



MARKETING RESEARCH
FOUNDATION

MAPS TECHNICAL REPORT

January 2022 – December 2022

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 continuous 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 which 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.

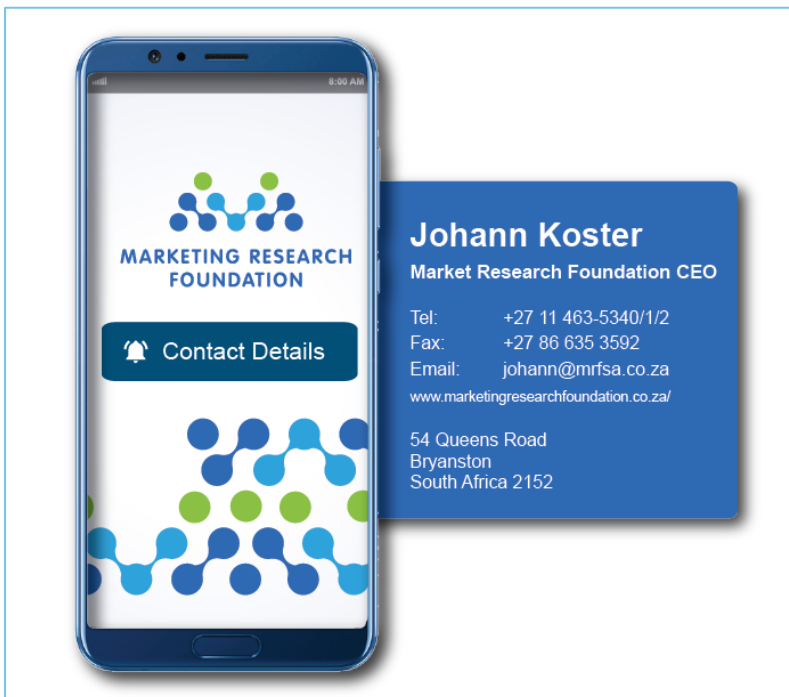
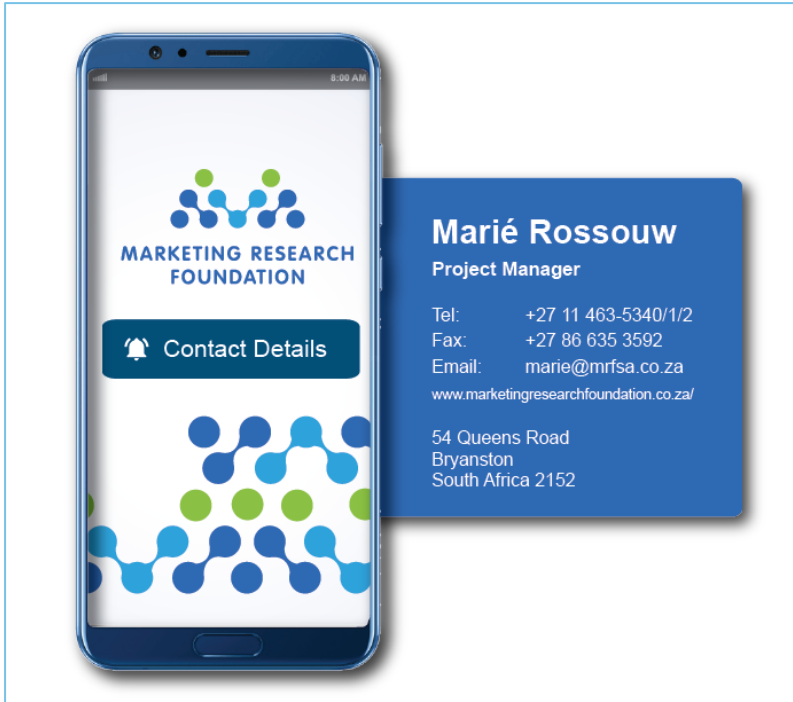
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Section A:

Introduction and Key
Definitions

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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, 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™ January 2022 – December 2022.

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. Missing ages are imputed using relevant demographic variables such as age groups of own children.

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 4 weeks, past 7 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™ January 2022 – December 2022.

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 4 weeks, past 7 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™ January 2022 – December 2022.

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 7 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 2 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 or not 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 1667 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 8 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 stick to them. For example, some areas in Westonaria on the West Rand are classified under Urban while some 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

8. 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.

9. 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, i.e. 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.

10. 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.

11. Housing Unit

A unit of accommodation for a household, which 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.

12. 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.

13. 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.

14. Level of Education

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

15. 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
- Do 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
- Do 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.

16. 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.

17. Multiple Households

Two or more households living in the same dwelling unit.

18. Occupation

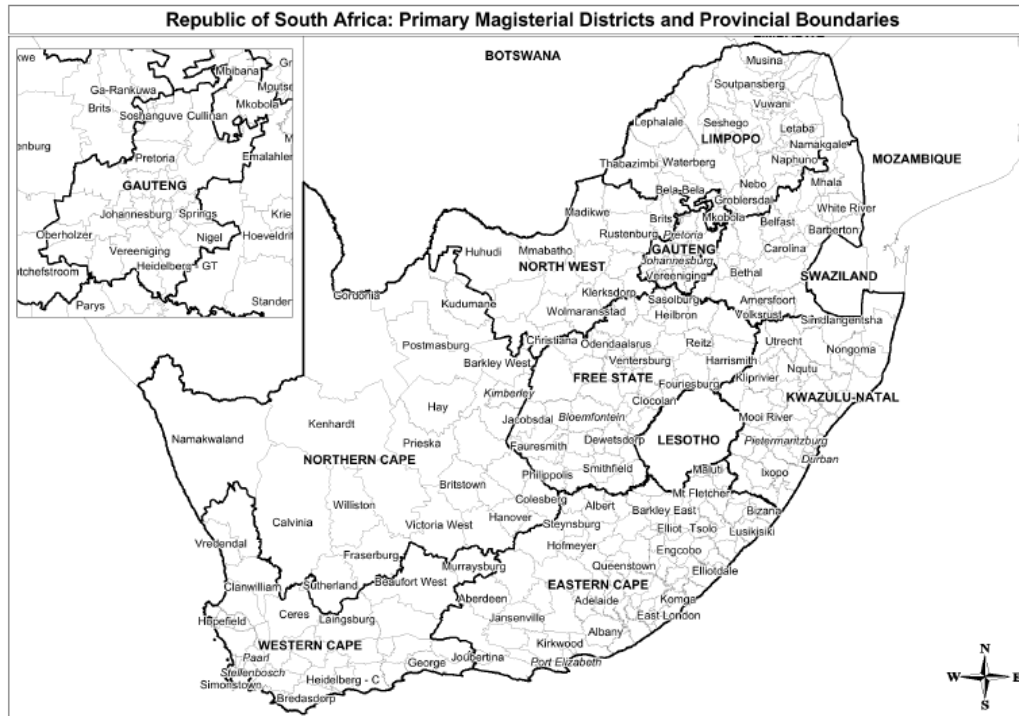
The occupation of respondents who work full-time or part-time or are self-employed is classified according to Stats SA "Standard Classification of Occupations" (Report 09-90-01) down to the level of unit groups (three-character codes). These appear on the database. (See Appendix of this report.) Note that the abbreviation n.e.c. used throughout the occupation classification list stands for "not elsewhere classified".

19. 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.

20. 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.



21. 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.

22. Readership

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

23. 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."

24. South African Population

The total population of the country is based on the official population according to Stats SA. The last census in South Africa was conducted between March and May 2022 and the official results will be released in 2023. 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.

25. 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.

26. Wave

There are two waves in a year: wave 1 and wave 2. Each wave is made up of a period of 6 successive calendar months. The first fieldwork wave for the reporting period ran from the 19th of January 2022 to the 21st of June 2022 whereas that of the second wave started on the 14th of July 2022 and came to an end on the 21st of December 2022. Two waves produced an annual sample of 20 056.

27. 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).



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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 is the adult (15+) population of South Africa. The following was used to filter the broad audience base of the respondents:



- Age: 15 years and older;
- Gender: Both males and females;
- Race: All racial groups; and
- Area: National (all 9 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+)

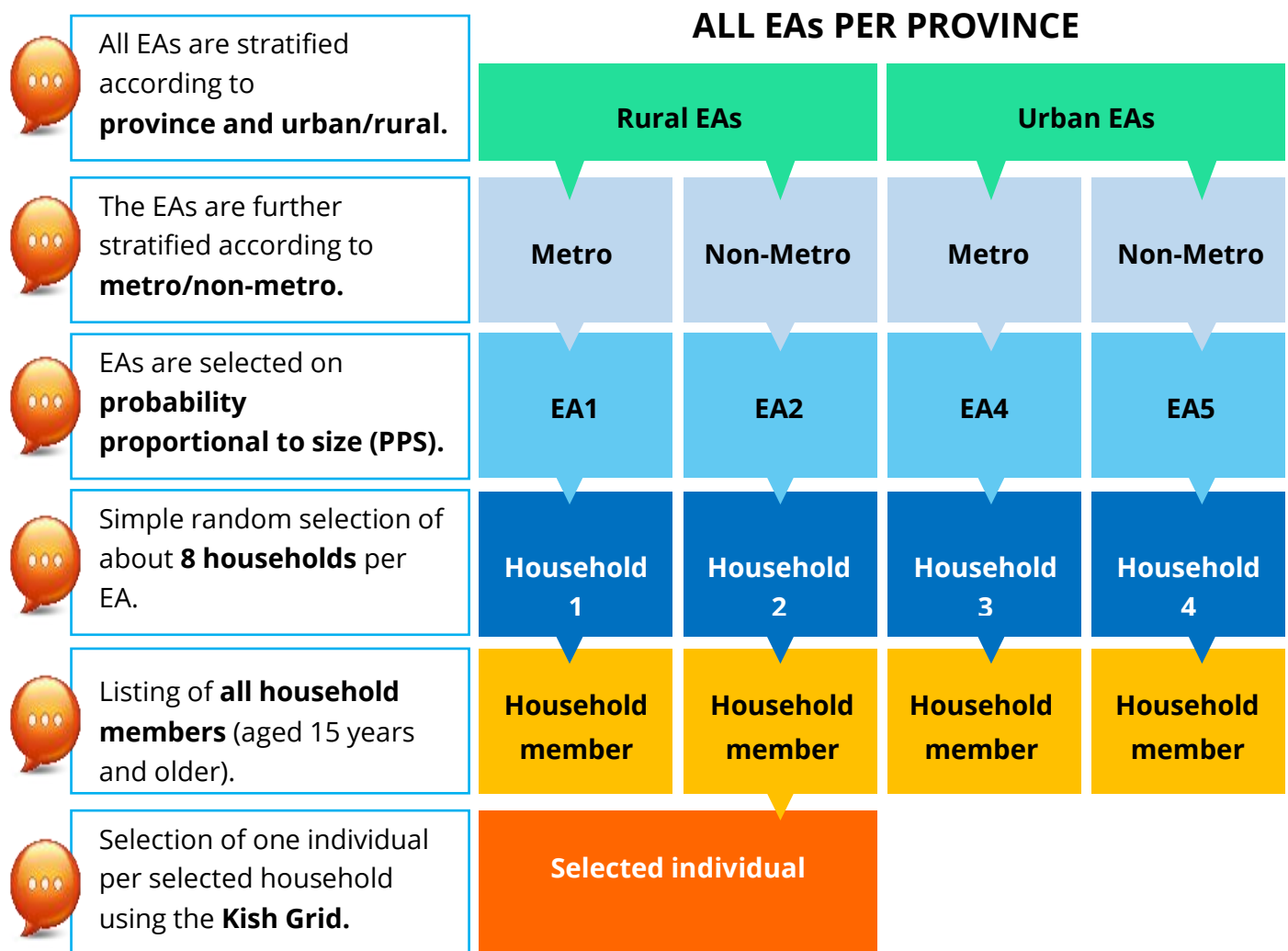
Race	Count	Percentage (%)
Black African	34 474 439	79%
Coloured	3 931 926	9%
Indian/Asian	1 261 112	3%
White	3 924 746	9%
Total	43 592 223	100%

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 8 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 household 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 most of the enumeration area was adequately 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 January 2022 and December 2022.

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 that is used 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™ January 2022 – December 2022 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 characterized 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. Initialize the Weighting Process: Set an initial set of weights for each survey respondent. These initial weights are usually set to one;

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 minimize 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. Finalize 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.

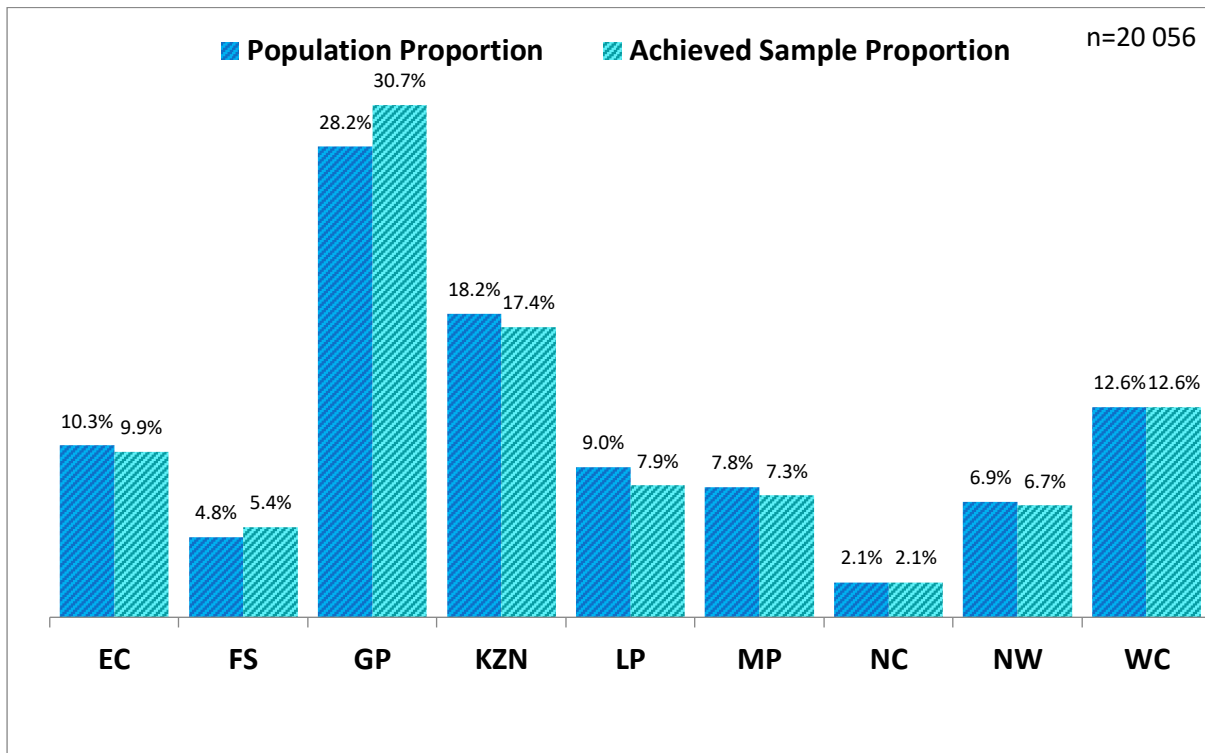
Achieved Weighting Efficiency

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™ January 2022 – December 2022 data slightly differed (by 0.87%) from 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	61.71%	100%
Free State	68.47%	100%
Gauteng	73.07%	100%
KwaZulu-Natal	67.78%	100%
Limpopo	70.39%	100%
Mpumalanga	80.44%	100%
North West	75.41%	100%
Northern Cape	79.66%	100%
Western Cape	61.95%	100%
Overall	69.13%	99.48%

Population vs. Achieved Sample Proportions



National Sample Profile

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	5016	25%	5016	25%	5016	25%	5008	25%	20056
Female	2571	51%	2707	54%	2488	50%	2511	50%	10277
Male	2445	49%	2309	46%	2528	50%	2497	50%	9779
Black	3858	77%	3982	79%	3989	79%	3869	77%	15698
White	651	13%	450	9%	428	9%	534	11%	2063
Indian/Asian	119	2%	101	2%	163	3%	134	3%	517
Coloured	388	8%	483	10%	436	9%	471	9%	1778
15 – 24	1162	23%	1207	24%	1201	24%	1172	23%	4742
25 – 34	1578	31%	1584	32%	1391	28%	1462	29%	6015
35 – 44	959	19%	974	19%	1041	21%	1043	21%	4017
45 – 54	620	12%	580	12%	630	13%	612	12%	2442
55 – 64	427	9%	402	8%	439	9%	438	9%	1706
65 – 74	217	4%	200	4%	230	5%	221	4%	868
75+	53	1%	69	1%	84	2%	60	1%	266

Sample Profile [Eastern Cape]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	496	25%	472	24%	504	25%	512	26%	1984
Female	260	52%	271	57%	266	53%	258	50%	1055
Male	236	48%	201	43%	238	47%	254	50%	929
Black	452	91%	393	83%	446	88%	454	89%	1745
White	17	3%	25	5%	13	3%	23	4%	78
Indian/Asian	5	1%	1	0%	0	0%	1	0%	7
Coloured	22	4%	53	11%	45	9%	34	7%	154
15 – 24	98	20%	68	14%	83	16%	82	16%	331
25 – 34	125	25%	119	25%	112	22%	131	26%	487
35 – 44	88	18%	86	18%	88	17%	98	19%	360
45 – 54	60	12%	64	14%	90	18%	68	13%	282
55 – 64	73	15%	76	16%	69	14%	79	15%	297
65 – 74	40	8%	45	10%	41	8%	40	8%	166
75+	12	2%	14	3%	21	4%	14	3%	61

Sample Profile [Free State]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	264	24%	264	28%	272	24%	288	24%	1088
Female	143	54%	166	63%	140	51%	139	48%	588
Male	121	46%	98	37%	132	49%	149	52%	500
Black	236	89%	246	93%	250	92%	255	88%	987
White	24	9%	8	3%	13	5%	19	7%	64
Indian/Asian	0	0%	0	0%	0	0%	0	0%	0
Coloured	4	2%	10	4%	9	3%	14	5%	37
15 – 24	74	28%	42	16%	45	17%	55	19%	216
25 – 34	93	35%	72	27%	79	29%	79	27%	323
35 – 44	49	19%	55	21%	57	21%	64	22%	225
45 – 54	24	9%	37	14%	40	15%	35	12%	136
55 – 64	20	8%	30	11%	29	11%	28	10%	107
65 – 74	3	1%	22	8%	17	6%	20	7%	62
75+	1	0%	6	2%	5	2%	7	2%	19

Sample Profile [Gauteng]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	1496	24%	1496	24%	1584	26%	1576	26%	6152
Female	761	51%	755	50%	710	45%	801	51%	3027
Male	735	49%	741	50%	874	55%	775	49%	3125
Black	1143	77%	1240	83%	1329	84%	1286	82%	4998
White	274	18%	201	13%	176	11%	211	13%	862
Indian/Asian	19	1%	16	1%	28	2%	32	2%	95
Coloured	60	4%	39	3%	51	3%	47	3%	197
15 – 24	333	22%	397	27%	412	26%	409	26%	1551
25 – 34	488	33%	530	35%	476	30%	476	30%	1970
35 – 44	281	19%	276	18%	338	21%	348	22%	1243
45 – 54	212	14%	159	11%	174	11%	184	12%	729
55 – 64	111	7%	88	6%	109	7%	112	7%	420
65 – 74	58	4%	39	3%	64	4%	41	3%	202
75+	13	1%	7	1%	11	1%	6	0%	37

Sample Profile [KwaZulu-Natal]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	920	26%	888	26%	848	24%	840	24%	3496
Female	468	51%	467	53%	435	51%	421	50%	1791
Male	452	49%	421	47%	413	49%	419	50%	1705
Black	744	81%	738	83%	663	78%	674	80%	2819
White	80	9%	58	7%	50	6%	63	8%	251
Indian/Asian	95	10%	79	9%	125	15%	95	11%	394
Coloured	1	0%	13	1%	10	1%	8	1%	32
15 – 24	184	20%	177	20%	184	22%	173	21%	718
25 – 34	283	31%	286	32%	244	29%	228	27%	1041
35 – 44	190	21%	189	21%	165	19%	169	20%	713
45 – 54	120	13%	124	14%	113	13%	122	15%	479
55 – 64	91	10%	73	8%	73	9%	79	9%	316
65 – 74	42	5%	28	3%	52	7%	59	7%	181
75+	10	1%	11	1%	17	1%	10	1%	48

Sample Profile [Limpopo]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	392	25%	408	25%	400	25%	392	25%	1592
Female	213	54%	214	52%	201	50%	196	50%	824
Male	179	46%	194	48%	199	50%	196	50%	768
Black	384	98%	403	99%	391	98%	392	100%	1570
White	8	2%	1	0%	1	0%	0	0%	10
Indian/Asian	0	0%	0	0%	8	2%	0	0%	8
Coloured	0	0%	4	1%	0	0%	0	0%	4
15 – 24	66	17%	105	26%	93	23%	97	25%	361
25 – 34	157	40%	139	34%	118	30%	139	35%	553
35 – 44	85	22%	80	20%	87	22%	83	21%	335
45 – 54	32	8%	37	9%	48	12%	36	9%	153
55 – 64	36	9%	30	7%	32	8%	21	5%	119
65 – 74	16	4%	12	3%	15	4%	13	3%	56
75+	0	0%	5	1%	7	2%	3	1%	15

Sample Profile [Mpumalanga]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	376	26%	384	26%	344	24%	352	24%	1456
Female	189	50%	208	54%	182	53%	176	50%	755
Male	187	50%	176	46%	162	47%	176	50%	701
Black	320	85%	370	97%	324	94%	290	82%	1304
White	56	15%	8	2%	15	4%	56	16%	135
Indian/Asian	0	0%	5	1%	0	0%	5	2%	10
Coloured	0	0%	1	0%	5	2%	1	0%	7
15 – 24	55	15%	78	20%	75	22%	78	22%	286
25 – 34	89	24%	100	26%	89	26%	104	30%	382
35 – 44	79	21%	82	21%	94	27%	68	19%	323
45 – 54	61	16%	47	12%	34	10%	49	14%	191
55 – 64	56	15%	47	12%	39	11%	27	8%	169
65 – 74	25	7%	18	5%	5	1%	17	5%	65
75+	11	3%	12	3%	8	2%	9	3%	40

Sample Profile [Northern Cape]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	96	23%	96	23%	120	28%	112	26%	424
Female	54	56%	54	56%	63	53%	56	50%	227
Male	42	44%	42	44%	57	47%	56	50%	197
Black	57	60%	43	45%	64	53%	58	52%	222
White	8	8%	0	0%	8	7%	9	8%	25
Indian/Asian	0	0%	0	0%	1	1%	0	0%	1
Coloured	31	32%	53	55%	47	39%	45	40%	176
15 – 24	14	15%	19	20%	24	20%	22	20%	79
25 – 34	35	36%	39	41%	28	23%	29	26%	131
35 – 44	27	28%	30	31%	31	26%	34	30%	122
45 – 54	10	10%	4	4%	16	13%	16	14%	46
55 – 64	3	3%	2	2%	14	12%	8	7%	27
65 – 74	5	5%	2	2%	3	3%	2	2%	12
75+	2	2%	0	0%	4	3%	1	1%	7




Sample Profile [North West]

	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	344	26%	336	25%	336	25%	328	24%	1344
Female	157	46%	214	64%	183	54%	158	48%	533
Male	187	54%	122	36%	153	46%	170	52%	471
Black	312	91%	326	97%	321	95%	294	90%	1253
White	32	9%	8	2%	9	3%	21	6%	70
Indian/Asian	0	0%	0	0%	0	0%	0	0%	0
Coloured	0	0%	2	1%	6	2%	13	4%	21
15 – 24	80	23%	58	17%	67	20%	79	24%	284
25 – 34	123	36%	104	31%	101	30%	101	31%	429
35 – 44	63	18%	66	20%	72	21%	65	20%	266
45 – 54	44	13%	43	13%	42	13%	34	10%	163
55 – 64	15	4%	33	10%	31	9%	34	10%	113
65 – 74	16	5%	22	7%	14	4%	8	3%	60
75+	3	1%	10	3%	9	3%	7	2%	29

Sample Profile [Western Cape]






	January to December 2022 [Unweighted Data]								Total
	Jan – Mar '22	%	Apr – Jun '22	%	Jul – Sept'22	%	Oct – Dec'22	%	
Total	632	25%	672	27%	608	24%	608	24%	2520
Female	326	52%	358	53%	308	51%	306	50%	1298
Male	306	48%	314	47%	300	49%	302	50%	1222
Black	210	33%	223	33%	201	33%	166	27%	800
White	152	24%	141	21%	143	24%	132	22%	568
Indian/Asian	0	0%	0	0%	1	0%	1	0%	2
Coloured	270	43%	308	46%	263	43%	309	51%	1150
15 – 24	258	41%	263	39%	218	36%	177	29%	916
25 – 34	185	29%	195	29%	144	24%	175	29%	699
35 – 44	97	15%	110	16%	109	18%	114	19%	430
45 – 54	57	9%	65	10%	73	12%	68	11%	263
55 – 64	22	3%	23	3%	43	7%	50	8%	138
65 – 74	12	2%	12	2%	19	3%	21	3%	64
75+	1	0%	4	1%	2	0%	3	0%	10

Achieved Sample: Interviews

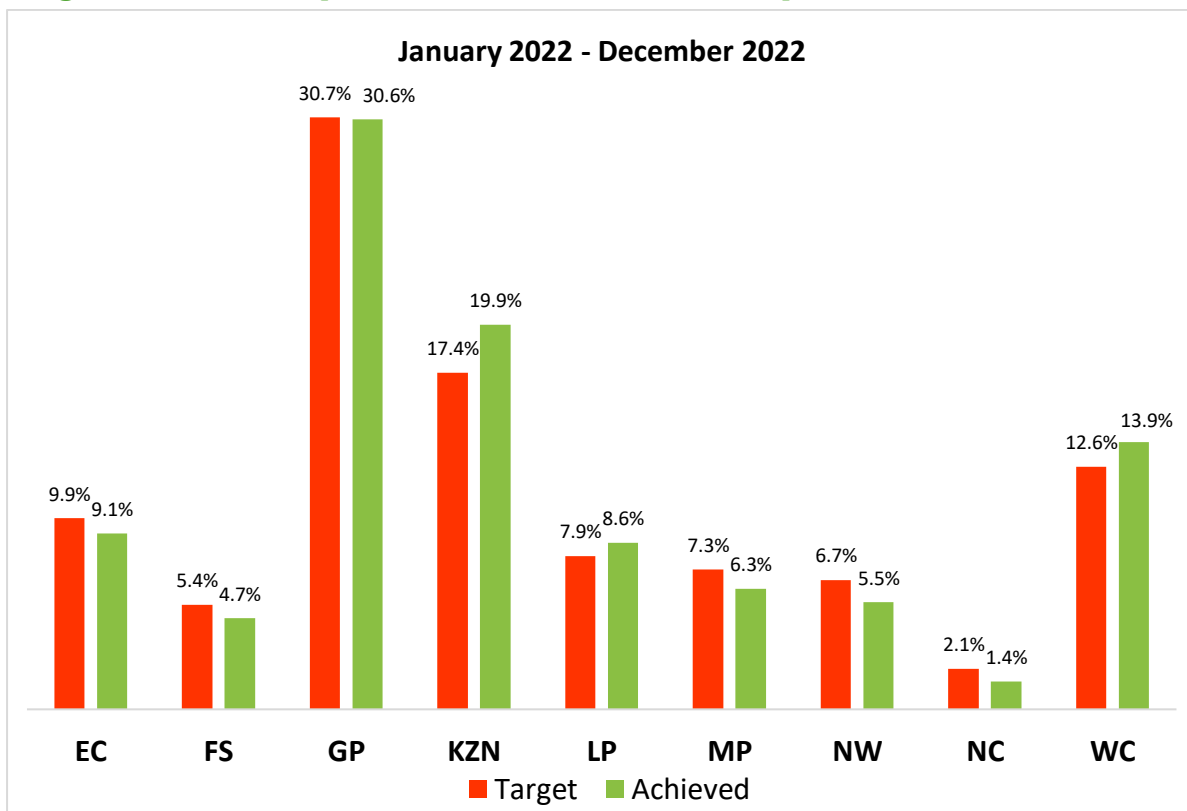
Province	January 2022 – December 2022		
	Target Sample 	Achieved Sample 	Variance 
Eastern Cape	1979	1984	0%
Free State	1085	1088	0%
Gauteng	6136	6152	0%
KwaZulu-Natal	3487	3496	0%
Limpopo	1588	1592	0%
Mpumalanga	1452	1456	0%
North West	1341	1344	0%
Northern Cape	423	424	0%
Western Cape	2513	2520	0%
Total	20004	20056	

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 % = $[(1984/20056) - (1979/20004)] \times 100\%$.

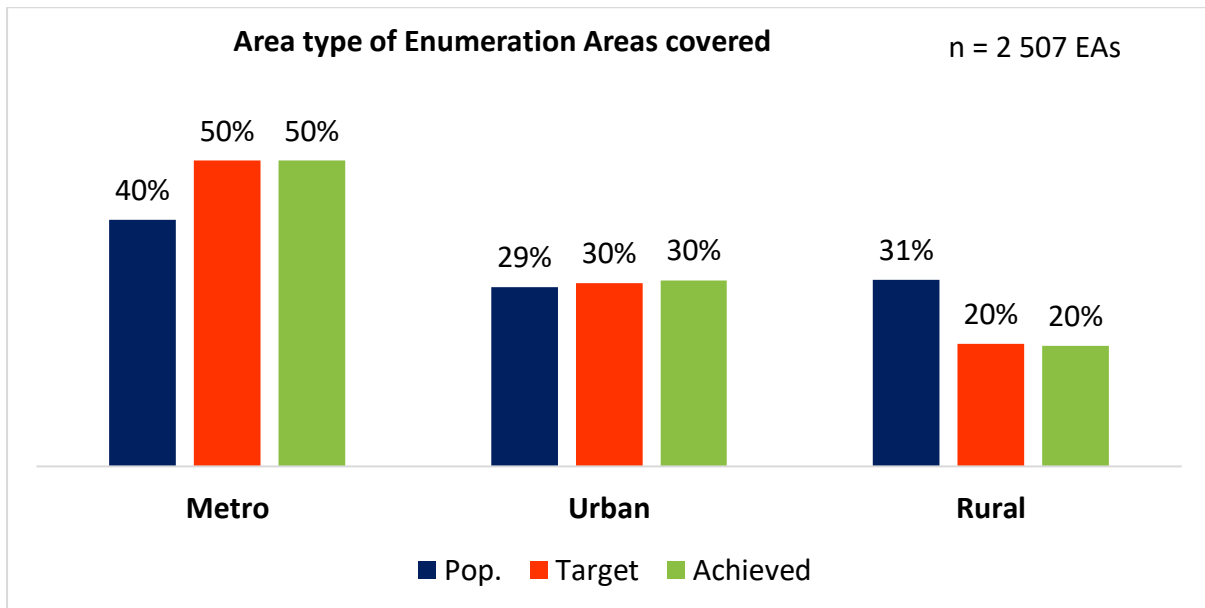
Achieved Sample: Leave Behind Questionnaires

Province	January 2022 – December 2022				Variance
	Target	No. of paper leave behind questionnaires collected and processed	No. of online leave behind questionnaires submitted	Total number of leave behind questionnaires collected	
					
Eastern Cape	989	925	58	983	-0.79%
Free State	543	464	45	509	-0.72%
Gauteng	3068	3135	166	3301	-0.11%
KwaZulu-Natal	1744	1937	214	2151	+2.48%
Limpopo	794	834	99	933	+0.70%
Mpumalanga	726	633	43	676	-1.00%
North West	670	585	13	598	-1.16%
Northern Cape	211	148	6	154	-0.68%
Western Cape	1257	1336	161	1497	+1.29%
Total	10002	9997	805	10802	

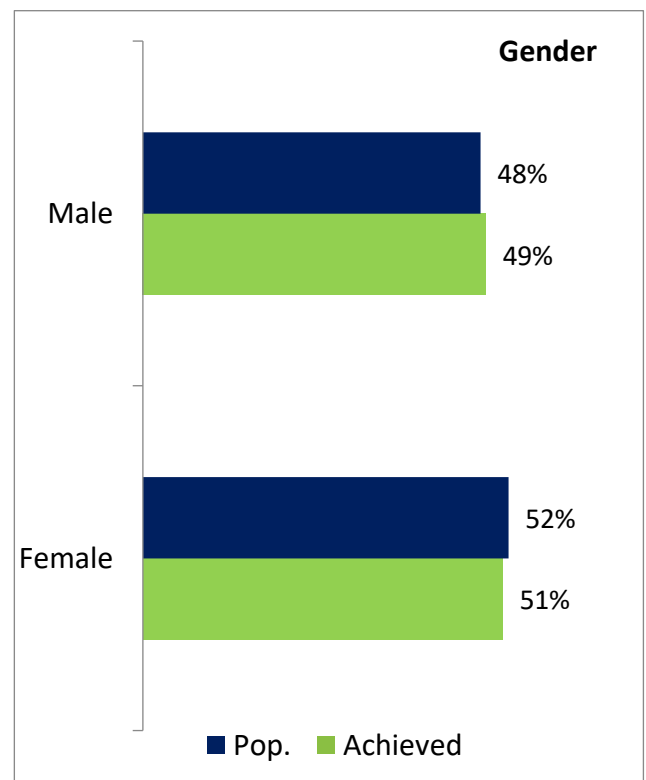
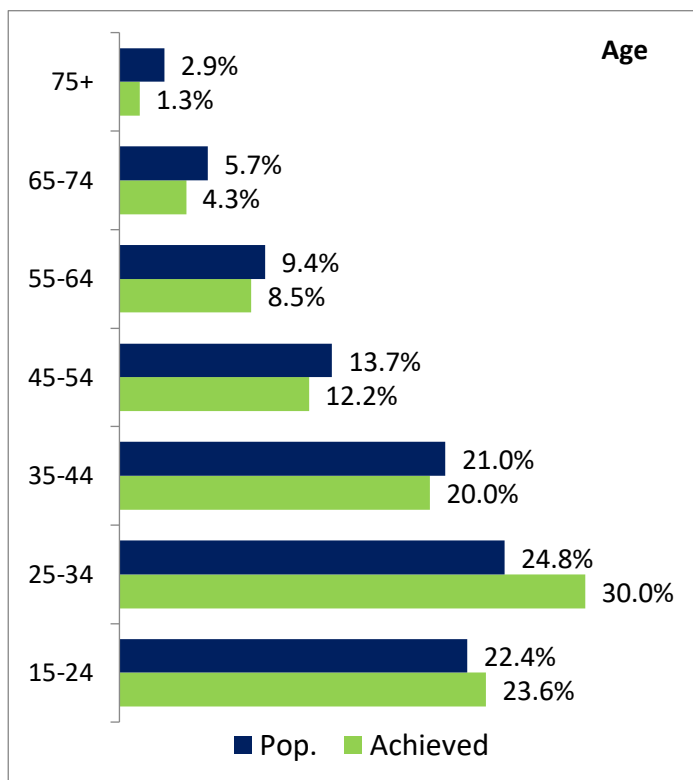
Target vs. Achieved [Leave Behind Questionnaires]



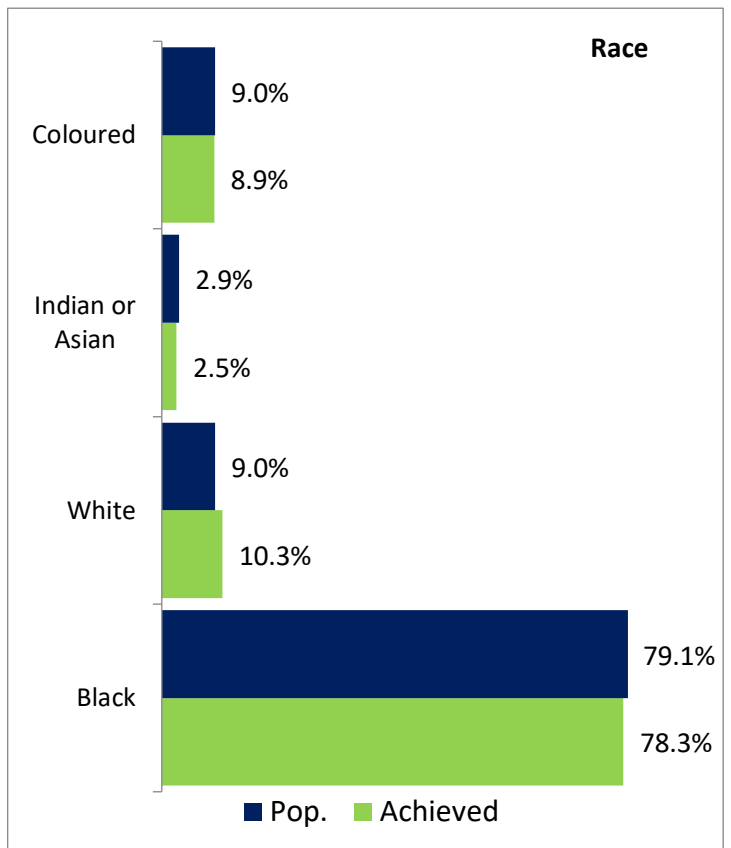
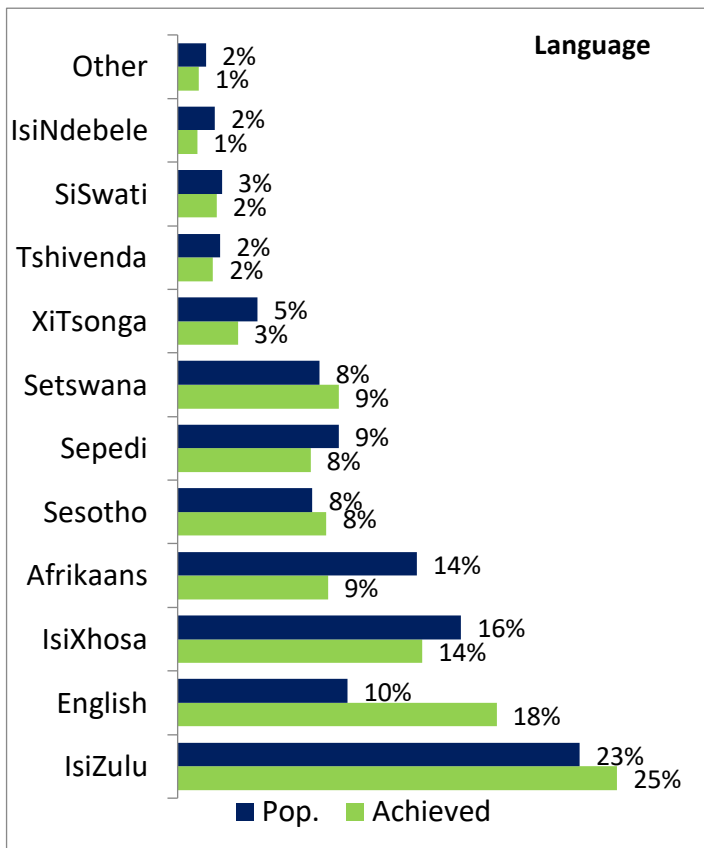
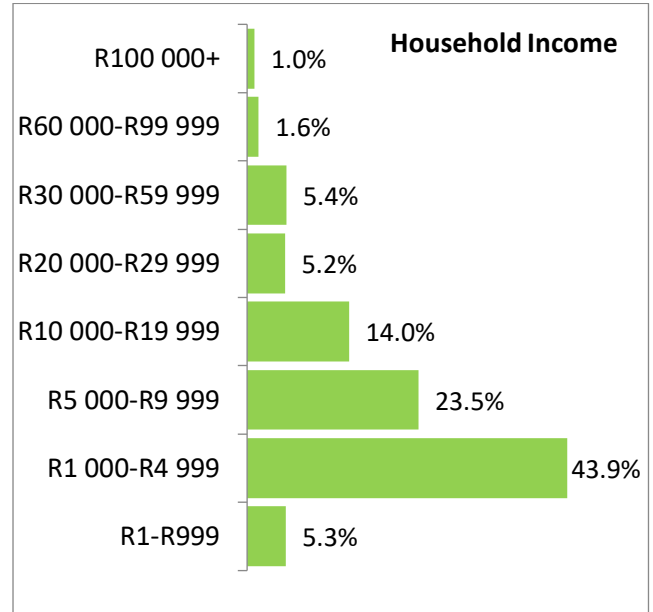
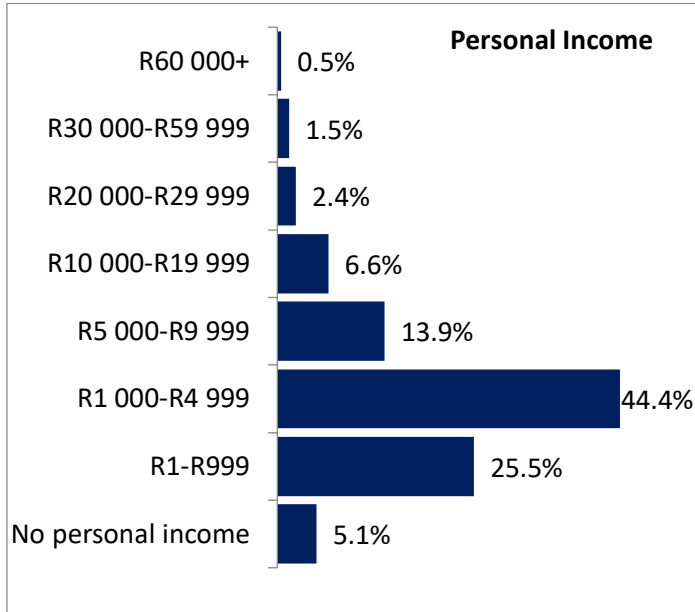
Area Distribution

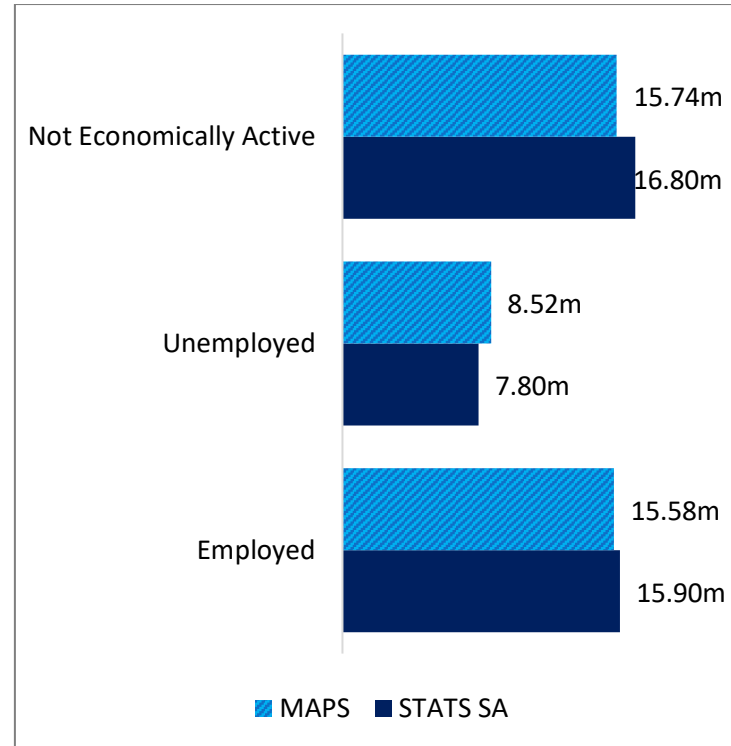
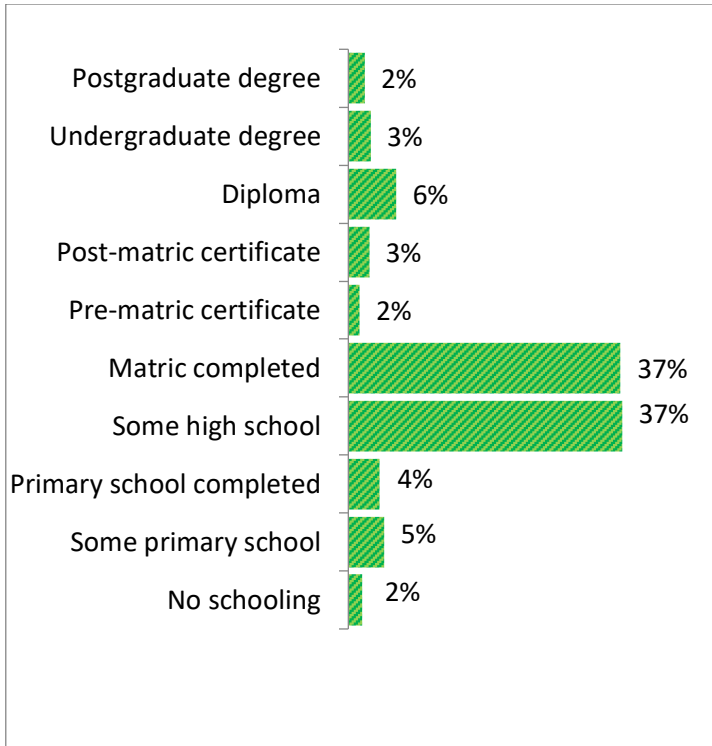


Respondent Profiles



Source: Statistics South Africa 2022 Mid-year Estimates [15+ 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, the number of adult males or females in the household who are 15 years and older, are determined to enable random selection of the individual to be interviewed. The Kish grid is once again utilised to randomly select the individual to be interviewed. Once the interview is completed, respondents are asked to complete a self-completion/leave behind questionnaire.

In rural areas, interviewers with knowledge of the language and customs of the local population are used and arrangements are made with the chief/headman in charge of areas where interviews must be done before working in the areas.

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 3 and 5 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™ January 2022 – December 2022 study began on the 19th of January 2022 and came to an end on the 21st of December 2022. The second quarter of 2022 was the first time that the fieldworkers were able to conduct interviews without wearing masks (i.e., outdoors) since MAPS™ fieldwork started in July 2020. The relaxation of the health and safety regulations brought a huge relief for both the interviewers and the respondents. Respondents were no longer hesitant about taking part in surveys due to the fear of contracting COVID-19 and it was no longer necessary for the fieldworkers to hand out free masks and ensure the use of them. However, interviewers still had to maintain a distance of at least a metre from the respondents as per the health regulations at that time. The government of South Africa announced that it was no longer mandatory to wear a mask outdoors end of March 2022 and the national state of disaster was lifted during the first week of April.



The specific start and end dates of MAPS™ January 2022 – December 2022 are shown below:

19 January 2022 – 21 December 2022	
Quarter	Period
Q1 2022	19 January – 12 April 2022
Q2 2022	8 April – 21 June 2022
Q3 2022	14 July – 27 September 2022
Q4 2022	1 October – 21 December 2022

MAPS™ January 2022 – December 2022 Timeline

Consideration Area	Summary
Questionnaire Changes/Additions	<p>Two research instruments [i.e., the MAPS™ face-to-face questionnaire and the MAPS™ leave-behind questionnaire (loosely referred to as the “diary”)] for the MAPS study were updated using input obtained from the MRF, various MRF MAPS™ subscribers and Plus 94 Research. Some of the questions that were added to the face-to-face questionnaire were to help ensure that there was strict application of the Kish grid system by the interviewers, especially at the stage where the final respondent is selected for the survey. In addition, there were questions added that were related to the interviewer perception of dominant race and language in enumeration areas. Certain demographic traits (such as dominant race or ethnic group residing in an EA), which were observed and recorded during the 2011 SA census, have evolved over the last decade, hence the need to seek the view of the fieldworkers for up-to-date information in that regard. Below are sections that were expanded by adding new items in the face-to-face questionnaire:</p> <ul style="list-style-type: none"> • Home internet access; • Home appliances;

	<ul style="list-style-type: none"> • Magazines and store magazines; • Television, on-demand streaming services; • Internet activities e.g., online shopping, social media and streaming; • Consumer behaviour questions pertaining to financial services and products, loyalty/rewards programmes cards, medical aid, crypto currency and money transfer services; and • Beauty products <p>A virtual MAPS™ interviewer training workshop took place on the 13th of July 2022 to take them through the MAPS™ questionnaire changes and additions in preparation for Q3 2022 fieldwork.</p>
Interviewers	<p>Approximately 150 interviewers across all the nine provinces participated in the data collection process during 2022 and all of them have a minimum of a matric qualification (about a quarter either have a diploma or a degree). Fieldworkers successfully conducted 20 056 face-to-face interviews and collected 10 802 leave-behind questionnaires (9997 paper and 805 online) across all the provinces in 2 507 EAs. There was a 10% increase of online diary participation and a 4% decline in the paper-based diary output (i.e., MAPS™ July 2021 – June 2022 vs. MAPS™ January 2022 – December 2022). Although there was a reasonable increase in online diary participation, the online platform was still underutilised in 2022. Fieldworkers are always encouraged to use online diaries, especially in metropolitan and urban areas where the network coverage is reasonably good. The frequent use of the online platform would be of immense value to the MAPS study in that there would be little/no missing items (item non-response), and it is much cheaper and efficient.</p> <p>Virtual MAPS™ interviewer debriefing workshops took place once a quarter in order to provide them with feedback on the quality of data that they gathered. Periodic retraining/feedback sessions help Plus 94 Research to clearly and effectively communicate fieldworker strengths and areas for improvement identified during internal data reviews. Greater emphasis was placed on the quality of paper diaries (MAPS leave-behind questionnaires). Interviewers were advised to thoroughly check paper diaries during collection at the households of the respondents. Although there has been significant improvement in the overall quality of the self-administered questionnaires that have been collected over the past two years, the issue of item non-response remains a challenge. In order to minimise the impact of the missing items on the survey, only diaries that are at least 95% complete are considered for data processing and the rest are discarded. Under normal circumstances, respondents are given three to five days to complete the diary. However, permission is always granted in instances where respondents may require more time.</p>
Field Quality Control Checks	<p>During the third quarter of 2022, various field quality control checks were intensified in order to address certain demographic imbalances that were observed in the data which was submitted for previous fieldwork periods. Interviewers were closely monitored by field operations executives and managers on how they were using the Kish grid system in the random selection of the final respondent within a household in order to avoid convenience sampling. Harsh interviewer penalties such as HR disciplinary action, which</p>

	<p>included written warnings, permanent removal of some fieldworkers on the MAPS™ study etc., were applied in cases where obvious signs of convenience sampling were detected through physical, telephonic and recording back-checks. Other few cases of convenience sampling were identified through GPS plotting and verification. Such interviews were deleted and redone at the right location using the appropriate sampling methodology. A few of the face-to-face interviews that were completed under 40 minutes were discarded because the MAPS™ pilot interviews have proven that it is nearly impossible to conduct it in such a short space of time. On average, the MAPS™ face-to-face interview is about 60 minutes long. Interviewer data trend analysis was carried out on regular basis. If an interviewer was suspected of cheating through certain abnormal and consistent patterns identified in the submitted data, all their interviews would be subjected to 100% back-checks instead of the normal 25% back-checks. Daily interviewer workloads were kept track of to avoid burnout and ensure that interviews of a good standard were submitted. Penalties (e.g., slight reduction in interviewer payments for unsatisfactory parts in paper diaries) were also applied on paper diaries that were lacking in certain aspects e.g., missing information even if they were of a reasonable standard and approved for data processing.</p>
<p>Sampling</p>	<p>The area type distribution target [50% metro, 30% urban and 20% rural] was met successfully. The age group distribution at the national level in the achieved sample has remained more or less the same when compared to the previous bi-annual reporting period. Percentages obtained for all the age groups in the achieved sample closely mirror the target population except for the 25-34 years group which was oversampled by 5%. The percentage of banked respondents has steadily improved across the four quarters for 2022 [Jan '22-Mar '22 – 63%, Apr '22-Jun '22 – 61%, Jul '22-Sept '22 – 65% and Oct '22-Dec '22 – 67%] and this can be attributed to the strict measures that were put in place to curb Kish grid interviewer non-compliance. Households that earn less than R5 000 were oversampled by approximately 20%. The MAPS™ survey household income results were compared to 2021 data obtained from an organisation called IHS Markit. Despite the improvement, which was realised during the third quarter of 2022, much still needs to be done to correct the skew towards younger age groups across all the provinces, and that is anticipated to have a positive effect (to some extent) on the income aspect of the MAPS™ data.</p>
<p>Household Substitution</p>	<p>The overall household substitution rate almost doubled from the previous bi-annual report for the MAPS™ July 2021 – June 2022 survey. It sharply rose from 10% to 18% and the increase was realised for all the main reasons which usually result in household substitution. The breakdown derived from the two most recent bi-annual reports was as follows: MAPS™ July 2021 – June 2022 - 624 households and 162 EAs were substituted, MAPS™ January 2022 – December 2022 - 1530 households and 260 EAs were substituted. Stricter adherence to the proper use of the Kish Grid system and the prespecified visiting points from the maps provided by AfricaScope might have played a role in the surge of the substitution rate.</p>
<p>Missing Information</p>	<p>The observed trend on the proportion of missing information pertaining to income variables has remained almost constant since MAPS™ started in 2020. In 2022, the number of respondents who claimed that they did not know their household income ranged between 25%-30% across all the four quarters, whereas respondents that</p>

	<p>refused to provide either their household income or personal income as they deemed this type of question to be of a sensitive nature ranged between 5%-9% across all the four quarters.</p> <p>Data imputation was implemented to help close this gap in income. Variables that were chosen for the imputation process include age, area, employment status, highest level of education, LSM and SEM, and SASSA income. Very few respondents refused to provide their age while a few others refused to specify their gender, and data imputation was again used for the missing information. All the respondents were comfortable with specifying their race. All leave-behind questionnaires underwent stringent checks before they were approved for data processing. About a thousand paper diaries were discarded for the MAPS™ January 2022 – December 2022 survey, mainly due to incompleteness, lack of confirmation by the respondents via telephonic back-checks, and the deletion of face-to-face interviews, which then makes it impossible to retain the accompanying diaries.</p>
<p>Major Challenges Experienced in Field</p>	<ul style="list-style-type: none"> • Bad weather conditions (e.g., heavy rainfall and storms); • Crime; • Access to gated communities (residential estates and farms); • Traditional leaders that demand incentives such as money and livestock to allow fieldworkers to carry out interviews in their territories; • Poor road infrastructure in very remote rural areas; • Great difficulty in convincing community members in some EAs to take part in the survey as they were very skeptical of any outsiders that sought audience due to the scams they have experienced in the past; and • Poor network coverage (mostly in rural areas), which affects the GPS capturing process at the visiting points.
<p>MAPS Fieldwork Audit by 3M3A</p>	<p>The Marketing Research Foundation commissioned 3M3A to conduct a comprehensive audit of MAPS™ for the full year 2021 fieldwork. The audit exercise ran from the first week of July in 2022 up until the first week of September in that same year. 3M3A is a specialist media measurement consultancy formed in 2015 primarily to assist stakeholders in the effective management and procurement of research particularly TV, radio, online audience measurement systems. The audit had four main specific objectives:</p> <ul style="list-style-type: none"> • The audit must include all aspects of design, sampling methodology, questionnaire design, implementation and related aspects that may affect the accuracy of the data levels; • To understand both the current status as well as longitudinally across releases; • To assess whether the specifications are adequate and that the procedures stipulated are adhered to; and • To assess whether the MAPS surveys can serve as a ‘hub’ survey for fusion with multiple other surveys. <p>Below are some of the high-level findings of the audit:</p>

	<ul style="list-style-type: none"> • In terms of fieldwork there is generally a good level of compliance in terms of interviewing at the randomly selected sample points; • The GIS system is implemented at a high standard and according to the processes described in the technical and supporting documentation; • The field quality control procedures are detailed and of good standard. The field reports were readily available and have been studied. Overall, the checks are in place; • The disproportional area type sample is not extreme and is well controlled by the weighting process; • AfricaScope provides the mapped geo-coordinates for fieldwork and also performs a useful field audit every quarter; • The field force does well in interviewing in the right places even in difficult and dangerous areas. In some provinces and areas, they face multiple challenges from bad roads to no sanitation and safety concerns; • The substitution rate is low in comparison to other surveys of this nature. However, it is not possible to investigate this much further until the visit numbers to each home is tracked and the selected household member from the Kish grid recorded. The second change we understand has already been implemented in the 2022 fieldwork; • Of the 52 districts in the country 41 are covered (79%), of the 233 municipalities in the country, MAPS 2021 fieldwork covers 164 (70%) and of the 4393 main places 996 are surveyed (23%); • The fusion process produces consistent data between the surveyed and the fused groups of respondents. This part of the process is working well and is of high standard; and • The security protocols are of good standard and are compliant with data protection regulations.
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MARKETING RESEARCH
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Section D:

Analysis and Results

PLUS 94
RESEARCH

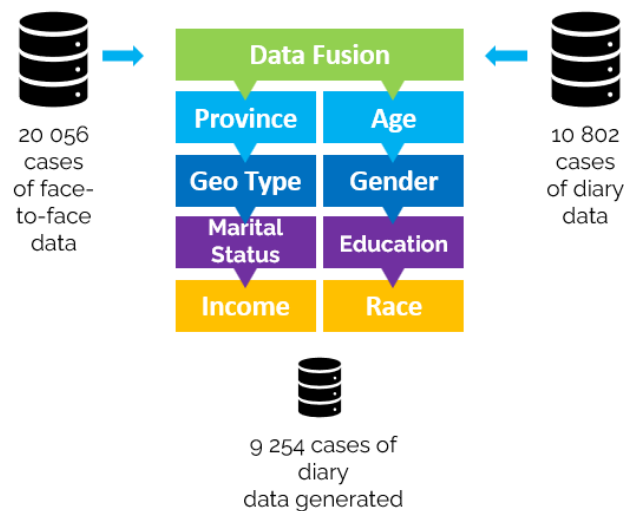
Section D: Analysis and Results

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 20056 respondents completed a face-to-face questionnaire. Half of them were expected to complete the leave behind questionnaire. A total of 10802 respondents successfully completed the leave behind questionnaire. For the 9254 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™ January 2022 – December 2022 survey are shown below:

Reason for replacement	Number of households
Refused	962
House inaccessible (gated communities and farms)	132
Nobody home (after 2 call-backs)	231
EA inaccessible	2080 (260 EAs)
Other	205
Total	3610

The overall household substitution rate stood at 18% (i.e., 8% more than the rate which was obtained for the MAPS™ July 2021 – June 2022 survey).

The table below unpacks the reasons for the replacement of 260 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 Refusals	Area very unsafe	Severely damaged roads/EA inaccessible	Language barrier	
Eastern Cape	3	4	6	3	1	1	0	0	18
Free State	4	2	0	1	3	0	0	0	10
Gauteng	103	1	1	3	1	0	0	0	109
KwaZulu-Natal	19	3	4	2	1	0	5	0	34
Limpopo	3	5	3	2	0	0	0	0	13
Mpumalanga	10	5	2	0	2	2	0	0	21
North West	10	9	4	5	1	0	0	0	29
Northern Cape	2	5	2	1	2	0	0	1	13
Western Cape	11	0	0	0	0	2	0	0	13
Total	165	34	22	17	11	5	5	1	260

Backchecking

At least a quarter of each interviewer's work was backchecked 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 backcheck survey. The backchecking exercise enables Plus 94 Research to modify certain aspects of the data collection in order to improve data quality. A total of **5697** 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	Motor car	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	3 or more cell phones in household	E1
14	2 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 8 SAARF Lifestages. These Lifestages 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 are most the ones in 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 ten 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%.

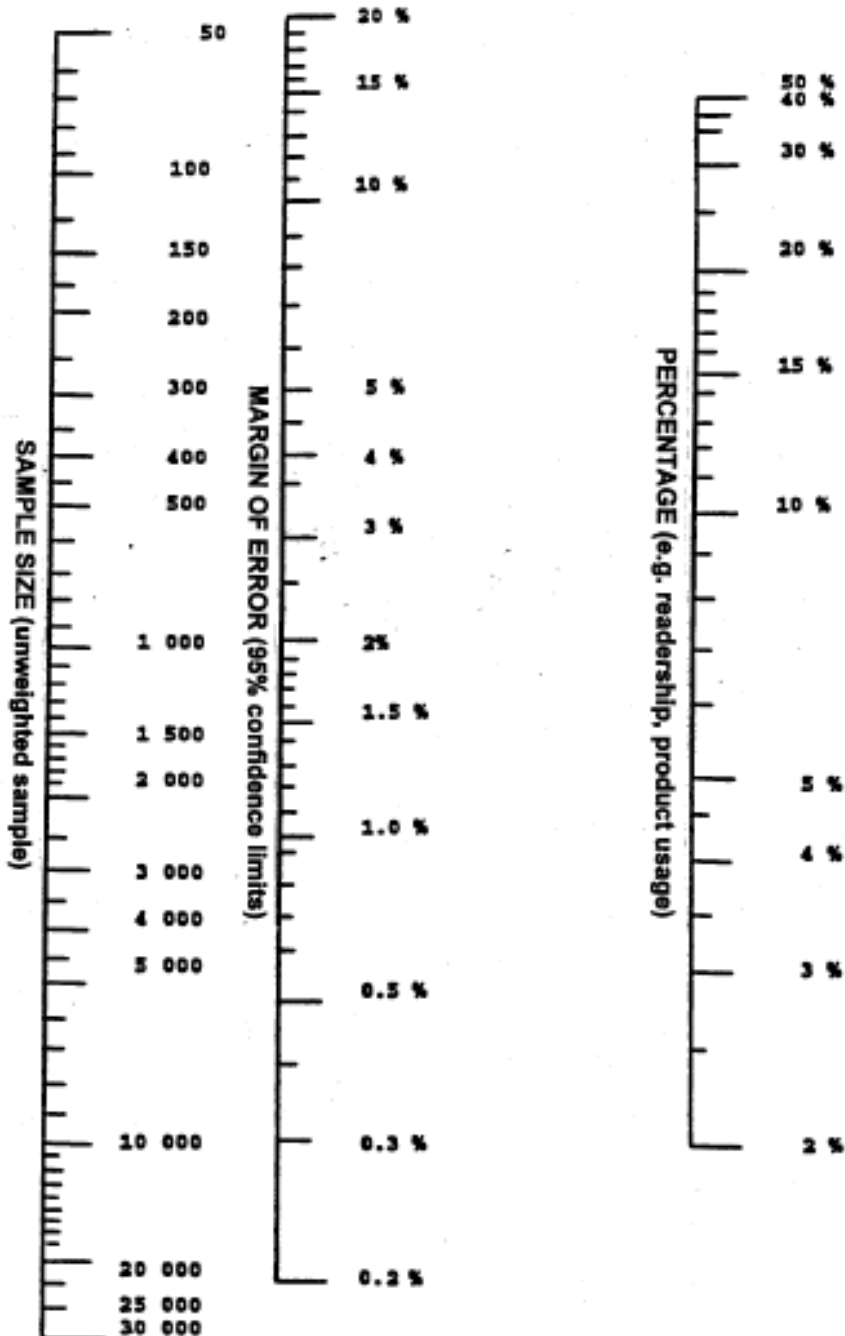
To obtain the confidence limits of the numbers of readers, multiply the results just obtained by the "Estimated population" of the target group.

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™ January 2022 – December 2022 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:

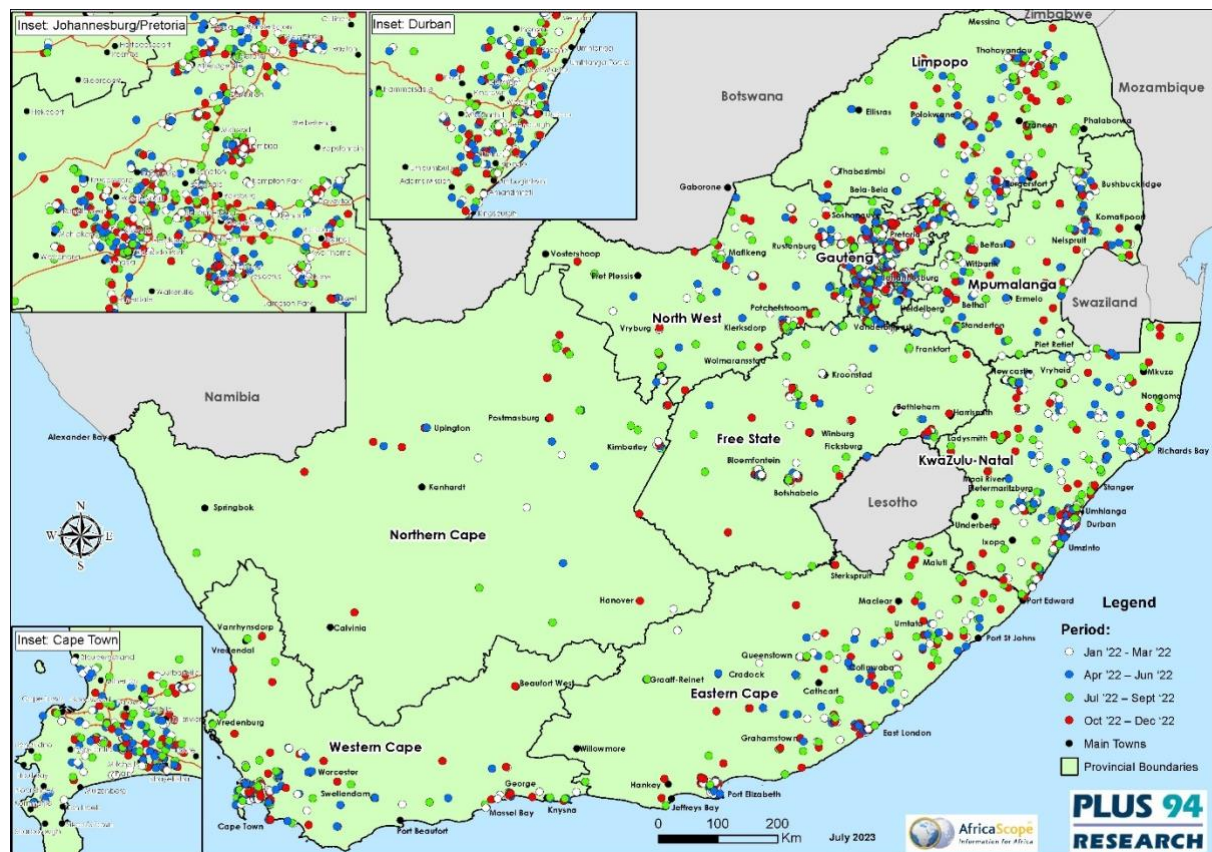
<https://mapssurvey.co.za/tests/questionnaire/>

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;
- eThekweni 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 have 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.

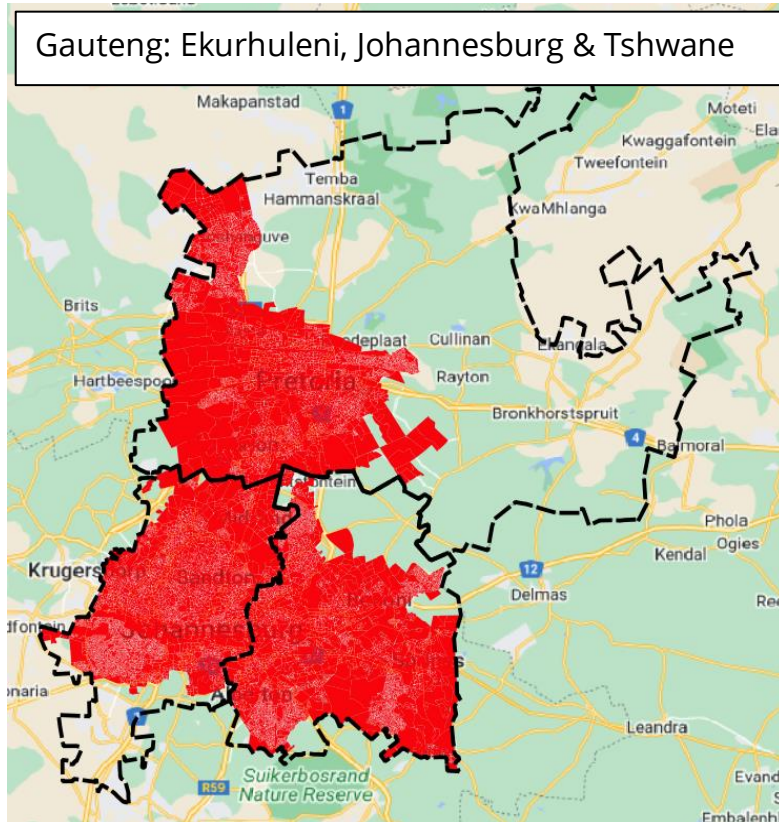
These metropolitan districts also have rural areas associated with them that include both commercial farmlands and traditional areas. For example, large parts of the eThekweni metropolitan district consist of traditional areas with relatively low population densities. Within the boundaries of the metropolitan districts there are also small towns (e.g., Bronkhorstspuit 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.

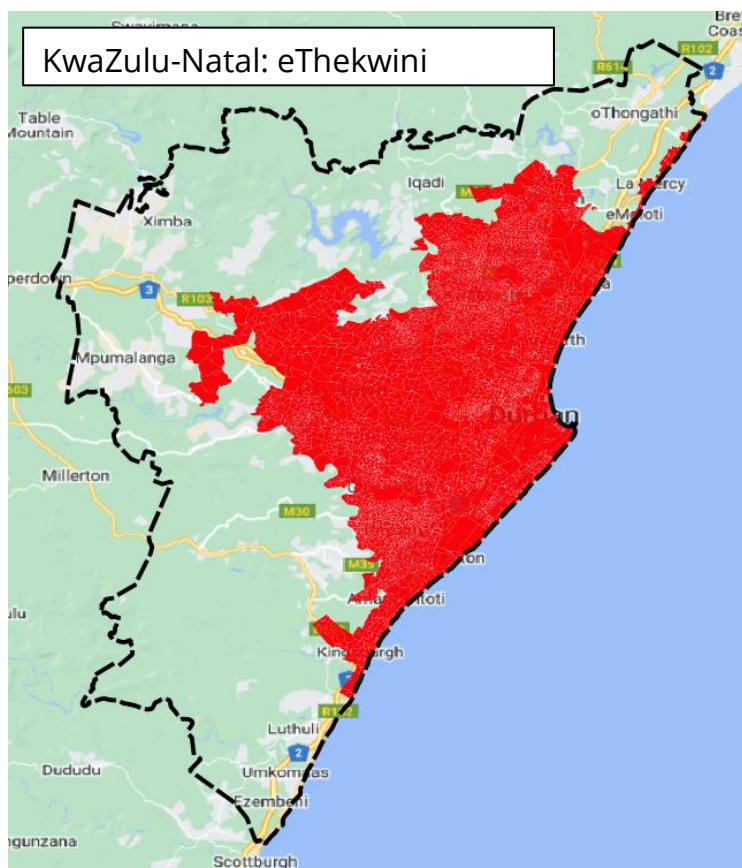
To accomplish this, the census enumeration areas from the 2011 census were used as a basis, which were classified in terms of the type of area. However, 12 years after the census, the types of areas in the metropolitan districts have changed. Therefore, the enumeration area boundaries were overlaid onto 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.

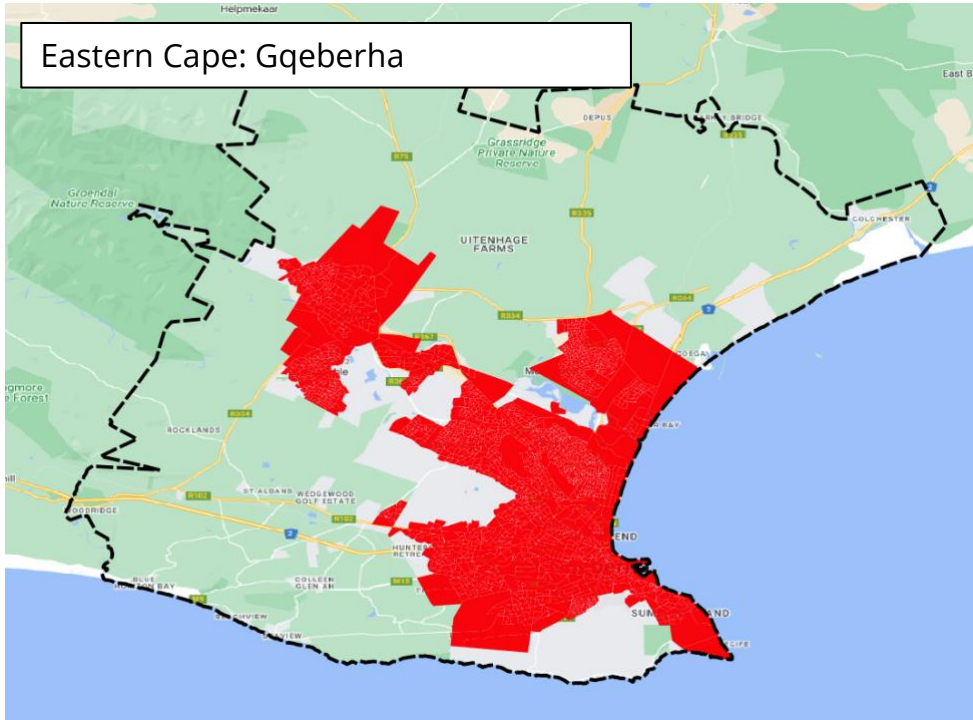
- Ekurhuleni Metro, City of Johannesburg and City of Tshwane Metropolitan District



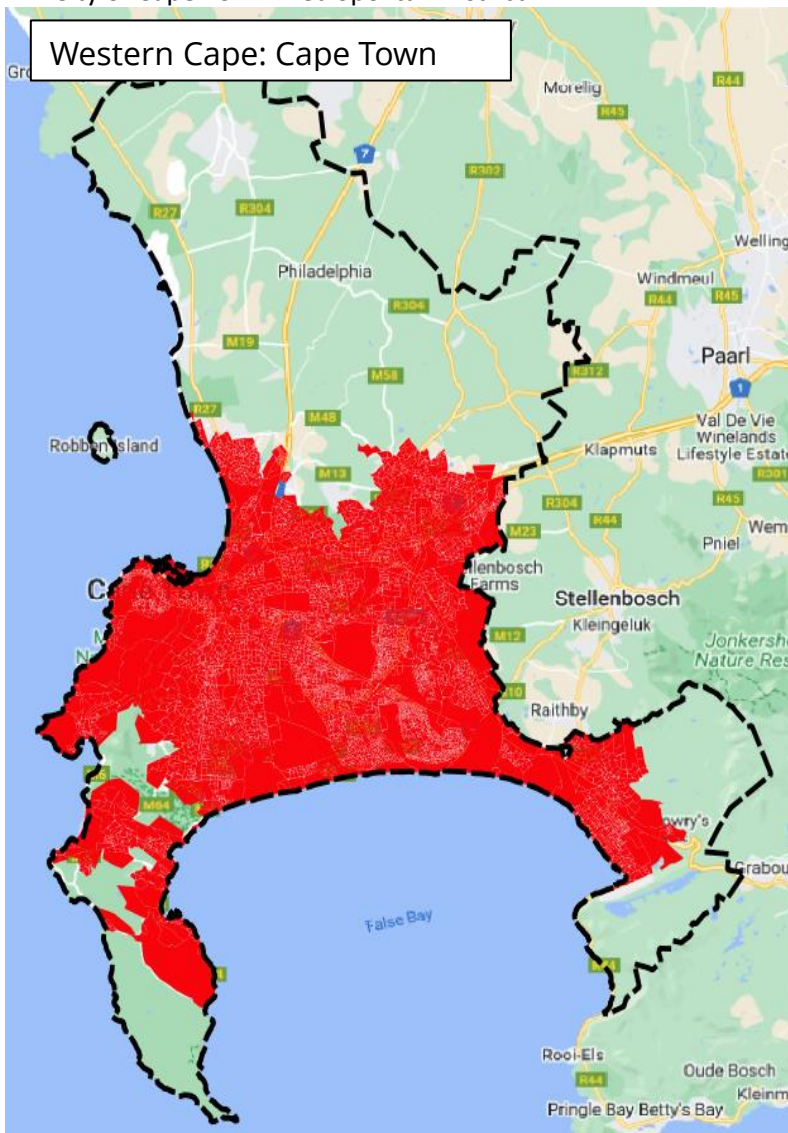
- eThekweni Metropolitan District



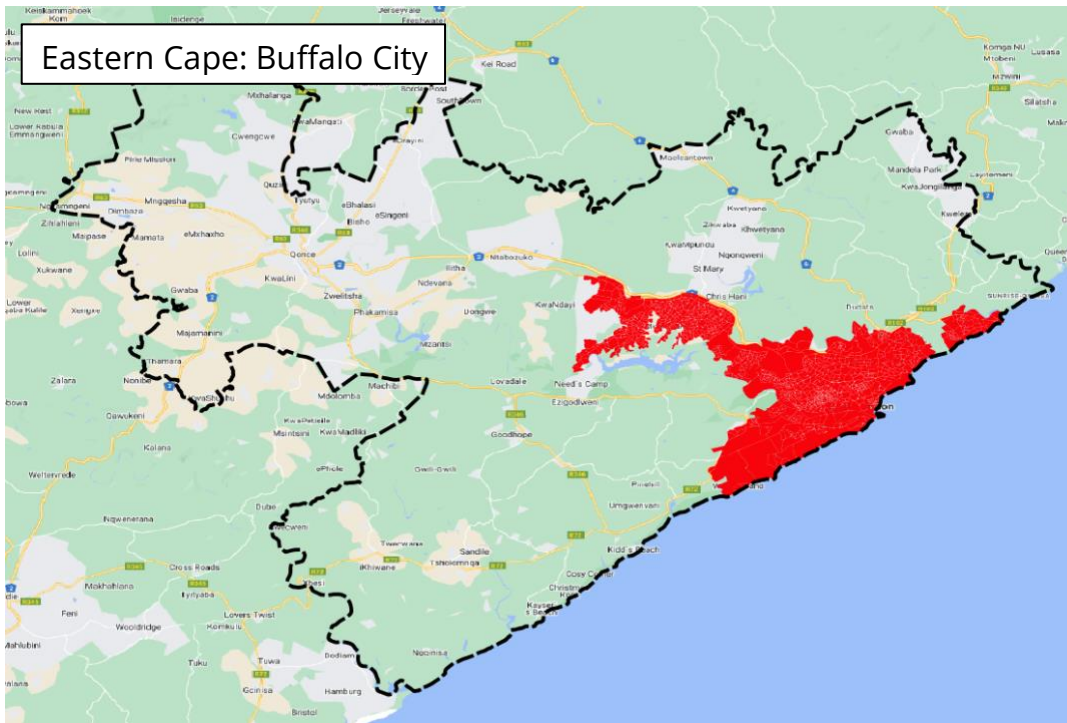
- Nelson Mandela Bay Metropolitan District



- City of Cape Town Metropolitan District



- Buffalo City Metropolitan District





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