the operations of the Company by engaging in any lawful activity which may generate funding for the Company.

MRF Management

Responsibility for the management of the MRF affairs rests with a Board of Directors, representing the members of the Foundation – The Marketing Association of South Africa, the Association for Communication and Advertising, and the Advertising Media Forum – together with the Chief Executive Officer, under a chairman.

MRF Councils

The MRF Board of Directors is the highest MRF authority. It consists of directors nominated by all MRF stakeholders, namely marketers and advertising agencies.

Much of the work done by the MRF is guided by a Research Committee with work groups and an Advisory Council. The MRF Research Committee and Advisory Council is involved with guidance and decision making regarding the direction of the research survey. The Research Committee consists of representatives from the subscriber base and research experts from the broad industry. The Advisory Council consists of research experts from the broad industry who do not sit on the Board or are members of the Research Committee. The Committee and Council's mandate is to advise the MRF Board on what research should be undertaken and, in instances where the necessary authority has been delegated to it, to decide on details. In addition, several research experts serve on this council to advise on how research should be carried out.

The MRF Board and the MRF Research Committee and Advisory Council operate on a voluntary basis.

MRF Contractor

The MRF MAPS™ Technical Report, tabular electronic reports, datafiles, presentations, MAPS™ Questionnaire, Products and Activities Questionnaire, and other interviewing material that includes an interviewer instruction booklet, were prepared by Plus 94 Research.

Coverage and Layout of this Technical Report

1. Introduction

2. Special Notes: It is important that this be read before studying the individual electronic reports.

3. Definition of Terms: Particular attention is drawn to this section, since correct interpretation of the data in the numerous MAPS™ tables naturally depends on a clear understanding of the terms used.

4. Universe: Details of the population sampled are provided.

5. Sampling: The MAPS™ sampling method and the actual sample obtained is provided.

6. The Interview: The MAPS™ interview is described as well as questionnaire changes implemented.

7. Fieldwork: The fieldwork methods and the results obtained in terms of the original sample attained are discussed.

8. Analysis: This covers the treatment of the data after completion of the interviewing and the weighting methodology employed.

9. Segmentation

10. Living Standards Measure

11. Confidence Limits: The Technical Report concludes with the likely margins of error attached to the MAPS™ data.

12. Appendix: The MAPS™ research instruments [i.e., face-to-face questionnaire and leave-behind questionnaire], questionnaire changes/additions, fieldwork areas covered by the study.

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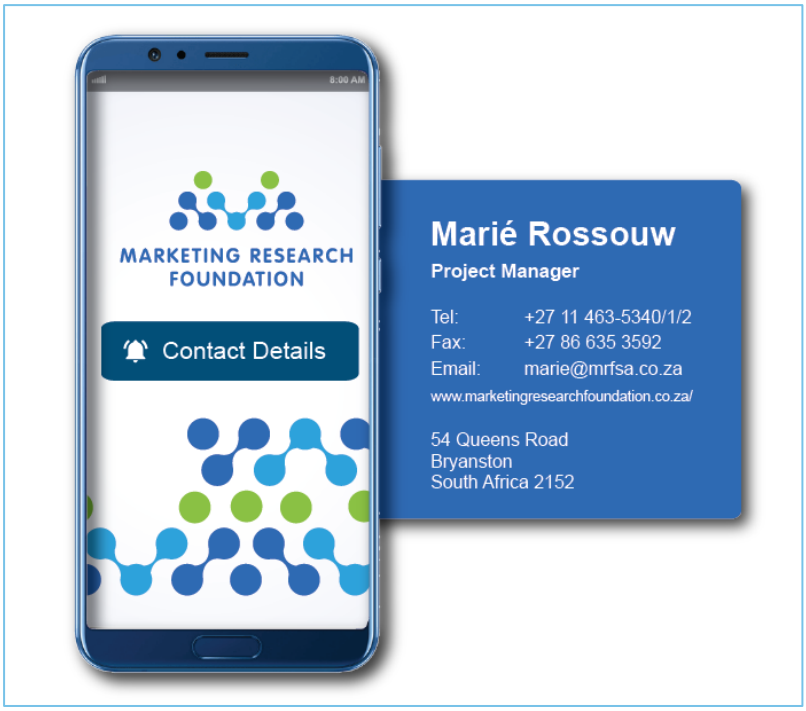

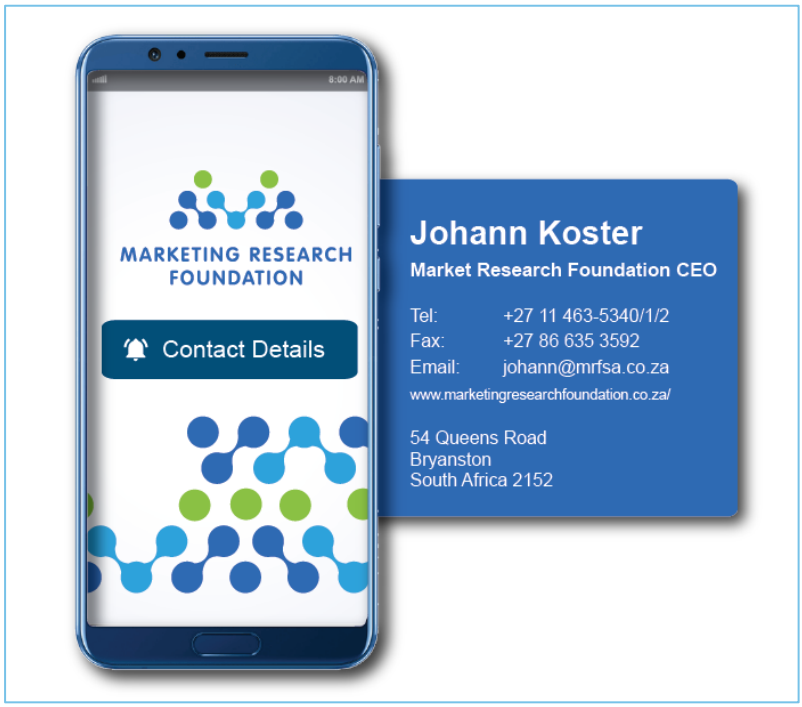

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MARKETING RESEARCH FOUNDATION

Section A:

Introduction and Key Definitions

PLUS 94 RESEARCH

Section A: Introduction and Key Definitions

1.0 Introduction

MAPS™ aims to be the consumer-centric barometer of the customer journey, tracking consumption and related product and brand information. The results of the survey will aid consumer understanding for target marketing and target sizing, and act as the basis for planning media space and time.

The focus of the research is on product and brand consumption, media interaction, and consumer behaviour, but has been expressed broadly as surveys, investigations, and reports to allow for the best methods of collecting and reporting the information to be considered, with a view to establishing:

- Consumption behaviour relating to purchase, usage, and ownership of products, services, and brands;
- Comprehensive characteristics of users of products, services, brands, behaviour, and media that can be used for segmentation development, and defining a multitude of target groups, including Living Standards Measures (LSMs), Socio-Economic Measures (SEMs), lifestyles and psychographics; and
- The usage of media (audience sizes and wide-ranging characteristics, including detailed demographics).

Naming of MRF MAPS™ Releases

The descriptors for the various MRF MAPS™ releases are as follows:

- The current release is described as MRF MAPS™ July 2022 – June 2023.

2.0 Special Notes

1. Age

There is one age question in the MRF MAPS™ questionnaire which captures the exact ages of the respondents. There is also a proportion of respondents who refuse to give their exact ages. Between July 2020 and December 2022 missing ages for respondents who were not willing to disclose their exact ages were imputed using relevant demographic variables such as age groups of own children. As from January 2023, an additional question with five-year age bands was introduced to cater for such respondents. A total of 28 respondents refused to provide their exact ages and opted to rather indicate their age band during the first half of 2023. Mid-points of the chosen age bands were then imputed as their exact age. For example, a respondent who selects a 30 – 34 age band is automatically assigned an exact age of 32 years on question PD1 (Would you mind telling me your exact age?) when the imputation process is carried out.

2. Language

For reporting purposes, the language categories are as follows:

Afrikaans	Sesotho	Setswana
English	SiSwati	Tshivenda
IsiNdebele	XiTsonga	IsiZulu
Sepedi	IsiXhosa	Other

Each language code comprises only those respondents claiming that specific language as the language most spoken.

3. Population 2022

According to Statistics South Africa's 2022 mid-year population estimates, the total population of South Africa was estimated to be at 60.14 million. Approximately 71.9% (43.59 million) of the population is aged 15 years and older and this defines the universe for the MAPS™ study. About 9.2% (5.6 million) is 60 years and older, whereas 28.1% of the population is aged younger than 15 years.

4. Radio Listenership

To assist with intermedia comparisons, the past four weeks, past seven days, and yesterday radio listening questions are incorporated into the MRF MAPS™ questionnaire. The radio currency is BRC RAM data. BRC RAM is not a product of the MRF and independently conducted by the BRC.

Radio stations with 40 or more mentions are released individually on the database for commercial, community, and online stations.

Refer to the questionnaire in the Appendix of this report for details of the radio station changes for MRF MAPS™ July 2022 – June 2023.

5. MRF MAPS™ Research Universe

The research universe is defined as adult males and females aged 15 years and older.

6. TV Viewership

To assist with intermedia comparisons, the past four weeks, past seven days, and yesterday TV viewing questions are incorporated into the MRF MAPS™ questionnaire. The TV currency is BRC TAMS data. BRC TAMS is not a product of the MRF and independently conducted by the BRC.

The figures for SABC 1, SABC 2, SABC 3, e.tv, M-Net, and Community TV reflected in the electronic reports and on the database still reflect total viewership for these stations regardless of the platform through which they are viewed. "Total Community TV" currently includes Soweto TV, Cape Town TV, Bay TV, Tshwane TV, 1KZNTV, and Platinum TV.

TV channels with 40 or more mentions are released individually on the database.

Refer to the questionnaire in the Appendix of this report for details of all TV station/channel changes for MRF MAPS™ July 2022 – June 2023.

7. Question R12 of the Face-to-Face

Question: What is your occupation? (What type of work do you do?)

There were some respondents that listed various elementary jobs that were coded as "general hand worker" in the data.

"General hand worker" refers to the following occupations:

- General worker;
- Maintenance/recycling/street cleaner/municipal worker;
- Car guard;
- Ordinary labourer;
- Gardener; and
- Farmworker.

8. Question R17 of the Face-to-Face

Please note that the diploma qualification **excludes short courses** as these are covered by response options 6 and 7.

1. No schooling;
2. Some primary school;
3. Primary school completed;
4. Some high school;
5. Matric (high school completed);
6. Pre-Matric certificate;
7. Post-Matric certificate;
8. Diploma;
9. Undergraduate degree; and
10. Postgraduate degree.

3.0 Definition of Terms

In a study of this magnitude, it is important that certain user-terms be defined and agreed upon. This has a bearing on how the respondents are filtered. The MRF reserves all rights to provide such definitions and to modify them from time to time as may become necessary. Changes in the definitions are then incorporated into the questionnaire to modify the manner in which respondents are screened and their data interpreted. Below is a summary of the list of working definitions as they are currently used in the survey:

1. Average Issue Readership (AIR)

To qualify as an "average issue" reader of a publication, a respondent must have read or paged through any copy of the title under consideration within a period before the interview which is no longer than the issue period of that title. Furthermore, the respondent must have read or paged through that issue for the first time within that period.

For example, to qualify as an average issue reader of a weekly publication, a respondent must have read or paged through that issue for the first time within the past seven days.

2. Children's Primary Purchase Decision Maker

"Primary purchase decision maker for babies" refers to infants up to 23 months old, and "primary purchase decision maker for children" refers to children from two to 14 years old.

A primary purchase decision maker for children is a person (male or female) who decides upon or chooses the products or services for children. These children can be his/her own children, other children who are dependent on him/her, or any other children. It does not matter whether these children live with the person who primarily makes decisions for their purchases.

3. Cycle

A cycle (quarter) is a continuous period of three months.

4. Dip

A dip is a monthly survey of 1 667, which by 12 months equals 20 004 interviews. Three dips make a cycle of 5 001 interviews, and two cycles make a wave of 10 002.

5. Dwelling Unit

Structure or part of a structure or group of structures occupied or meant to be occupied by one or more than one household. Includes structure or part of a structure which is vacant and/or under construction but can be lived in at the time of the survey.

6. EA

EA is an acronym for an enumeration or enumerator area. It is a pocket-sized piece of a country which is visited by an enumerator during a census. In the MAPS™ study, EA maps were made use of by interviewers for ease of identifying the areas selected for the survey.

7. Area Type

The definition of metropolitan areas in the MAPS™ study is different from that of Statistics South Africa. There are no rural areas associated with the built-up areas. AfricaScope defines them as contiguous built-up areas. Definitions for rural and other urban areas are as defined by Stats SA.

Metro - Areas that fall under a **metropolitan municipality as per the official demarcation of municipalities**. The area might be a city e.g., Johannesburg under the City of Johannesburg

Metropolitan Municipality, or a town e.g., Centurion under the City of Tshwane Metropolitan Municipality, or just a township e.g., KwaThema in Ekurhuleni Metropolitan Municipality. There are eight metropolitan municipalities.

Urban – **Urban areas that fall under a local or district municipality** as per the official demarcation of municipalities. The area might be a large town e.g., Polokwane under the Polokwane Local Municipality, or a small town e.g., Krugersdorp under West Rand District Municipality.

Rural – **Farms and Traditional areas that fall under a local and district** municipality as per the official demarcation of municipalities.

Stats SA provides a list of with classifications showing if an area is urban or rural, or if it falls under a metropolitan municipality or not. Sometimes there are fine margins, but we adhere to them. For example, some areas in Westonaria on the West Rand are classified under "urban" while others fall under "rural". An informal settlement may fall under "metro", "urban", or "rural" as well.

Refer to the Appendix (Section E) of this Technical Report for further information on area type.

8. Home Language

The respondent is asked for the language they personally speak most often at home. If the respondent cannot decide on one home language, they are asked for the language they spoke most often yesterday.

All 11 official languages are used as breakdowns in the electronic reports as follows:

Afrikaans	Sesotho	Tshivenda
English	SiSwati	IsiXhosa
IsiNdebele	XiTsonga	IsiZulu
Sepedi	Setswana	Other

9. Household

A household consists of a person, or a group of persons, who occupy a common dwelling (or part of it) for at least four days a week and who provide themselves jointly with food and other essentials for living. In other words, they live together as a unit. People who occupy the same dwelling, but who do not share food or other essentials, are enumerated as separate households. For example, people who share a dwelling, but who buy food and eat separately, are counted as separate households. Resident domestic workers and live-in gardeners are, however, excluded and regarded as forming a household of one or more persons.

10. Household Income

"Household income" is defined to the respondent as the "total monthly income" of the number of "income earners" previously enumerated within the relevant household "before tax and other deductions", but including "all sources of income, e.g., salaries, pensions, government grants, income from investments, etc."

In the cases of refusal to answer the question, the income is imputed using demographic variables such as the Living Standards Measure, Socio-Economic Measure, residential area, and employment status.

11. Household Purchaser

Any respondent of either gender who claims to be solely or partly responsible for the day-to-day purchases of the household is described as a household purchaser (see the face-to-face questionnaire in the Appendix of this report, question M1).

These respondents, weighted to households, should be used for analyses on the household FMCG categories.

There may be more than one person who could claim to be a "household purchaser" within any given household, although only one would be interviewed.

12. Housing Unit

A unit of accommodation for a household may consist of one structure, or more than one structure, or part of a structure. (Examples of each are a house, a group of rondavels, and a flat.) It may be vacant or occupied by one or more than one household.

13. Internet

The Internet is introduced to respondents as an alternative means of communication, and that it can be accessed using a computer, cellular phone, or another Internet-enabled device.

14. Large Item Decision Maker

To analyse the incidence, usage, and purchase of large household items, a male or female respondent who claims to be the head of the household or who claims to be solely or partly responsible for the household purchases is described as a "large item decision maker".

15. Level of Education

Respondents still undergoing full-time education are coded according to the level achieved as at the date of the interview.

16. Life Stages

Seven personal life stage groups are used as a breakdown and are included on the database. A description of these groups follows. Unless otherwise stated, a child is under 21 years of age.

Young Singles

- Up to 34 years old;
- Not married or not living together; and
- Does not have any dependent children in the household (own or other children) that the respondent is responsible for.

Mature Singles

- 35+ years old;
- Not married or not living together; and
- Does not have any dependent children in the household (own or other children) that the respondent is responsible for.

Young Couples

- Up to 49 years old;
- Married or living together; and
- No dependent children in the household (own or other children) that they are responsible for.

Mature Couples

- 50+ years old;
- Married or living together; and
- No dependent children in the household (own or other children) that they are responsible for.

Young Family

- Married or living together; and
- With at least one dependent child under 13 years in the household (own or other children) that they are responsible for.

Single-Parent Family

- Not married or not living together; and
- With dependent children in the household (own or other children) that they are responsible for.

Mature Family

- Married or living together; and
- With no dependent children under 13 years in the household (own or other children) that they are responsible for, but with dependent children over the age of 13 years in the household.

17. Mothers with Children

"With babies" refers to infants up to 23 months old. "With children" refers to children in the age group from 24 months to 14 years.

18. Multiple Households

Two or more households living in the same dwelling unit.

19. Occupation

The occupation of respondents who work full-time or part-time or are self-employed is classified according to Stats SA "Standard Classification of Occupations" (Report 09-90-01) down to the level of unit groups (three-character codes). These appear on the database. (See Appendix of this

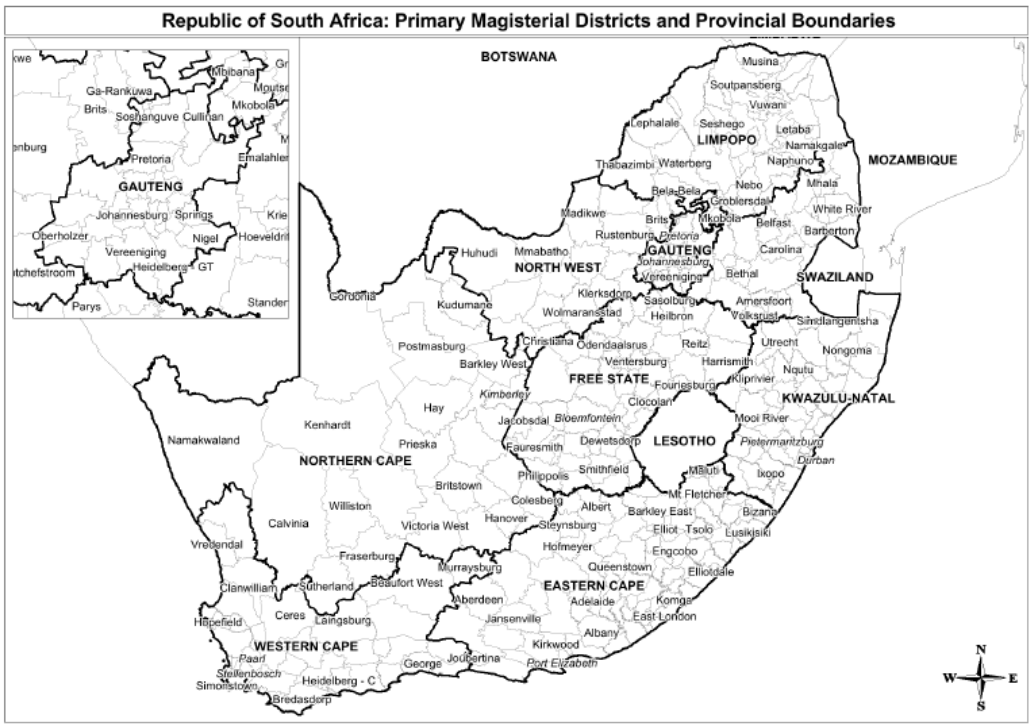
report.) Note that the abbreviation n.e.c. used throughout the occupation classification list stands for "not elsewhere classified".

20. Out of Home

"Out of Home" media exposure covers billboards, digital screens, branding on the inside and outside of buses and taxis, signs on building wraps/construction site wraps, dustbins, and street poles. Travel outside of home is measured by duration, destination, and mode of travel.

21. Province

The nine province boundaries used in the MAPS™ sample coincide with those of Stats SA. The following map shows the boundaries of the provinces in terms of magisterial districts.



22. Radio Listening

"Radio listening" is defined as having personally listened to the radio – it may be all of a programme or only part of it via a radio set, a computer, a cell phone, the television, satellite, or any other means and it does not matter where you listened to it."

Note that the currency for radio listening is BRC RAM.

23. Readership

All references to numbers of readers imply estimates of the "average issue readership" of the publication concerned.

24. Read or Paged Through

To have "read or paged through" is explained to the respondent as meaning that he/she has "... read or paged through all or part of a copy, including any of the separate parts, sections or supplements which may come with it. It does not matter if it was an own copy or someone else's copy, or where it was read or paged through. It also does not matter if it was purchased personally or purchased by someone else, or whether it was received free of charge at home or elsewhere."

25. South African Population

The total population of the country is based on the official population according to Stats SA. Stats SA is currently using the cohort-component methodology to estimate the mid-year population. This refers to the population as it stands during the month of June. The adjusted population estimates are released by Stats SA in July of each year.

26. TV Viewing

"TV viewing" is defined as "... you personally have watched all or part of a programme – it does not matter where it was watched it – at home or elsewhere."

Note that the currency for TV viewing is BRCTAMS.

27. Wave

There are two waves in a year: wave 1 and wave 2. Each wave is made up of a period of six successive calendar months. The first fieldwork wave for the reporting period ran from the 14th of July 2022 to the 21st of December 2022, while that of the second wave started on the 17th of January 2023 and came to an end on the 10th of July 2023. Two waves produced an annual sample of 20 040.

28. Working Life

Unemployed – any person that does not have a job and is actively looking for employment (this also includes individuals that have never worked before and are actively looking for jobs e.g., Matric graduate job seekers, university graduate job seekers, etc.).

Not working – discouraged work seekers who are no longer actively looking for employment or anyone who is not actively looking for employment (this excludes housewives/househusbands, students, and retired people, as these categories have their own pre-codes in the questionnaire).

MARKETING RESEARCH FOUNDATION

Section B:

Research Universe and Sample

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Section B: Research Universe and Sample

4.0 Universe

The target population for the research are individuals aged 15 years and older in South Africa. The following was used to filter the broad audience base of the respondents:

- Gender: Both males and females;
- Race: All racial groups; and
- Area: National (all nine provinces).

Population 2022

According to Statistics South Africa's 2022 mid-year population estimates, the total population of South Africa was estimated to be at 60.14 million. Approximately 71.9% (43.59 million) of the population is aged 15 years and older and this defines the universe for the MAPS™ study. About 9.2% (5.6 million) is 60 years and older whereas 28.1% of the population is aged younger than 15 years. The table below summarises the adult population in the nine provinces:

Province	Adult Population (15 years+)	% of Population
Eastern Cape	4 495 853	10%
Free State	2 101 871	5%
Gauteng	12 312 692	28%
KwaZulu-Natal	7 950 182	18%
Limpopo	3 942 319	9%
Mpumalanga	3 390 484	8%
Northern Cape	929 692	2%
North West	2 991 722	7%
Western Cape	5 477 408	13%
Total	**43 592 223**	**100%**

Gender (15 years+)

Gender	Count	Percentage (%)
Female	22 580 134	52%
Male	21 012 089	48%
Total	**43 592 223**	**100%**

Race (15 years+)

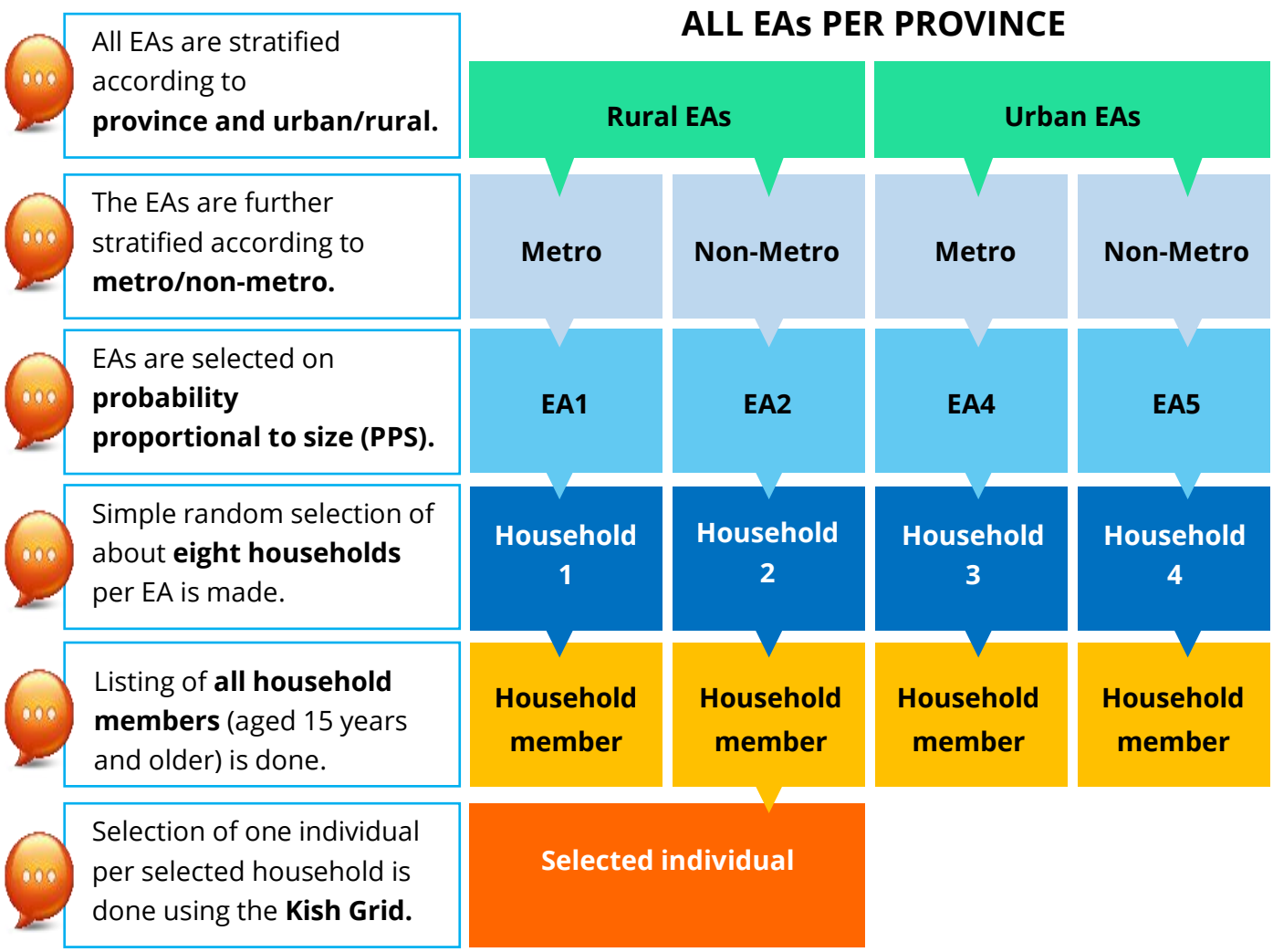
Race	Count	Percentage (%)
Black African	34 474 439	79%
Coloured	3 931 926	9%
Indian/Asian	1 261 112	3%
White	3 924 746	9%
Total	**43 592 223**	**100%**

Source: *Statistics South Africa, Statistical Release P0302, Mid-year population estimates*

5.0 Sample

Sampling Methodology

The sampling methodology is area stratified, multi-stage probability sampling. The Stats SA 2011 census data enumeration areas (EAs) are used as the sampling frame. EAs are drawn using a "probability proportional to population size" (PPS) approach. The EAs are the primary sampling units (PPUs), and the households are the secondary sampling units (SSUs). The stratification is based on the number of households per strata (province, rural/urban, metro/non-metro). The image below illustrates the sampling procedure for the MAPS™ study:



EAs that were 100% in the military barracks were removed from the sampling frame before selection. Prisons, hospitals, industrial areas, cemeteries, and resorts were excluded from the survey. EAs that constitute these areas were only included if there was a residential component in the EA.

Professor Khangelani Zuma was responsible for drawing the EA sample for the MAPS™ study. Under his guidance, AfricaScope provided Plus 94 Research with the EA maps based on the drawn EA sample. Each map had 12 household locations/points that were randomly selected and assigned numbers from 1 to 12 along with the exact GPS coordinates for each point. Plus 94 Research fieldworkers were required to interview eight respondents from household number 1 to 8 in each EA if there was no household replacement in an EA. The other four additional points (labelled 9, 10, 11, and 12) were used as replacement households where refusals were encountered with any of the respondents from households number 1 to 8. To ensure a wide geographic spread of points, all the randomly selected 12 points within an EA were physically spaced to such an extent that the majority of the enumeration area was satisfactorily covered. The spread also ensured that all possible demographic profiles of respondents in every EA had a fair chance of participating in the MAPS™ study. Refer to the Appendix of this report to obtain finer details on the areas [province, district, municipality, main place name, sub-place name, and area type (i.e., metro, urban, and rural)] that were covered by the MAPS™ study between July 2022 and June 2023.

Half of the total sample of the MAPS face-to-face interview respondents were expected to complete the leave-behind questionnaire. To ensure that the completed leave-behind questionnaires were representative of the participants that took part in the face-to-face interviews, it was ensured that at least four respondents in each EA visited filled in a leave-behind questionnaire.

Disproportional Stratified Sample

Disproportional stratified sampling is a stratified sampling procedure in which the number of elements sampled from each stratum is not proportional to their representation in the total population. Population elements are not given an equal chance to be included on the sample. This sampling procedure helps improve precision at stratum (reporting domain) level by increasing sample size/allocation to smaller strata and decreasing the sample size to larger strata. In order to ensure a disproportionate sample for the MAPS™ study, the sample is structured as follows, taking into account the multi-stage stratified sampling approach:

a) 50% metro area EAs;

b) 30% large, medium, and small urban EAs; and

c) 20% rural EAs.

A disproportionate stratified sample was applied in order to boost samples in urban and metro areas.

Weighting, Benchmarking, and Weighting Efficiency

Current Weighting Scheme

The sample data is benchmarked against the South African population of 15 years and older. The Statistics South Africa (Stats SA) mid-year population estimates and the Quarterly Labour Force Survey (QLFS) employment numbers are used for this benchmarking process. Stats SA does not provide mid-year estimates for the area type (i.e., metro, urban, and rural) split. Therefore, a demographer from AfricaScope estimates the area type split and the racial distribution per province, which are critical in the benchmarking process. For household weights, benchmarking using household population totals by province is conducted to provide benchmarked household weights. The weighting is done based on fixed five-year age bands, four race groups, the male or female gender, three area types, the nine provinces, level of education, and employment status.

RIM Weighting Using the ANESrake Approach

Rim weighting was run using the Anesrake package in R https://cran.r-project.org/web/packages/anesrake/anesrake.pdf. This is a package used by the American National Election Studies in a number of other weighting setups, mostly because it is easy to use and well documented. The resultant weights were projected so that it summed up to the national population (43 592 223).

Weighting data is a crucial step in survey analysis to ensure representative results. In some cases, there may be insufficient sample sizes within certain subgroups of the population. To address this issue and improve weighting efficiencies, the RIM (random iterative method) weighting technique was employed for the MRF MAPS™ July 2022 – June 2023 data release. This approach, implemented using the ANESrake package in R, allows for the interlacing and collapsing of certain weighting variables, such as age, gender, race, education level, employment status, area type, and province. Interlacing variables refers to combining or interweaving certain weighting variables when insufficient sample sizes are available within particular subgroups of the population. By interlacing variables such as age, gender, race, education level, employment status, area type, and province, the RIM weighting process can capture the joint distribution of these variables more effectively.

RIM Weighting Process

The RIM weighting technique is used to generate accurate weights that align the sample with the target population. The ANESrake package in R provides a user-friendly implementation of this method. The steps involved in the RIM weighting process using ANESrake are as follows:

1. Identify the Target Population: Define the population that the survey aims to represent accurately. This population is often characterised by demographic and geographic variables such as age, gender, race, education level, employment status, area type, and province;

2. Calculate Population Totals: Obtain population totals for each combination of the identified weighting variables from external data sources, such as census or survey data. These population totals represent the known distribution of the target population;

3. Prepare the Survey Data: Ensure that the survey data includes the required variables for weighting, aligning them with the identified weighting variables in the target population. While it is necessary to incorporate all the specified variables in the weighting process, it is important to note that attempting to align the data to every single variable may lead to excessive strain on certain weights, resulting in

extremely small or large values. Therefore, depending on the structure of the data, it may be appropriate to exclude certain variables from the weighting procedure;

4. Initialise the Weighting Process: Set an initial set of weights for each survey respondent. These initial weights are usually set to 1;

5. Start Iterative Process: Begin the iterative process to update the weights based on the target population distribution. The ANESrake package employs an iterative proportional fitting (raking) algorithm to adjust the weights;

6. Perform Iterative Proportional Fitting: In each iteration, ANESrake adjusts the weights to minimise the differences between the survey data and the target population distribution. The package uses the raking algorithm, which iteratively redistributes the weights based on the joint distribution of the weighting variables;

7. Assess Convergence: Monitor the convergence of the iterative process to ensure stability in the weights. The process typically continues until a predetermined convergence criterion is met; and

8. Finalise the Weights: Once the iterative process converges, the final weights are obtained. These weights represent the adjusted values that align the survey data with the target population.

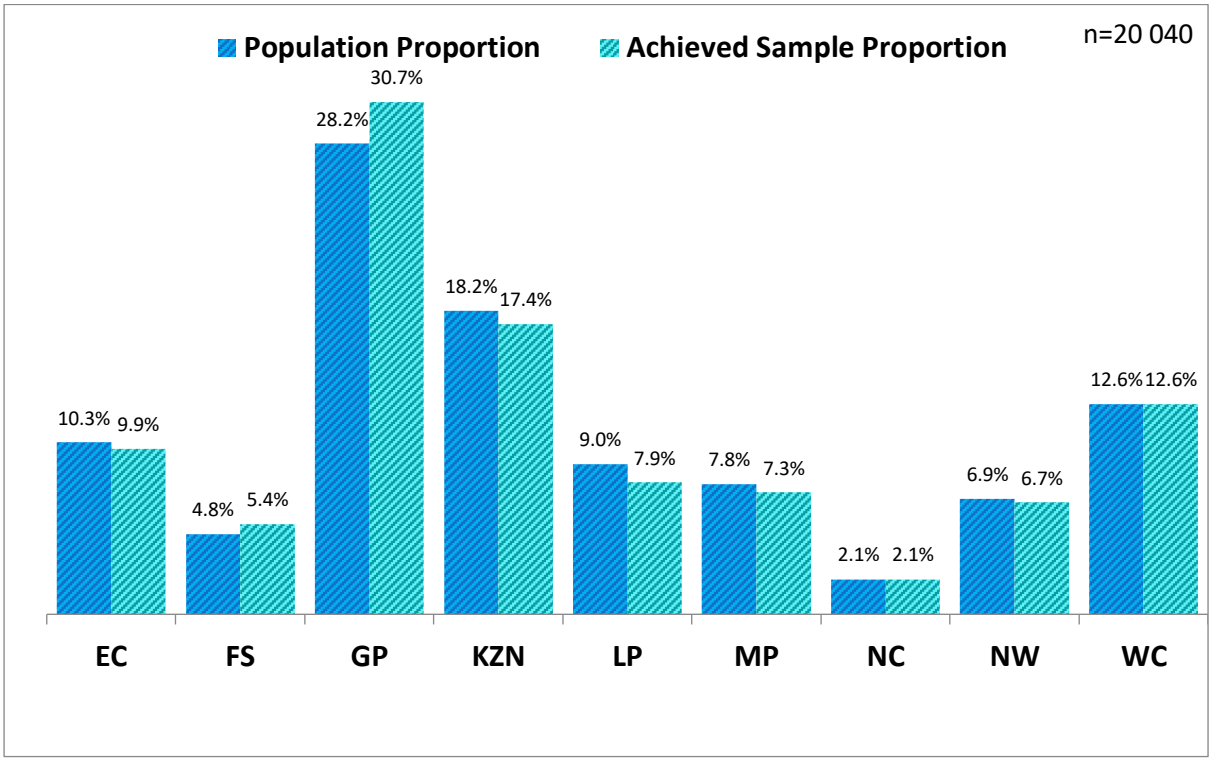
Achieved Weighting Efficiency

High weighting efficiencies in survey data analysis offer several advantages, ensuring accurate representation and reliable results. The benefits of high weighting efficiencies include improved representativeness, reduced bias, enhanced precision, and robust statistical analysis. It is generally recommended to aim for a minimum weighting efficiency of 70% to maintain data quality and integrity. This minimum threshold ensures that the weighted data adequately reflects the target population.

The minimum efficiency of 70% at national level is set. The individual efficiency achieved for the MAPS™ July 2022 – June 2023 data was slightly above the expected minimum individual efficiency of 70%. It is crucial to note that while the minimum of 70% efficiency is acceptable, variations may occur at the provincial level. It is possible that certain provinces may have weighting efficiencies below this threshold due to smaller sample sizes or unique population characteristics.

Province	**Achieved Individual Weighting Efficiency (%)**	**Achieved Household Weighting Efficiency (%)**
Eastern Cape	61.03%	100%
Free State	70.34%	100%
Gauteng	74.16%	100%
KwaZulu-Natal	67.97%	100%
Limpopo	73.11%	100%
Mpumalanga	74.79%	100%
North West	70.59%	100%
Northern Cape	78.88%	100%
Western Cape	70.59%	100%
Overall	70.20%	99.63%

Population vs. Achieved Sample Proportions



National Sample Profile

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	5 016	25%	5 008	25%	5 008	25%	5 008	25%	20 040
Female	2 488	50%	2 511	50%	2 524	50%	2 514	50%	10 037
Male	2 528	50%	2 497	50%	2 484	50%	2 494	50%	10 003
Black	3 989	80%	3 869	77%	3 988	80%	3 988	80%	15 834
White	428	9%	534	11%	423	8%	491	10%	1 876
Indian/Asian	163	3%	134	3%	57	1%	109	2%	463
Coloured	436	9%	471	9%	540	11%	420	8%	1 867
15 – 24	1 201	24%	1 172	23%	991	20%	936	19%	4 300
25 – 34	1 391	28%	1 462	29%	1 461	29%	1 448	29%	5 762
35 – 44	1 041	21%	1 043	21%	1 161	23%	1 180	24%	4 425
45 – 54	630	13%	612	12%	629	13%	686	14%	2 557
55 – 64	439	9%	438	9%	447	9%	435	9%	1 759
65 – 74	230	5%	221	4%	248	5%	253	5%	952
75+	84	2%	60	1%	71	1%	70	1%	285

Sample Profile [Eastern Cape]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	504	25%	512	25%	520	25%	512	25%	2 048
Female	266	53%	258	50%	266	51%	263	51%	1 053
Male	238	47%	254	50%	254	49%	249	49%	995
Black	446	88%	454	89%	435	84%	438	86%	1 773
White	13	3%	23	4%	12	2%	4	1%	52
Indian/Asian	0	0%	1	0%	0	0%	2	0%	3
Coloured	45	9%	34	7%	73	14%	68	13%	220
15 – 24	83	16%	82	16%	90	17%	90	18%	345
25 – 34	112	22%	131	26%	118	23%	147	29%	508
35 – 44	88	17%	98	19%	121	23%	118	23%	425
45 – 54	90	18%	68	13%	73	14%	79	15%	310
55 – 64	69	14%	79	15%	64	12%	38	7%	250
65 – 74	41	8%	40	8%	43	8%	33	6%	157
75+	21	4%	14	3%	11	2%	7	1%	53

Sample Profile [Free State]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	272	26%	288	28%	240	23%	240	23%	1040
Female	140	51%	139	48%	127	53%	122	51%	528
Male	132	49%	149	52%	113	47%	118	49%	512
Black	250	92%	255	88%	214	89%	220	92%	939
White	13	5%	19	7%	16	7%	16	7%	64
Indian/Asian	0	0%	0	0%	0	0%	0	0%	0
Coloured	9	3%	14	5%	10	4%	4	2%	37
15 – 24	45	17%	55	19%	41	17%	42	18%	183
25 – 34	79	29%	79	27%	50	21%	63	26%	271
35 – 44	57	21%	64	22%	56	23%	52	22%	229
45 – 54	40	15%	35	12%	36	15%	37	15%	148
55 – 64	29	11%	28	10%	35	15%	30	13%	122
65 – 74	17	6%	20	7%	17	7%	13	5%	67
75+	5	2%	7	2%	5	2%	3	1%	20

Sample Profile [Gauteng]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	1 584	26%	1 576	26%	1 408	24%	1 416	24%	5 984
Female	710	45%	801	51%	699	50%	717	51%	2 927
Male	874	55%	775	49%	709	50%	699	49%	3 057
Black	1 329	84%	1 286	82%	1 144	81%	1 169	83%	4 928
White	176	11%	211	13%	193	14%	176	12%	756
Indian/Asian	28	2%	32	2%	15	1%	25	2%	100
Coloured	51	3%	47	3%	56	4%	46	3%	200
15 – 24	412	26%	409	26%	308	22%	300	21%	1 429
25 – 34	476	30%	476	30%	437	31%	463	33%	1 852
35 – 44	338	21%	348	22%	322	23%	331	23%	1 339
45 – 54	174	11%	184	12%	182	13%	157	11%	697
55 – 64	109	7%	112	7%	94	7%	94	7%	409
65 – 74	64	4%	41	3%	49	3%	54	4%	208
75+	11	1%	6	0%	16	1%	17	1%	50

Sample Profile [KwaZulu-Natal]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	848	24%	840	24%	912	26%	912	26%	3 512
Female	435	51%	421	50%	463	51%	452	50%	1 771
Male	413	49%	419	50%	449	49%	460	50%	1 741
Black	663	78%	674	80%	836	92%	765	84%	2 938
White	50	6%	63	8%	17	2%	59	6%	189
Indian/Asian	125	15%	95	11%	40	4%	82	9%	342
Coloured	10	1%	8	1%	19	2%	6	1%	43
15 – 24	184	22%	173	21%	153	17%	147	16%	657
25 – 34	244	29%	228	27%	294	32%	262	29%	1 028
35 – 44	165	19%	169	20%	205	22%	198	22%	737
45 – 54	113	13%	122	15%	105	12%	122	13%	462
55 – 64	73	9%	79	9%	81	9%	101	11%	334
65 – 74	52	7%	59	7%	59	6%	61	7%	231
75+	17	1%	10	1%	15	2%	21	2%	63

Sample Profile [Limpopo]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	400	23%	392	23%	456	27%	456	27%	1 704
Female	201	50%	196	50%	231	51%	227	50%	855
Male	199	50%	196	50%	225	49%	229	50%	849
Black	391	98%	392	100%	456	100%	437	96%	1 676
White	1	0%	0	0%	0	0%	13	3%	14
Indian/Asian	8	2%	0	0%	0	0%	0	0%	8
Coloured	0	0%	0	0%	0	0%	6	1%	6
15 – 24	93	23%	97	25%	83	18%	95	21%	368
25 – 34	118	30%	139	35%	141	31%	106	23%	504
35 – 44	87	22%	83	21%	105	23%	128	28%	403
45 – 54	48	12%	36	9%	57	13%	72	16%	213
55 – 64	32	8%	21	5%	39	9%	34	7%	126
65 – 74	15	4%	13	3%	20	4%	14	3%	62
75+	7	2%	3	1%	11	2%	7	2%	28

Sample Profile [Mpumalanga]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	344	23%	352	24%	392	27%	384	26%	1 472
Female	182	53%	176	50%	197	50%	193	50%	748
Male	162	47%	176	50%	195	50%	191	50%	724
Black	324	94%	290	82%	352	90%	361	94%	1 327
White	15	4%	56	16%	37	9%	21	5%	129
Indian/Asian	0	0%	5	2%	1	0%	0	0	6
Coloured	5	2%	1	0%	2	1%	2	1%	10
15 – 24	75	22%	78	22%	79	20%	66	17%	298
25 – 34	89	26%	104	30%	112	29%	122	32%	427
35 – 44	94	27%	68	19%	97	25%	68	18%	327
45 – 54	34	10%	49	14%	45	11%	53	14%	181
55 – 64	39	11%	27	8%	36	9%	41	11%	143
65 – 74	5	1%	17	5%	19	5%	30	8%	71
75+	8	2%	9	3%	4	1%	4	1%	25

Sample Profile [Northern Cape]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	120	27%	112	25%	96	22%	112	25%	440
Female	63	53%	56	50%	50	52%	56	50%	225
Male	57	47%	56	50%	46	48%	56	50%	215
Black	64	53%	58	52%	12	13%	71	63%	205
White	8	7%	9	8%	8	8%	1	1%	26
Indian/Asian	1	1%	0	0%	0	0%	0	0%	1
Coloured	47	39%	45	40%	76	79%	40	36%	208
15 – 24	24	20%	22	20%	12	13%	18	16%	76
25 – 34	28	23%	29	26%	21	22%	30	27%	108
35 – 44	31	26%	34	30%	27	28%	36	32%	128
45 – 54	16	13%	16	14%	14	15%	22	20%	68
55 – 64	14	12%	8	7%	12	13%	5	4%	39
65 – 74	3	3%	2	2%	7	7%	1	1%	13
75+	4	3%	1	1%	3	3%	0	0%	8

Sample Profile [North West]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	336	25%	328	24%	336	25%	344	26%	1 344
Female	183	54%	158	48%	170	51%	170	49%	681
Male	153	46%	170	52%	166	49%	174	51%	663
Black	321	95%	294	90%	313	93%	326	95%	1 254
White	9	3%	21	6%	9	3%	16	5%	55
Indian/Asian	0	0%	0	0%	0	0%	0	0%	0
Coloured	6	2%	13	4%	14	4%	2	0%	35
15 – 24	67	20%	79	24%	59	18%	56	16%	261
25 – 34	101	30%	101	31%	98	29%	109	32%	409
35 – 44	72	21%	65	20%	79	24%	66	19%	282
45 – 54	42	13%	34	10%	40	12%	56	16%	172
55 – 64	31	9%	34	10%	39	12%	29	8%	133
65 – 74	14	4%	8	3%	17	5%	20	6%	59
75+	9	3%	7	2%	4	1%	8	2%	28

Sample Profile [Western Cape]

	July 2022 to June 2023 [Unweighted Data]								Total
	Jul – Sept'22	%	Oct – Dec'22	%	Jan – Mar'23	%	Apr – Jun'23	%	
Total	608	24%	608	24%	648	26%	632	25%	2 496
Female	308	51%	306	50%	321	50%	314	50%	1 249
Male	300	49%	302	50%	327	50%	318	50%	1 247
Black	201	33%	166	27%	226	35%	201	32%	794
White	143	24%	132	22%	131	20%	185	29%	591
Indian/Asian	1	0%	1	0%	1	0%	0	0%	3
Coloured	263	43%	309	51%	290	45%	246	39%	1 108
15 – 24	218	36%	177	29%	166	26%	122	19%	683
25 – 34	144	24%	175	29%	190	29%	146	23%	655
35 – 44	109	18%	114	19%	149	23%	183	29%	555
45 – 54	73	12%	68	11%	77	12%	88	14%	306
55 – 64	43	7%	50	8%	47	7%	63	10%	203
65 – 74	19	3%	21	3%	17	3%	27	4%	84
75+	2	0%	3	0%	2	0%	3	1 %	10

Achieved Sample: Interviews

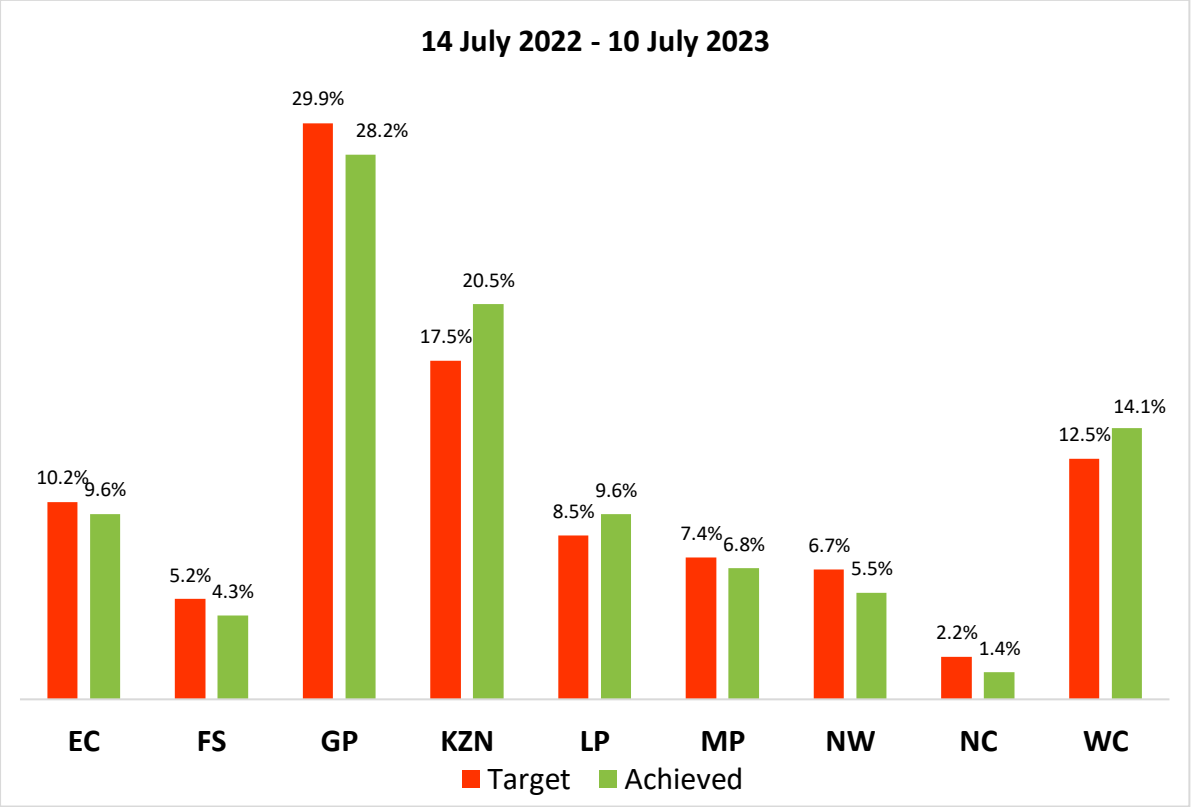
Province	14 July 2022 – 10 July 2023		
	Target Sample	Achieved Sample	Variance
Eastern Cape	2 044	2 048	0%
Free State	1 038	1 040	0%
Gauteng	5 973	5 984	0%
KwaZulu-Natal	3 506	3 512	0%
Limpopo	1 701	1 704	0%
Mpumalanga	1 469	1 472	0%
North West	1 342	1 344	0%
Northern Cape	439	440	0%
Western Cape	2 492	2 496	0%
Total	20 004	20 040	

There was no variance between the target and achieved sample proportions across all provinces. Note that the variance is obtained as follows: For example, for Eastern Cape: Achieved sample % - Target sample % = [(2048/20040) - (2044/20004)] x 100%.

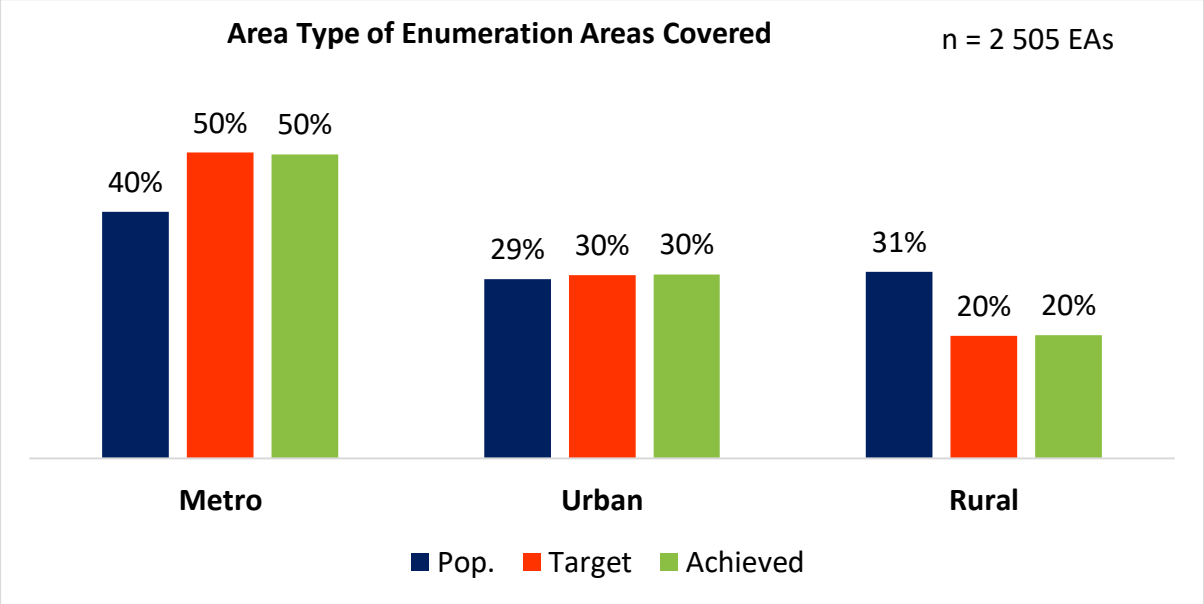
Achieved Sample: Leave-Behind Questionnaires

Province	14 July 2022 – 10 July 2023				
	Target	No. of Paper Leave-Behind Questionnaires Collected and Processed	No. of Online Leave-Behind Questionnaires Submitted	Total Number of Leave-Behind Questionnaires Collected	Variance
Eastern Cape	1 022	962	86	1 048	-0.62%
Free State	519	421	53	474	-0.85%
Gauteng	2 986	2 843	238	3 081	-1.64%
KwaZulu-Natal	1 753	1 902	334	2 236	+2.95%
Limpopo	850	837	210	1 047	+1.09%
Mpumalanga	735	651	90	741	-0.56%
North West	671	578	26	604	-1.18%
Northern Cape	220	142	12	154	-0.79%
Western Cape	1 246	1265	271	1 536	+1.61%
Total	10 002	9 601	1 320	10 921	

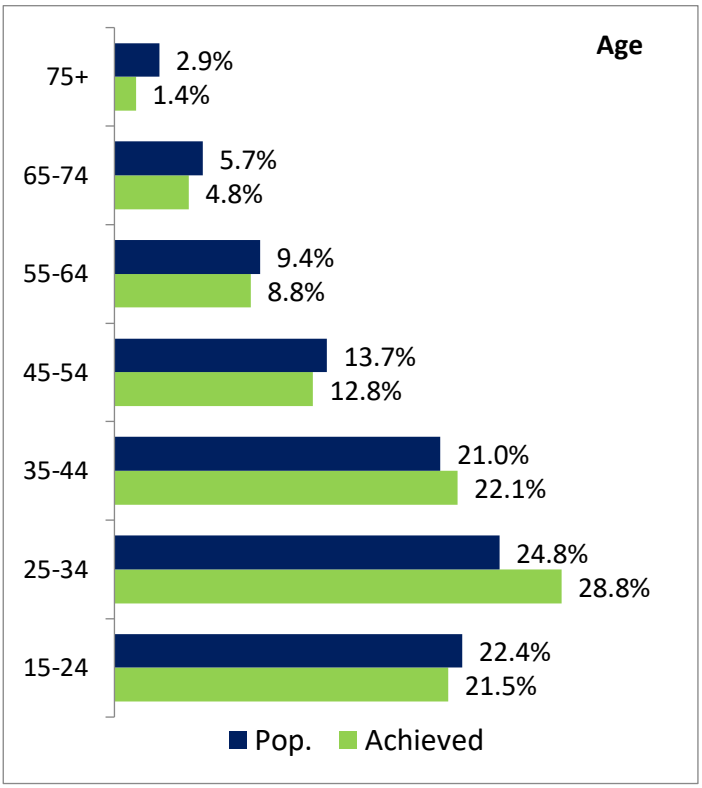
Target vs. Achieved [Leave-Behind Questionnaires]

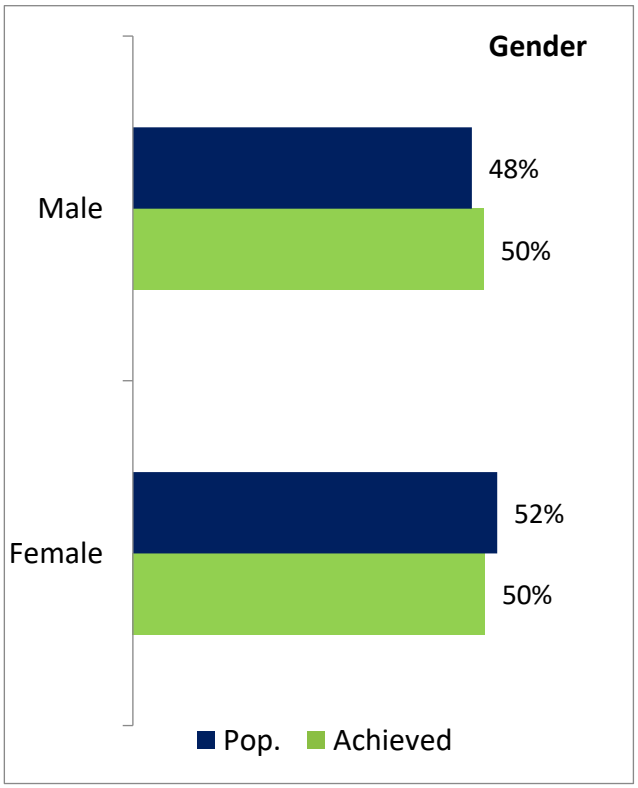


Area Distribution

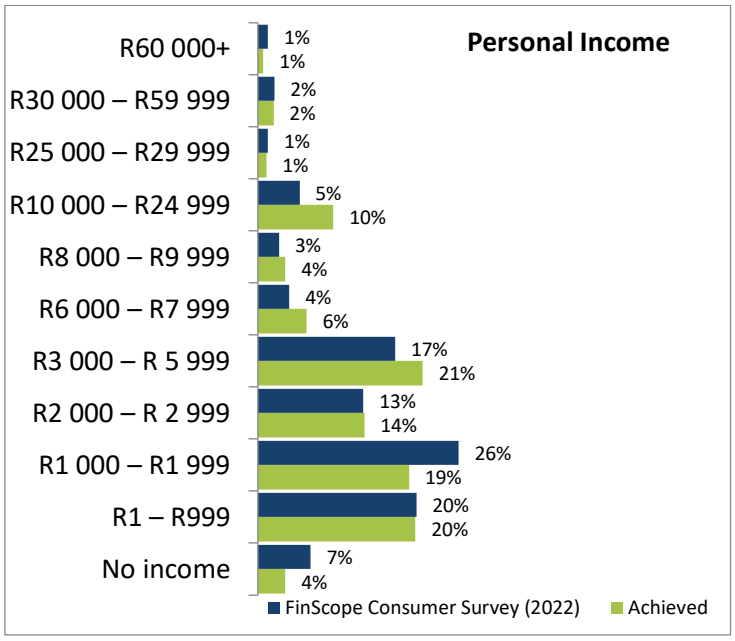


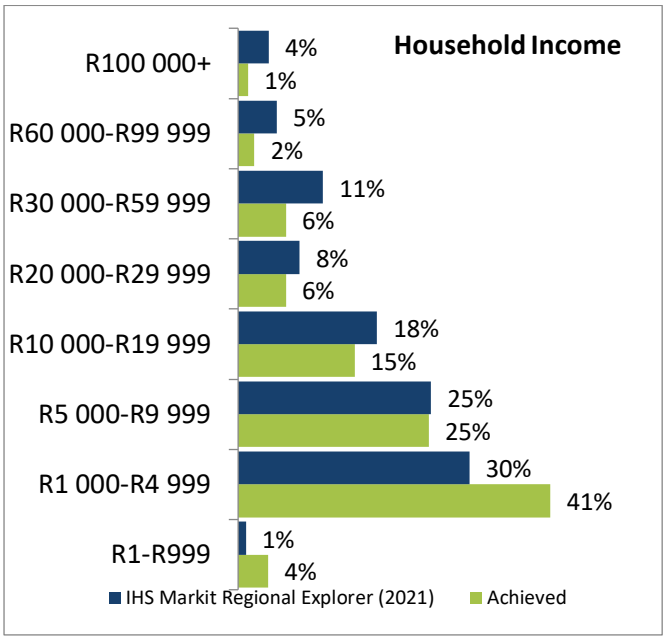
Respondent Profiles

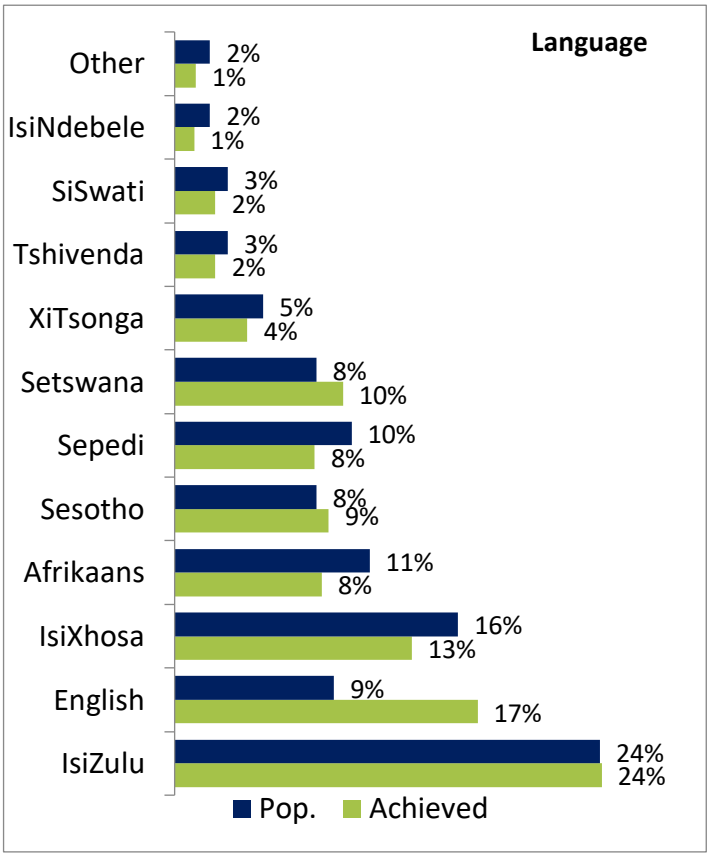


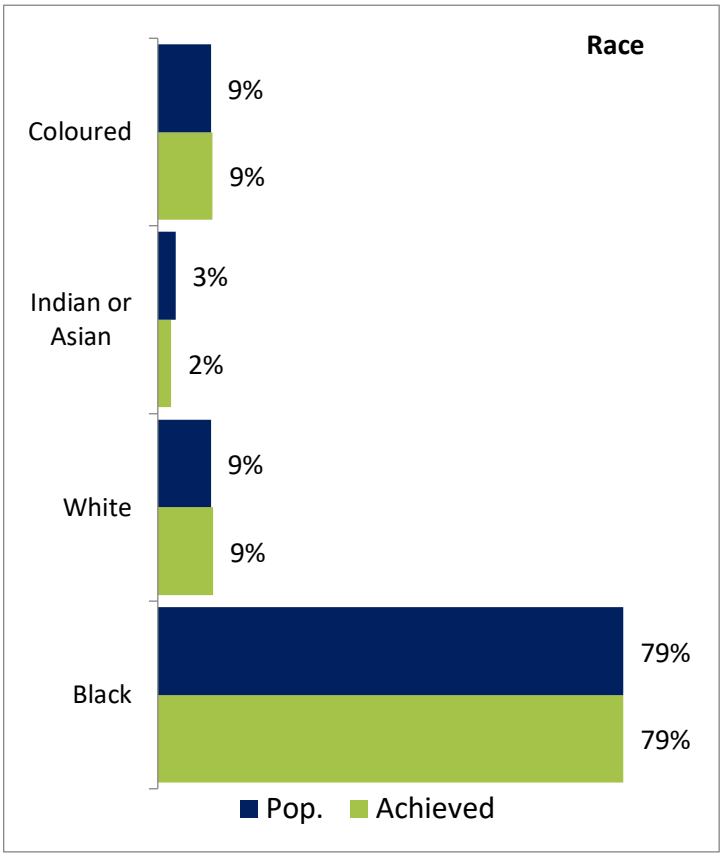


Source: Statistics South Africa 2022 Mid-year Estimates [15+ years]

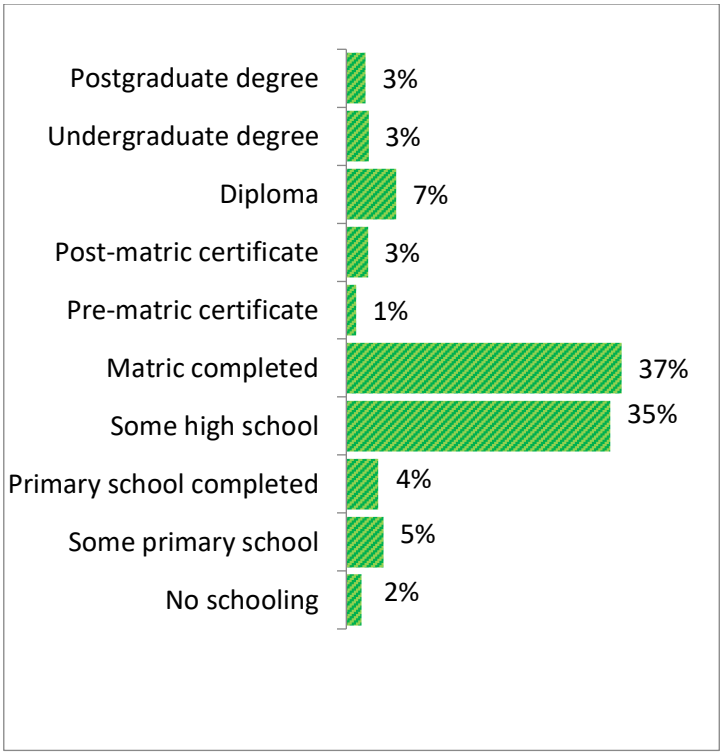


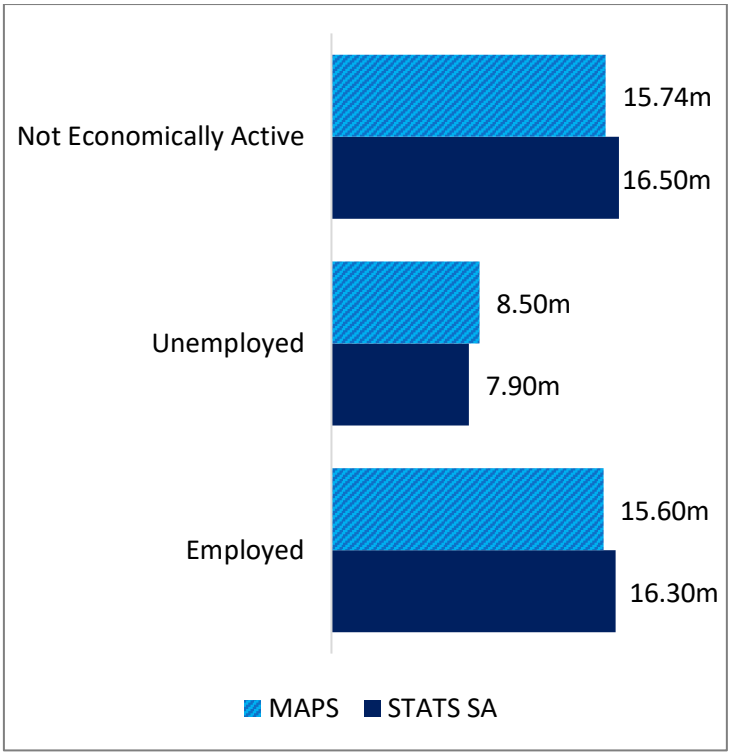






Source: Statistics South Africa Census 2022
[Language Most Spoken in Household]





Source: STATS SA QLFS Q2 2023, 15-64 years

MARKETING RESEARCH FOUNDATION

Section C:

Fieldwork

PLUS 94 RESEARCH

Section C: Fieldwork

6.0 Fieldwork

The Interview

In the event of a multi-household interview point, the Kish grid is utilised to determine which household will be interviewed. After selection of the household to be interviewed is made, the number of adult males or females in the household who are 15 years and older is determined to enable random selection of the individual to be interviewed; the Kish grid is once again utilised to randomly select this individual. Once the interview is completed, respondents are asked to complete a self-completion/leave-behind questionnaire.

In rural areas, interviewer with knowledge of the language and customs of the local population are used and arrangements are made with the chief/headman in charge before work commences.

Two research instruments were used for the MAPS™ study:

- Face-to-face questionnaire; and
- Leave-behind questionnaire.

The average interview length for the face-to-face questionnaire was between 55 and 60 minutes. Respondents were given between three and five days to fill in the leave-behind questionnaire. Tablet-assisted personal interviewing (TAPI) was utilised for the face-to-face interviews, whereas paper-assisted personal interviewing (PAPI) and computer-assisted web interviewing (CAWI) methods were employed for the leave-behind questionnaire.

Both the questionnaires are provided in the Appendix of this Technical Report.

Fieldwork Summary

Fieldwork for the MAPS™ July 2022 – June 2023 study began on the 14th of July 2022 and came to an end on the 10th of July 2023.

The specific start and end dates of MAPS™ July 2022 – June 2023 are shown below:

14 July 2022 – 10 July 2023	
Quarter	**Period**
Q3 2022	14 July – 27 September 2022
Q4 2022	1 October – 21 December 2022
Q1 2023	17 January – 3 April 2023
Q2 2023	1 April – 10 July 2023

MAPS™ July 2022 – June 2023 Timeline

Consideration Area	Summary
Questionnaire Changes/Additions	MAPS questionnaire changes/additions that were compiled during the last quarter of 2022 by the MRF Research Committee and Plus 94 Research on behalf of the MAPS subscribers came into effect in January 2023. Once every year, the MRF gives its subscribers an opportunity to bring forward questionnaire changes or additions that are either of interest to the subscribers or have the potential to add value to the MAPS study. The regular modification of the research instruments helps to accommodate diverse subscriber research needs and ensures the relevance and accuracy of data collected. In addition, this form of flexibility allows for the inclusion of new product options, pack shots, emerging consumer trends, and deletion of products or services that no longer exist on the market. Below are some of the elements of the

	questionnaires [i.e., MAPS face-to-face questionnaire and the MAPS leave-behind questionnaire] that were updated/added: • Home appliances, factors considered when buying new appliances and furniture; • Additional retail outlets; • Average number of hours spent on media platforms [e.g., linear television, magazines, newspapers, radio, social media, podcasts, video, and audio streaming] and reasons for going to the cinema; • Online shopping categories [past four weeks]; • Additional financial services and products from formal financial institutions, use of secondary bank account, additional reasons for taking short-term loans, additional mobile payment services, investment products and financial policies, use of investment/wealth management companies, personal quantity of and contribution towards funeral policies; • Purchasing of accessories (e.g., bags/purses, wallets, jewellery, watches, neckwear/wristwear, sunglasses, hats/beanies, belts, and hair accessories); • Additional products and brands under household groceries, snacks, personal care, and drinks; • Revision or update of pack shots; • Additional sports; and • Addition of specific homeware categories (bed inners, bed covers, bed sheets/wraps, blankets/throws, towels, bathroom accessories, curtains, cushions, rugs, candleware, wall art, plants and flowers, bakeware, dinnerware, glassware, cookware, utensils, storage, cleaning equipment, cutlery, and furniture)
Interviewers	About 165 fieldworkers successfully conducted 20 040 face-to-face interviews and collected 10 921 leave-behind questionnaires (9 601 paper and 1 320 online) across all the provinces in 2 505 EAs. There was a 39% increase of online diary participation and a 4% decline in the paper-based diary output (i.e., MAPS™ January 2022 – December 2022 vs. MAPS™ July 2022 – June 2023). The current reporting period has experienced the largest increase with respect to the online diary output since the commencement of the MAPS™ study in 2020. Online research instruments have several advantages associated with them, hence the massive drive in promoting them. The risk of discarding a completed online diary due to poor quality of data is generally much lower than that of a paper one. In some cases, respondents that make use of the self-administered diary that is paper based find it difficult to stick to logic branches/skip logic instructions, which in turn leads to invalid responses for some questions in the survey. However, paper diaries usually have much higher response rates than online diaries across the entire LSM/SEM spectrum. Most of the rural and low-income earning respondents still require the use of paper instead of online (not by choice but circumstance). Therefore, it remains pivotal for the MAPS™ study to continue to have a mix of both data-collection methods for the leave-behind questionnaire. The Plus 94 Research call centre interviewers regularly reached out to online diary respondents in order to encourage

	them to fill in the diaries and to find out if they were experiencing any issues. The follow-up calls from the call centre have proved to be extremely effective, yielding extraordinary online diary response rates. At the beginning of year on the 13th of January 2023, over 140 interviewers virtually attended a MAPS™ interviewer training session. The two main objectives of the training session were as follows: • To take interviewers through the MAPS™ questionnaire changes and additions in preparation for Q1 2023 fieldwork, which began on the 17th of January 2023; and • To provide feedback on the quality of data that they gathered for the fourth quarter of 2022. Furthermore, two MAPS™ training workshops took place from the 16th to the 17th of March 2023 and from the 17th to the 18th of April 2023 in Mpumalanga and Free State respectively. There was a shortage of fieldworkers in both the provinces due to resignations and it was becoming difficult for the teams to complete their targets on time. Debriefing sessions not only promote the collection of quality data for the MAPS™ study but help minimise learning loss for the interviewers. Just before the start of Q2 2023 fieldwork, a debriefing session was held on the 31st of March 2023 with all the interviewers nationwide. The field management staff virtually met with the fieldworkers at least once a month to provide feedback on areas of improvement. In addition, field supervisors were accessible to interviewers daily for guidance. With regard to adequate field communication between field staff, the field manager in charge of the MAPS™ study called for semi-weekly virtual and in-person communication among the various levels of field staff. All field supervisors and interviewers received a daily update on fieldwork progress via email communication. This helped to ensure steady and adequate progress in data collection by keeping all staff on task and making them accountable for their progress or lack thereof. Casual communication platforms such as WhatsApp groups were also used by field staff. In certain instances, WhatsApp is a much more efficient channel compared to channels such as email for an interviewer if they need to receive speedy assistance.
Field Quality Control Checks	The following field quality control procedures were implemented: **Back-checks**: Back-checks are the most important quality control feature of any survey. Slightly over a quarter of the completed interviews (i.e., 27%) were telephonically back-checked during the first half of 2023. Cases that underwent back-checks were randomly selected and at least 20% of each fieldworker's submitted interviews were validated. The telephonic back-check responses were compared against the original responses for multiple variables to determine if there were any discrepancies. In addition, the respondents were asked to rate their overall survey experience and asked if the Plus 94 Research interviewers conducted themselves in a professional manner during the interview. The average interview length of a telephonic back-check was approximately five minutes. At least 15% of the interviews were physically back-checked by well trained, experienced, and reliable field supervisors. A team of data quality checkers regularly listened to recorded back-checks to establish the authenticity of the interview,

	the way in which the interview was conducted, and the professionalism of the interviewer. Interviewer Kish grid compliance was assessed through all three types of back-checks (i.e., physical, telephonic, and recordings). **Checking of captured GPS co-ordinates**: Captured GPS co-ordinates were monitored and verified on a regular basis. The captured GPS co-ordinates are compared against the pre-specified visiting points provided on enumeration maps. Interviews with GPS co-ordinates that were more than 25m away from the pre-specified points were discarded. **Paper self-completion questionnaire quality assurance**: All paper diary respondents were contacted to ensure that there was no falsification of data by the fieldworkers. The calls from the Plus 94 Research team also confirmed if the Kish grid-selected household member who took part in the face-to-face interview was the same individual who went on to fill in the self-completion questionnaire. In addition, the call confirmed the contact details for the processing of respondent incentives. Any paper diary that did not meet the set data quality standards with respect to completeness, consistency, and accuracy was discarded.
Sampling	Professor Khangelani Zuma provided a sample of 2 508 main sample EAs and 624 substitution EAs with the expected area type ratio of 50:30:20 [i.e., metro, urban, and rural respectively] for the 2023 MAPS™ fieldwork exercise. The MAPS™ 2021 fieldwork, which was assessed by 3M3A auditors, had a district coverage of 79% – a cause of concern. This was then addressed through the 2023 fieldwork sample, which represented all the districts and municipalities in line with one of the 3M3A auditors' recommendations. It also covered 1 238 out of the 4 393 main places (28%) in the country. It is important to note that it is impossible to draw all the 4 393 main places for a MAPS™ annual sample that reaches out to an average of 20 000 respondents in a year with eight respondents being selected per EA. The area type distribution target [50% metro, 30% urban, and 20% rural] was met successfully for the MAPS™ July 2022 – June 2023 fieldwork period. The gender split stood at 50:50 and this is guaranteed by sampling the same number of female and male respondents at EA level where possible. The pattern of results observed on level of education and frequent language spoken has largely remained steady since the MAPS™ study began in July 2020 (no significant change has been identified for the two variables). Besides the common demographic variables (such age, race, and gender), income and bank user variable outcomes also tend to reveal if the appropriate respondent sampling procedures are being strictly followed by fieldworkers. Over the past year, both the average household and personal income have tremendously increased. The average household income shot up from R9 395 to R15 436 (64% increase), whereas that of personal income increased from R4 619 to R6 613 (43% increase). The percentage of bank users rose from 60.9% to 74% (13.1% increase). In 2021 and 2022 it had become necessary for the MAPS™ data to use the FinScope banking variable data as a weighting factor due to the underrepresentation of banked consumers in the data. This is no longer a prerequisite for the MAPS™ weighting procedure, considering the significant improvement in this regard. The 3M3A auditors also advised against the use of banked variable benchmark data for weighting purposes, since it is not common practice to use a specific product or service category in data

	weighting. The achieved sample size of SASSA grant beneficiaries remained almost constant (42.2% to 39.5%). The two quarter periods being compared in this regard are Q2 2022 and Q2 2023. The Western Cape province had the most improved demographic output in terms of age group representation in Q1 and Q2 2023. During the same period in 2022, it was the worst performing province in that respect. Although the fieldworkers have made significant strides in reducing the extent of over-sampling of youth respondents by adhering to the Kish grid system over the past 12 months (this was also part of the 3M3A audit recommendation), there is a concerning trend that is gradually building in the under-sampling of the 15-24 age group. This group was under-represented by 3% at national level; the trend was more pronounced in all the provinces except for Gauteng and the Western Cape during the second quarter of 2023. Field supervisors are closely monitoring the situation on the ground so that they can establish the direct cause of this.
Household Substitution	The 3M3A's audit exercise highlighted that the MAPS™ 2021 survey's EA and household substitution were low in comparison to other surveys of a similar nature. There has been a notable increase in EA and household substitution during the past 12 months. This points to a high level of discipline in the way the fieldworkers are applying the Kish grid system in the selection of respondents at household level, and indicates an active effort in approaching the required pre-specified points on enumeration area maps. The overall household substitution rate increased substantially by approximately 10% from the previous bi-annual report for the MAPS™ January 2022 – December 2022 survey (i.e., from 18% to 28%). The EA and household substitution breakdown derived from the two most recent bi-annual reports was as follows: MAPS™ January 2022 – December 2022: 1 530 households and 260 EAs were substituted; MAPS™ July 2022 – June 2023: 2 720 households and 369 EAs were substituted.
Missing Information	During the past six months, between 5% and 6% of the respondents refused to provide either their household income or personal income as they deemed this type of question to be of a sensitive nature, while between 26% and 28% of the respondents mentioned that they did not have the knowledge of their household income. Data imputation was implemented to help close this gap. Variables that were chosen for the imputation process include broader income band questions (which were added to the questionnaire in January 2023), age, area, employment status, highest level of education, LSM and SEM, and SASSA income. A total of 28 respondents refused to provide their age. All the respondents were comfortable with specifying their race, while two individuals chose not to state their gender (imputation was also considered for these two cases).
Major Challenges Experienced in Field	• Cold weather conditions during winter; • The need to walk to access households located on hilly terrain – Free State and KwaZulu-Natal; • Crime across all area types (mainly in KwaZulu-Natal, Western Cape, and Eastern Cape); • The presence of ferocious dogs (pit bulls in some cases) in a few households in the Eastern Cape; • Access to gated communities (residential estates and farms); • Despite interviewers donning Plus 94 Research uniforms and carrying MAPS™ introductory letters, a few of the potential respondents refused to participate

	in the survey. The frequent scams that take place in their communities made it difficult to convince them that MAPS™ was a legitimate survey. Interviewers also came across respondents who successfully took part in the survey but were generally unsettled at the beginning due to the fear of being 'duped'; • Poor network coverage due to severe loadshedding; and • Poor network coverage in remote areas. This challenge tends to affect the GPS capturing process at the visiting points.

MARKETING RESEARCH FOUNDATION

Section D:

Analysis and Results

PLUS 94 RESEARCH

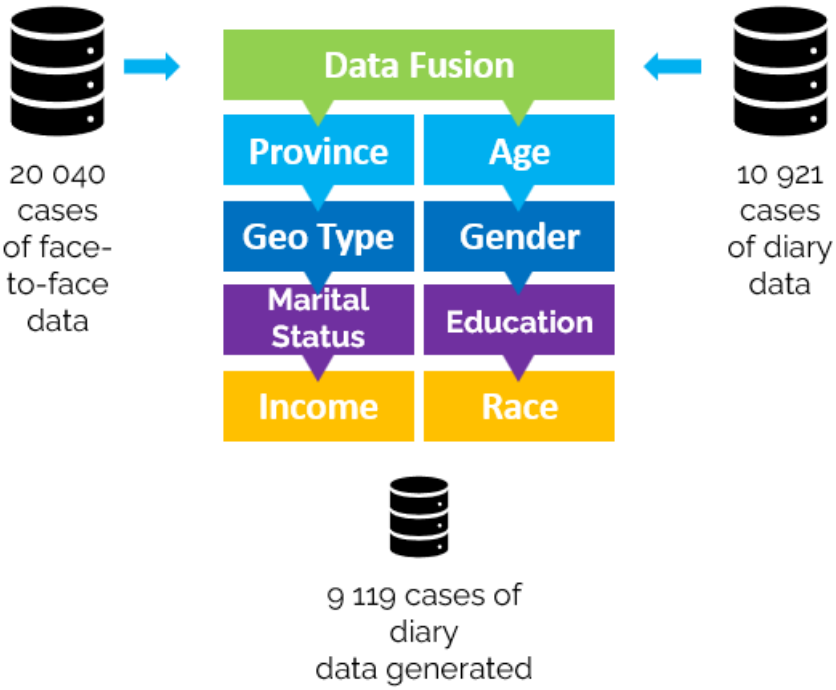
Section D: Analysis and Results

7.0 Analysis and Results

Data analysts, processors, and project managers constantly scrutinised and cleaned the data collected to ensure the integrity of the data and results.

Data Fusion

All 20 040 respondents completed a face-to-face questionnaire. Half of them were expected to complete the leave-behind questionnaire; a total of 10 921 respondents successfully completed the leave behind questionnaire. For the 9 119 respondents who did not complete the self-completion instrument, their non-available data was obtained through integrating the face-to-face interviews data with the leave-behind questionnaire data. A number of hooks were considered in fusing data; these included behavioural ones, but most were demographic variables.



Substitution

In cases where the selected respondent was unavailable, and after a total of three visits at different times of the day, substitution of the interview point would occur. In order to reduce substitution rates, the interviewer would take the contact details of the selected respondent in a household and phone to make an appointment. The interview would be scheduled at a time that best suited the respondent. Each household replacement/substitution was approved by field supervisors in order to avoid interviewer bias. The project manager was responsible for approving all EA replacements. Each

interviewer's work was analysed for any patterns in the number of refusals and successful interviews. The substitution details for the MAPS™ July 2022 – June 2023 survey are shown below:

Reason for Replacement	Number of Households
Refused	1 676
House inaccessible (gated communities and farms)	259
Nobody home (after two call-backs)	400
EA inaccessible	2 952 (369 *EAs*)
Other	385
Total	**5 672**

The overall household substitution rate stood at 28% (i.e., 10% more than the rate obtained for the MAPS™ January – December 2022 survey).

The table below unpacks the reasons for the replacement of 369 EAs across all the nine provinces:

Province	**Reason for EA substitution**								**Total**
	Access denied (Estate)	Access denied (Farm)	Non-residential EA	No longer inhabited	EA refusal	Area very unsafe	Severely damaged roads/EA inaccessible	Language barrier	
Eastern Cape	10	15	12	1	4	1	0	0	43
Free State	4	4	2	3	4	0	0	0	17
Gauteng	127	1	2	2	1	0	0	0	133
KwaZulu-Natal	22	3	11	4	7	3	8	0	58
Limpopo	3	8	9	2	3	0	0	0	25
Mpumalanga	9	4	4	0	7	1	0	0	25
North West	8	6	5	2	10	0	0	0	31
Northern Cape	2	3	3	1	4	0	1	1	15
Western Cape	17	0	0	1	0	4	0	0	22
Total	**202**	**44**	**48**	**16**	**40**	**9**	**9**	**1**	**369**

Back-checking

At least a quarter of each interviewer's work was back-checked to verify the quality and legitimacy of key data collected for the MAPS™ study. Throughout the duration of the fieldwork, the Plus 94

Research call centre-based backcheck team returns to a randomly chosen sub-sample of respondents. A smaller set of questions from the face-to-face questionnaire is used for the back-check survey. The back-checking exercise enables Plus 94 Research to modify certain aspects of the data collection in order to improve data quality. A total of **5 933** respondents confirmed that the interviews had taken place and the information provided was correct.

8.0 Segmentation

Segmentation tools assist in grouping together "like" people in order to establish a brand's relative potential in the marketplace. They enable the marketing and advertising industries to trend changes in the identified segments over time. The MAPS™ study offers a number of market segmentation tools in the analysis of the collected data. These are the Living Standards Measure (LSM), Socio-Economic Measure (SEM), Generations, and Lifestages.

Socio-Economic Measure (SEM)

The Publisher Research Council and the Broadcast Research Council of South Africa have developed and co-own the Establishment Survey SEM™ segmentation model.

The SEM 2018 algorithm, where each respondent is assigned a score that ranges from 0 to 100, was used to define the SEM segmentation. Ten segments were developed based on the input variables shown below:

Variable no.	Attribute	MAPS™ question no.
1	Built-in kitchen sink	H8
2	Tap water inside your home, or store-bought water for use in your home	H6A
3	Hot running water from a geyser	H6
4	Flush toilet in/outside house	H7
5	Home security service	H12A
6	Motorcar	G1
7	Fridge or combined fridge/freezer	141a
8	Side-by-side fridge and freezer	141a
9	Deep freezer – free standing	141a
10	Microwave oven	141a
11	Floor polisher or vacuum cleaner	141a
12	Washing machine	141a
13	Roof tiles or concrete roofing	P1
14	None, earth, or dung flooring	P2
15	Cement, concrete, or raw wood flooring	P2
16	Finished floor with parquet, carpet, tiles, or ceramic flooring	P2
17	None or one sleeping room	P3
18	Two sleeping rooms	P3
19	Three or more sleeping rooms	P3
20	A post office near where you live	P4
21	A police station near where you live	P4

9.0 Living Standards Measure (LSM)

"The SAARF LSM (Living Standards Measure) divides the population into 10 LSM groups: 10 (highest) to 1 (lowest). It cuts across race and other outmoded techniques of categorising people, and instead groups people according to their living standards using criteria such as degree of urbanisation and ownership of cars and major appliances." (*Source: www.saarf.co.za*)

The LSM indicator variables that were used in the analysis of MAPS™ data are shown below:

Variable no.	Attribute	MAPS™ question no.
1	Hot running water from a geyser	H6
2	Computer – desktop/laptop	FQ2
3	Electric stove	141a
4	Number of domestic workers or household helpers in household (this includes live-in and part-time domestics and gardeners)	R23
5	0 or 1 radio set in household	FQ2
6	Flush toilet in/outside house	H7
7	Motor vehicle in household	G1
8	Washing machine	141a
9	Refrigerator or combined fridge/freezer	141a
10	Vacuum cleaner/floor polisher	141a
11	Pay TV subscription	C3
12	Dishwashing machine	141a
13	Three or more cell phones in household	E1
14	Two cell phones in household	E1
15	Home security service	H12A
16	Deep freezer – free standing	141a
17	Microwave oven	141a
18	Rural rest (excl. Western Cape and Gauteng rural)	*
19	House/cluster house/townhouse	H1
20	DVD player/Blu-ray player	141a
21	Tumble dryer	141a
22	Home theatre system	141a
23	Home telephone (excl. cell phone)	FQ3
24	Swimming pool	H14
25	Tap water in house/on plot	H6A
26	Built-in kitchen sink	H8
27	TV set	C1
28	Air conditioner (excl. fans)	141a
29	Metropolitan dweller (250 000+)	*

**By sample design*

Lifestages

The Lifestages used for MAPS are adopted from the SAARF Lifestages. There are eight SAARF Lifestages, which are personal to the respondent and are determined by age, marital status, and whether dependent children in various age categories are living with them or not. A child has been defined as someone who is under 21. It should be noted that the classifications are not always linear as there can be parallel age paths. MAPS has condensed two of the Lifestages (At-Home Singles and Young Independent Singles) into 'Young Singles' to end up with seven Lifestages [Young Singles, Mature Singles, Young Couples, Mature Couples, Young Families, Single-Parent Families and Mature Families].

Generations

The Generations segments are as per the Telmar Global Generations definition and the Pew Research Generations definition. The Telmar Global generations segments are classified as follows:

- Pre-Boomers: 1945-earlier;
- Boomers: 1946-1964;
- Generation X: 1965-1985;
- Millennials (Gen Y): 1986-2005; and
- Generation Z: 2006-present.

The Pew Research generations segments are classified as follows:

- Silent: 1928-1945;
- Boomers: 1946-1964;
- Generation X: 1965-1980;
- Millennials (Gen Y): 1981-1996; and
- Generation Z: 1997-2012.

10.0 Confidence Levels

All sample survey results are, unavoidably, subject to a margin of error. How large this margin of error is depends principally on the size of the unweighted sample and, in the case of "yes/no" questions, (as comprise the majority of the MAPS questionnaire) the unanimity of response – for a given sample size, the margin of error is larger, in absolute size, if 50% of people answer "yes" to a given questions and 50% "no", as opposed to if only one person in 10 says "yes".

Contrary to widespread belief, the size of the margin of error is very little influenced, under certain conditions that generally apply in the MAPS™ case, by the size of the population that the sample represents or by the proportion of that population who are interviewed.

In a sample survey the sample data is used to estimate on a scientific basis the values of "universe" parameters (e.g., readership). Information based on sample data may vary from sample to sample, which implies that an estimated value may deviate from the "true" (albeit unknown) universe value. The latter is the value that would have been obtained if the whole population had been surveyed using the same questionnaire and survey method. The difference between an estimated value and the

corresponding true or universe value is referred to as the sample error. This sample error will vary from sample to sample and this variation in the sample error is estimated by the so-called standard error of the estimate.

An interval around the estimated value can be calculated, which will contain the true (universe) value with a given degree of confidence. This interval is referred to as a confidence interval for the (unknown) universe value. The boundaries of a confidence interval are obtained by subtracting a certain quantity from the estimated value and by also adding this quantity to the estimated value. This quantity is called the precision of the estimate and is, for a given confidence coefficient, equal to the maximum value of the sample error as defined above. In other words, the size of a sample error of an estimate cannot exceed the precision of the estimate. The precision of an estimate is calculated as the product of a constant and the standard error, where the value of the constant is determined by the chosen confidence coefficient. For a confidence coefficient of 0.95 or 95% the precision = 1.96 times the standard error, and for a confidence coefficient of 0.99 or 99% the precision = 2.58 times the standard error.

If the estimated value as well as its standard error is known, the true or universe value will not differ from the estimated value by more than 1.96 (approximately twice) the value of the standard error, assuming a 95% confidence coefficient.

The chart overleaf allows the approximate calculation of the “95% confidence limits” of any percentage shown in the MAPS™ reports. These confidence limits are such that there is only about one chance in 20 of the true percentage lying outside the limits given by the reported percentage plus or minus the confidence limits.

To obtain the confidence limit for any percentage, lay a straight edge across the chart so that it joins the relevant unweighted sample size on the left-hand scale and the percentage of interest on the right-hand scale. The confidence limits can then be read off the central scale, at the point where the straight edge cuts it.

Example

Suppose MAPS™ shows that, amongst men, the readership of a certain newspaper is 20% in Gauteng, with an unweighted sample size of 1 000 in this sub-group.

A straight edge laid across “1 000” on the left-hand scale and “20%” on the right-hand scale cuts the central scale at 3.5% approximately.

The 95% confidence limits of the readership level are thus 23.5% (i.e., 20% + 3.5%) and 16.5% (i.e., 20% - 3.5%). There is only about a 1 in 20 chance that the true (unknown) figure is either larger than 23.5% or smaller than 16.5%.

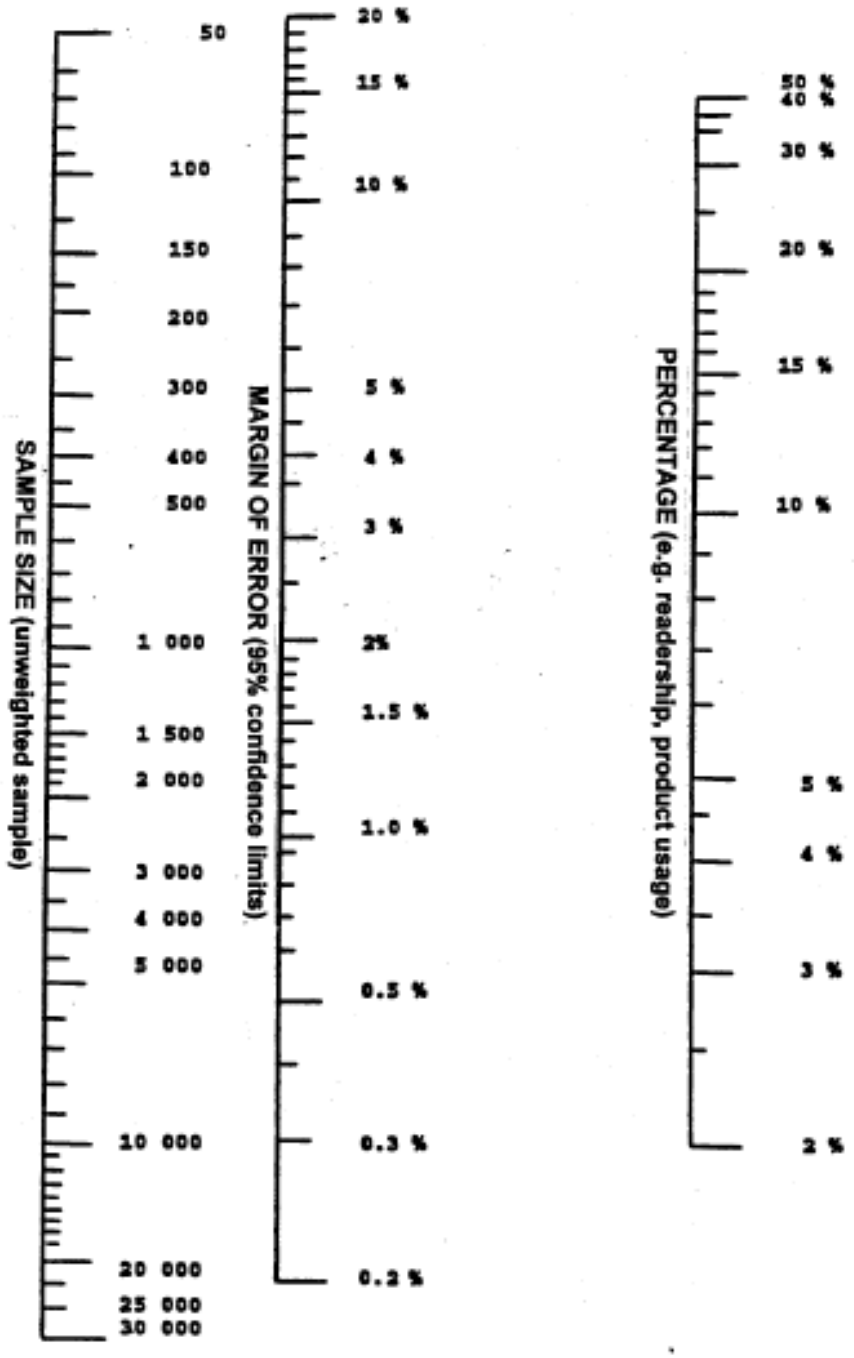
To obtain the confidence limits of the numbers of readers, multiply the results just obtained by the “estimated population” of the target group.

Continuing the previous illustration, if the table shows that the number of males in Gauteng is 920 000, then the 95% confidence limits of the readership of the publication would be (23.5% of 920 000) or 216 000 and (16.5% of 920 000) or 152 000, approximately.

Technical Note

In view of the sample design employed for MAPS™, it is inappropriate to estimate confidence limits based on Simple Random sample assumptions. The nomogram has been constructed using a Design Factor of 1.25. Whilst experience and some calculations based on MAPS™ data can support this figure, it may be exceeded when, for example, a variable is highly skewed in its population distribution; the confidence limits will then be wider. An upper limit of 2.0 for the Design Factor may be reasonably assumed, implying confidence limits 62.5% greater than those calculated from the nomogram in the worst case.

CONFIDENCE LIMITS



Section E:

Appendix

Section E: Appendix

11.0 MAPS™ Research Instruments

In order to get access to the questionnaires that were used for the MAPS™ July 2022 – June 2023 survey, please click on the link below:

https://mapssurvey.co.za/tests/docs/

11.1 Questionnaire Changes/Additions

MAPS™ questionnaire changes/additions implemented between July 2020 and December 2022 can be accessed on the link below:

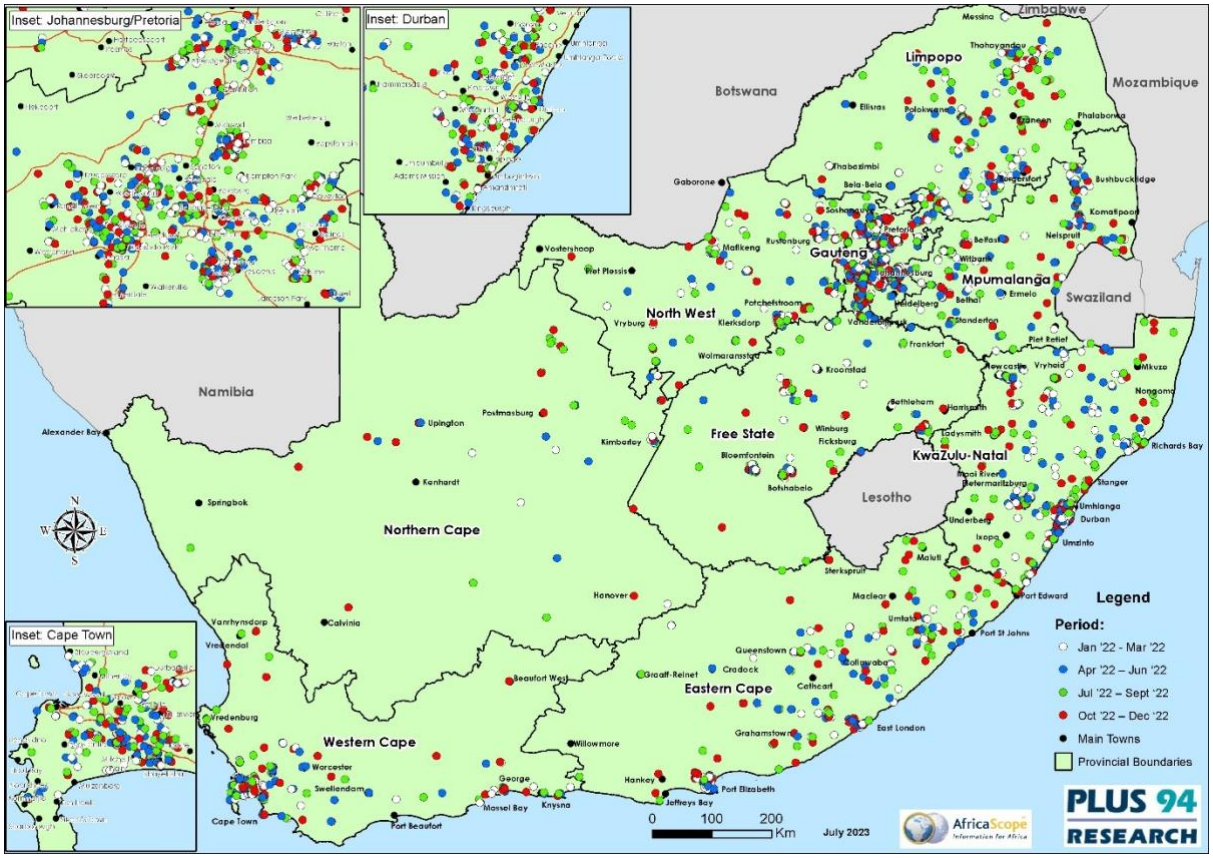
https://mapssurvey.co.za/tests/questionnaire/

11.2 Fieldwork Areas

Areas that were covered by the MAPS™ survey can be accessed on the link below:

https://mapssurvey.co.za/tests/areas/

Below is the national map indicating the geographical spread of the areas that were covered:



11.3 Defining the Metropolitan Boundaries for MAPS™

BACKGROUND

In South Africa, there are eight metropolitan districts that serve as administrative regions encompassing major urban areas. These metropolitan districts play a crucial role in governing and managing the affairs of these densely populated cities. These areas also make a significant contribution to the economy of the country and consumption patterns in South Africa. The Municipal Demarcation Board has the responsibility of demarcating the boundaries of the metropolitan districts. These metropolitan districts are:

- City of Johannesburg Metropolitan District;
- City of Tshwane Metropolitan District;
- Ekurhuleni Metropolitan District;
- eThekwini Metropolitan District;
- Nelson Mandela Bay Metropolitan District;
- City of Cape Town Metropolitan District;
- Mangaung Metropolitan District; and
- Buffalo City Metropolitan District.

DEFINING THE URBAN CENTRES OF METROPOLITAN DISTRICTS

The definition of metropolitan areas in the MAPS™ study is different from that of Statistics South Africa. There are no rural areas associated with the built-up areas. AfricaScope defines them as contiguous built-up areas. Definitions for rural and other urban areas are as defined by Stats SA.

The eight metropolitan districts each have unique characteristics associated with them. Each of the metropolitan districts has large urban areas that are made-up of both formal and informal residential areas. Part of these large urban areas include the commercial and industrial regions of the metropolitan district.

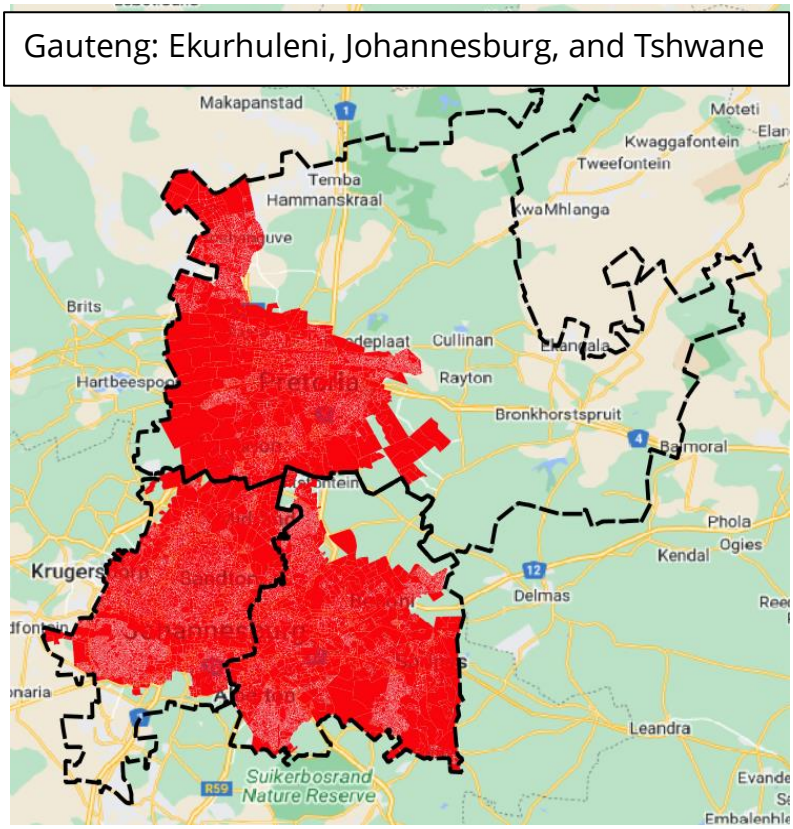
These metropolitan districts also have rural areas associated with them that include both commercial farmlands and traditional areas. For example, large parts of the eThekwini metropolitan district consist of traditional areas with relatively low population densities. Within the boundaries of the metropolitan districts there are also small towns (e.g., Bronkhorstspruit in Tshwane metropolitan districts) that are discontinuous from the urban centre.

Several of the metropolitan districts have relatively small urban centres compared to their large rural areas. These non-urban areas within the metropolitan districts will have a distinctly different consumption pattern to that of the population living in the densely populated formal and informal urban areas. Consequently, it was decided to identify in each of the metropolitan districts the areas that are truly the urban centres.

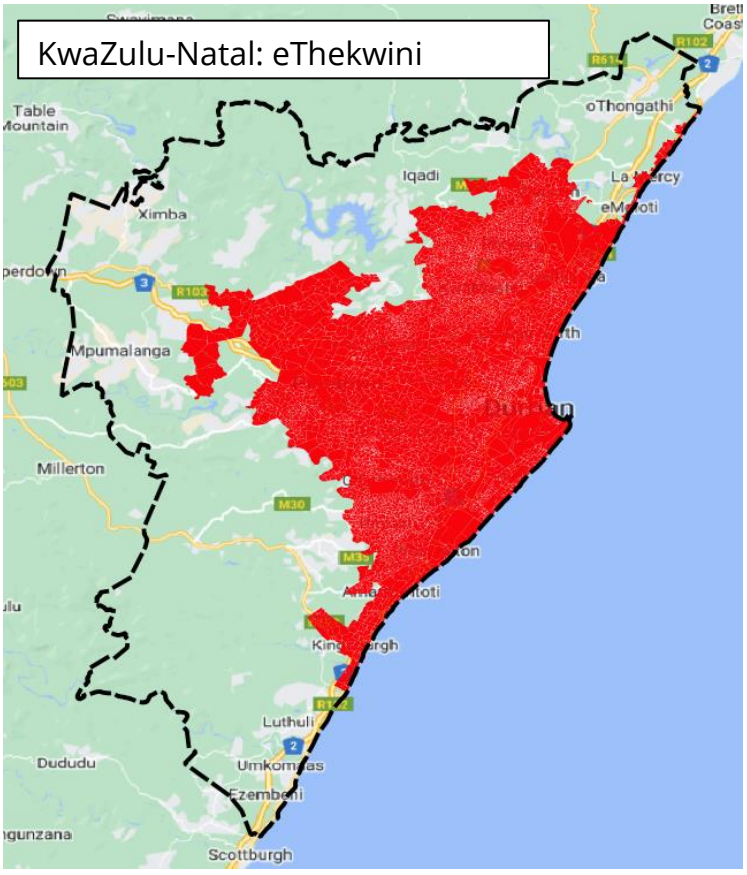
To accomplish this, the census enumeration areas from the 2011 census were used as a basis, which were classified in terms of the type of area. However, 12 years after the census, the types of areas in the metropolitan districts have changed. Therefore, the enumeration area boundaries were overlaid onto satellite imagery and changes in the type of areas were taken into consideration in defining the truly urban centres of the metropolitan district. Whenever possible, the urban centres of the metropolitan areas were defined as contiguous areas. However, it is only within the City of Cape Town that the urban centres are not contiguous.

The urban centres of each metropolitan district are depicted in the maps below.

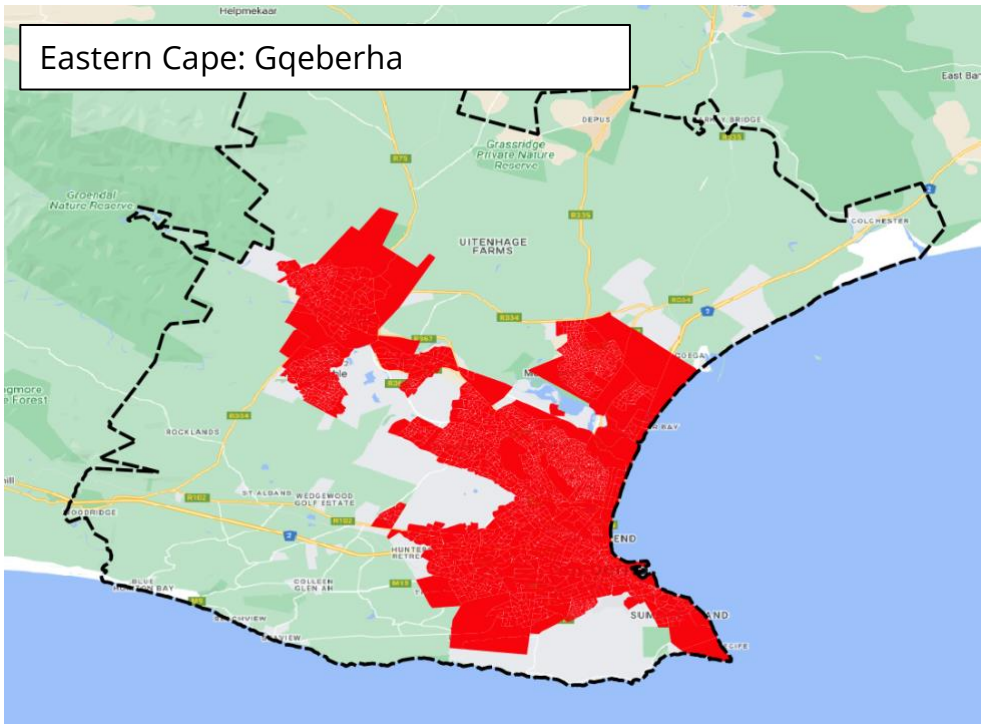
- Ekurhuleni Metro, City of Johannesburg, and City of Tshwane Metropolitan District



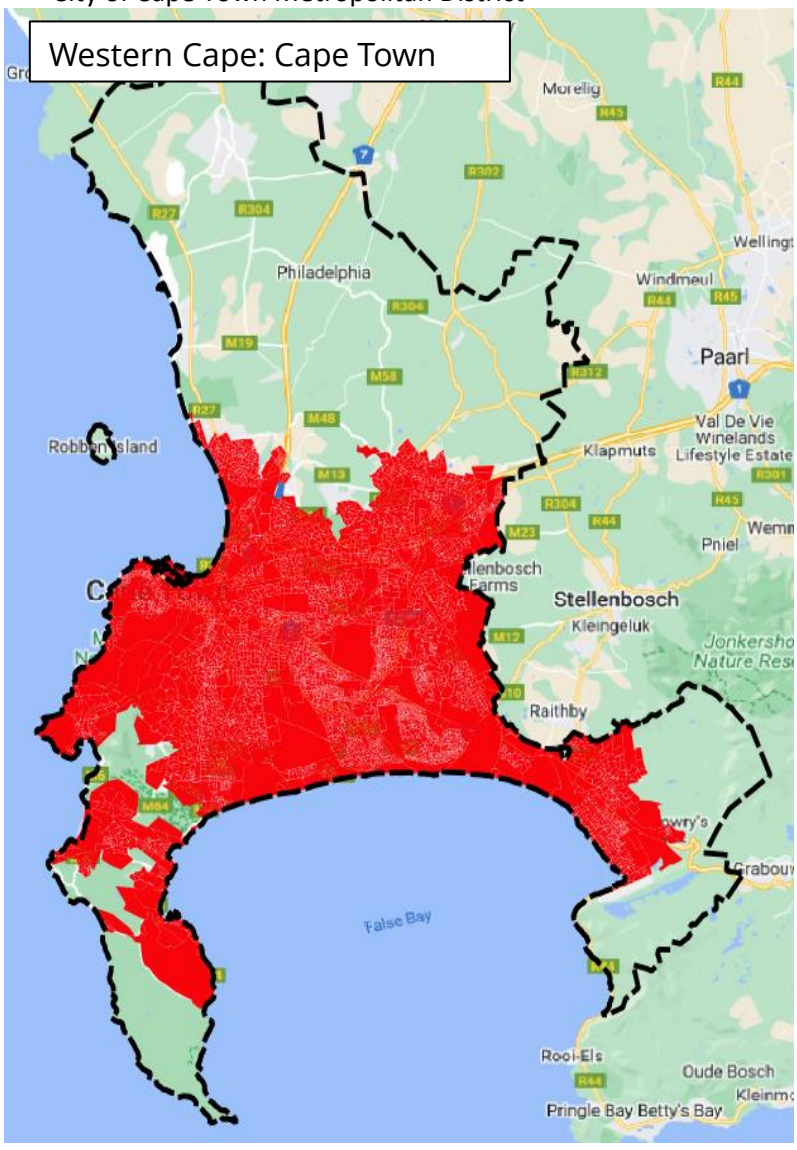
- eThekwini Metropolitan District



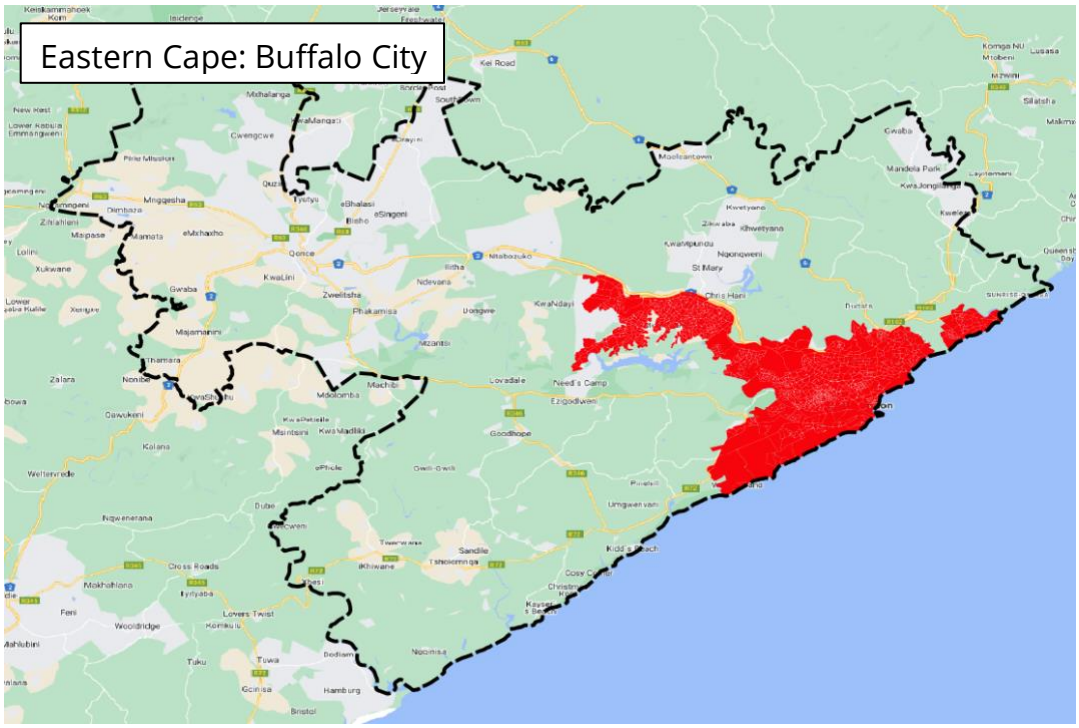
- Nelson Mandela Bay Metropolitan District



- City of Cape Town Metropolitan District



- Buffalo City Metropolitan District



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