



WORKING PAPER

I don't understand what you're asking me...

Interviewees' understanding of questionnaires relating to
safe and reliable water and sanitation services

by
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Abstract

Globally, governments and many agencies use data collected through questionnaire-based research instruments such as a national census or large-scale surveys to measure progress on service delivery goals and targets from the perspective of citizens/consumers. The data generated serves to inform planning and policy decisions. These strategic decision-making processes rely heavily on the quality and integrity of the information emanating from census and survey data. Research has shown that the target audiences of quantitative research in many cases do not understand, mentally process, and respond to questions as the survey designers intended. This gap between survey designers and their target audiences is exacerbated by cultural, socioeconomic and language differences. The result is response errors or inappropriate answering, which could seriously undermine data integrity, and ultimately the validity of the decisions that are based on the data. It is in this context and with this concern in mind, especially in view of the challenges prevailing in South Africa, that a Water Research Commission (WRC) study examined the validity of these processes with the aim of developing a more pragmatic and citizen/consumer-friendly instrument which will generate more reliable information. This working paper discusses the outcomes of that study.

1 Background

Globally, governments and many agencies use data collected through questionnaire-based research instruments such as a national census or large-scale surveys to measure progress on service delivery goals and targets from the perspective of citizens/consumers. The data generated serves to inform planning and policy decisions.

These strategic decision-making processes rely heavily on the quality and integrity of the information emanating from census and survey data. Research has shown that the target audiences of quantitative research in many cases do not understand, mentally process, and respond to questions as the survey designers intended. This gap between survey designers and their target audiences is exacerbated by cultural, socioeconomic and language differences. The result is response errors or inappropriate answering¹, which could seriously undermine data integrity, and ultimately the validity of the decisions that are based on the data.

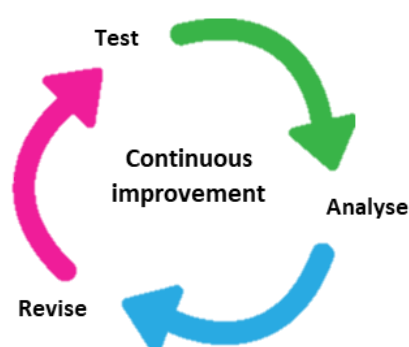
In South Africa, the instruments of StatsSA like the National Census and the General Household Survey (GHS), and municipal surveys, have become key mechanisms that the South African government uses to generate data on access to safe and reliable water and sanitation services. The perspective and experiences of citizens/consumers are an important information source for government on the actual state of water and sanitation services in South Africa. Their experiences reflect if the country's progress in terms of the Sustainable Development Goals (SDGs) is on track and whether water and sanitation projects remain operational and well-maintained.

It is therefore critical that the Census and GHS ask questions about the indicators of the SDGs and project health in a way that is relevant for citizens/consumers, easy to understand and easy to answer appropriately. Inappropriate responses to inappropriately posed or misunderstood questions can lead to serious under- or over-reporting of service delivery progress.

It is in this context and with this concern in mind, especially in view of the challenges prevailing in South Africa, that a Water Research Commission (WRC) study examined the validity of these processes with the aim of developing a more pragmatic and citizen/consumer-friendly instrument which will generate more reliable information.

The study applied the methodology of Cognitive Action Research (CAR) to test with a diverse group of citizens/consumers in formal, informal and rural areas in Gauteng, Limpopo and North West if:

- a) they understand the Census 2011 water and sanitation questions and a selection of the GHS 2018/2020 questions as intended, and
- b) can give answers that accurately reflect their water and sanitation realities.



¹ The term “appropriate answering” refers to respondents selecting a response option that is an accurate reflection of their reality. The term is not relevant for questions that ask perception or opinion. In the research that this paper reports on, the term was only applied when the fieldworkers were able to verify the respondent's response either by observation or with probing.

Subsequently, and using the same methodology, the questions were analysed, revised, and re-tested in several rounds to maximise understanding and minimise inappropriate answering. The revisions were made in cooperation with DWS and StatsSA to ensure that the revised questions remained on track in terms of its objectives.

Is the actual inappropriate answering in the Census and GHS indeed as high as the findings of the study suggest?

This is a difficult question to answer, because in this research, fieldworkers were instructed not to assist respondents when they asked for clarification. They were instructed to take down respondents' questions and refer to them during the cognitive interview that followed. DWS and StatsSA requested that the research tests the questions without fieldworker mediation.

In the actual field situation, however, Census and survey managers allow fieldworkers to translate, rephrase and explain questions, in an attempt to mitigate the risk of inappropriate answering.

Well-trained fieldworkers who understand the questions and their intent might significantly reduce inappropriate answering. On the other hand, allowing fieldworkers to explain questions could increase the risk of inappropriate answering. During the probing, one of the respondents mentioned that she was a fieldworker for Census 2011. She answered that the main source of her household water in a formal area was the river because "that is where the municipality gets the water from". She also thought that "dwelling" was a pipe!

It is dangerous to assume that all fieldworkers will interpret and explain the questions in the same way and as intended. For a census, where large numbers of short-term interviewers are recruited and trained, the risk of fieldworkers misguiding respondents is substantial. For a survey like the GHS which has a full-time established fieldwork team, the risk might be less.

2 Evidence

The study confirmed that inappropriate answering is a major issue for the key water and sanitation questions on the Census and GHS questionnaire. Only 52% of respondents could answer the first two water questions on Census 2011 and GHS 2018/2020 appropriately. 67% of respondents could answer the main sanitation question on Census 2011² and GHS 2018/2020 appropriately.

Inappropriate answering was much higher among respondents in informal and rural areas. These are the people still underserved with safe water and sanitation in terms of national and international goals and targets. Most of them are poor, they don't understand English well and they bear the brunt of poor municipal service delivery.

2.1 Reasons for inappropriate answering

The reasons for inappropriate answering are a combination of not understanding the terminology and structural and task issues of the questions themselves.

Respondents do not understand key terms

The cognitive interviews revealed that understanding of key terms like *household*, *main source*, *dwelling*, *piped water* was a major barrier to appropriate answering for respondents in informal and rural areas. Even though respondents could conduct a basic conversation in English, many of them

² There was only one sanitation question on Census 2011.

struggled with the terminology used in the questions and response options. Often, they would ask the fieldworkers to explain the terms or translate it into their home language or show them the question on paper.

In some instances, respondents were completely lost and unable to give answers.

When respondents were probed on the meaning of specific terms, several said that they were not sure of the meaning or that they had forgotten the meaning.

Another indication that the terminology was difficult to understand was the respondents' non-verbal responses. Respondents:

- had blank looks on their faces,
- paused for a long time,
- pointed and gestured instead of giving verbal answers,
- moved closer trying to peep at the questionnaire, hoping it will help them to understand.

The figure below depicts respondent's understanding of key terms used in the first Census water question as verified during the probing.

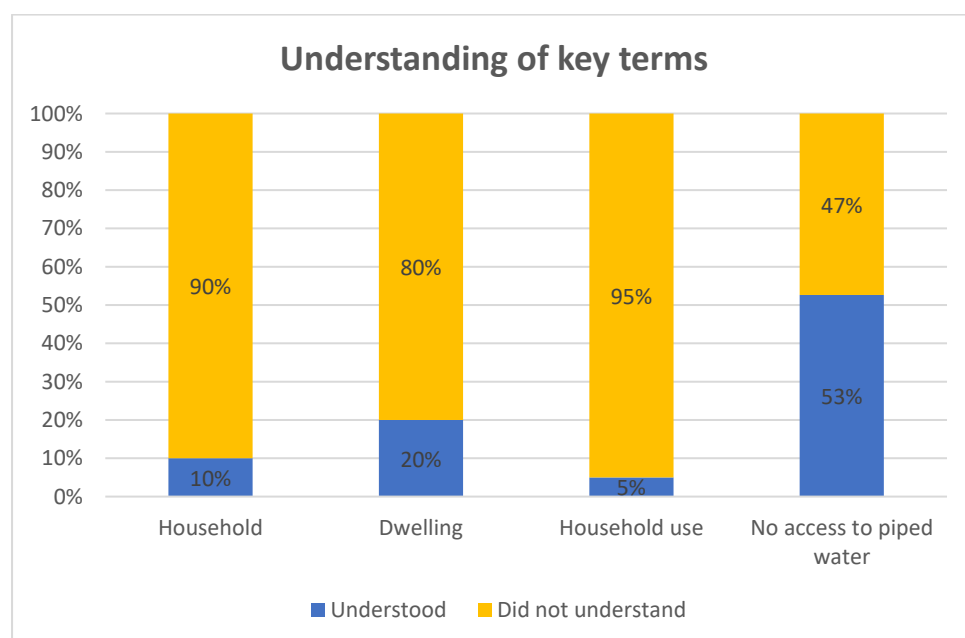


Figure 1: Census access to piped water question - understanding of key terms

Below are a few incorrect explanations that respondents gave for the term "household"³, indicating that they did not understand the term:

³ "Household" is used many times in the Census and GHS questionnaires. It is likely that respondents will become more acquainted with the term as the interview progresses. Yet, it remains an unnecessary cognitive barrier that can be avoided as illustrated in the revised questionnaire.

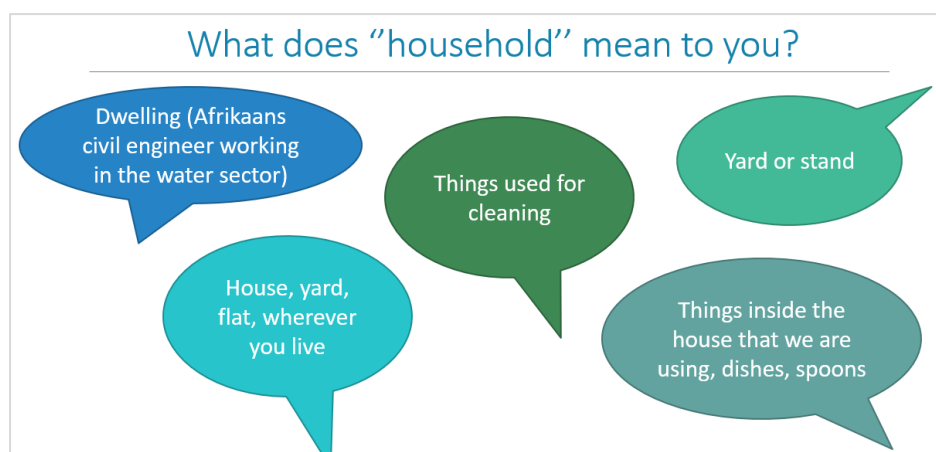


Figure 2: Examples of how respondents understand "household"

For the Census 2011 sanitation questions, the probing revealed that respondents in informal and rural areas were not familiar with the names of the different types of toilets, hence the inappropriate answering. The explanations that respondents gave for the term "chemical toilet" illustrate this terminological confusion:

Table 1: Respondents' interpretations of the option "chemical toilet"

<i>Modern toilets</i>
<i>Municipality comes with chemicals to clean</i>
<i>Like bucket toilets</i>
<i>Toilets where you dig a hole into the ground</i>
<i>Camping toilets and porta potties</i>
<i>Shared toilet; cleaned by truck</i>
<i>Ceremony toilet</i>
<i>A toilet used at functions or occasions</i>
<i>Same as a pit toilet (pour chemicals into it)</i>
<i>Mobile toilet</i>
<i>Toilet that cleans germs</i>

Respondents across the socioeconomic spectrum were baffled by the highly technical terms for newer toilet types used in the GHS question (*composting toilet, urine diversion dry toilet*).

Respondents got even confused with toilet types that have been around for a long time like a pit toilet. Adding another term, "latrine", did not improve comprehension. Very few respondents in informal and rural areas knew the difference between a pit with ventilation and one without. The fieldworkers probed to find out what respondents who were using pit toilets call them. The common answer was: "It is just my toilet".

Inappropriate questions

The gap between the reality that questions assume, and the actual realities of respondents, is well illustrated by the interruption questions. These questions test the reliability of water supply.

Reliability of supply is a critical aspect of a safely managed water facility. In South African regulation, a reliable household water supply is expressed as a municipal supply which is not Interrupted for more than two consecutive days, and not more than 15 days per year.

The questions that test reliability of supply are the following (Please note that the Census 2011 questions focus only on interruptions of “piped water supply” while the GHS 2018/2020 questions has a broader focus on “municipal water supply”):

Census 2011	GHS 2018/2020
In the last 12 months, has this household had any interruptions in piped water supply?	Has this household municipal water supply been interrupted at any time during the last 12 months?
1. Yes	1. Yes
2. No	2. No
Did any specific interruption(s) of piped water supply last longer than two days?	Thinking about the interruptions in your municipal water supply over the last 12 months, was any specific interruption longer than two days?
1. Yes	1. Yes
2. No"	2. No
	If you add all the days that your municipal water supply was interrupted over the last 12 months, was it more than 15 days in total?
	1. Yes
	2. No

The probing indicated that interruptions are much more complex than the two response options of the first questions suggest. Below are examples:

- **A respondent who experiences interruptions every week, said “no”, because they do not last longer than two days.** *On different days of the week, the water goes to different areas at a time, so the community shares the water with other communities. So, 3 times in a week, our community has water, and we are expected to fill up our tanks. Then the other days belong to another community.* Another respondent referred to this type of interruption as “like loadshedding”.
- In another case, a respondent said No, they did not experience interruptions. **The respondent did not count scheduled interruptions:** *No, there has only been scheduled interruptions.* These respondents live in what they call “the suburbs” and regard themselves as privileged in comparison with residents from nearby informal areas.

The figure below shows the different types of interruptions that consumers experience.

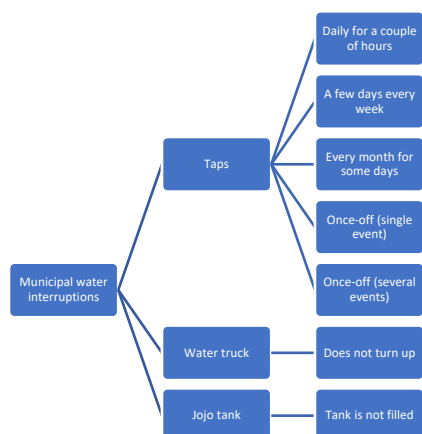


Figure 3: Different types of water interruptions

The Census and GHS questions that ask about interruptions for **longer than two days** capture only once-off interruptions of piped water. **As a result, respondents with any of the other types of interruptions answer “No” and are routed away even though they have not received municipal water for more than 15 days in the past year.** The research team referred to this as ‘the domino effect’.

The domino effect was compounded by the fact that more than a third of the respondents did not understand the words “interruptions” (Census 2011 and GHS 2018) and “interrupted” (GHS 2018) or did not regard the word as applicable to their situation.

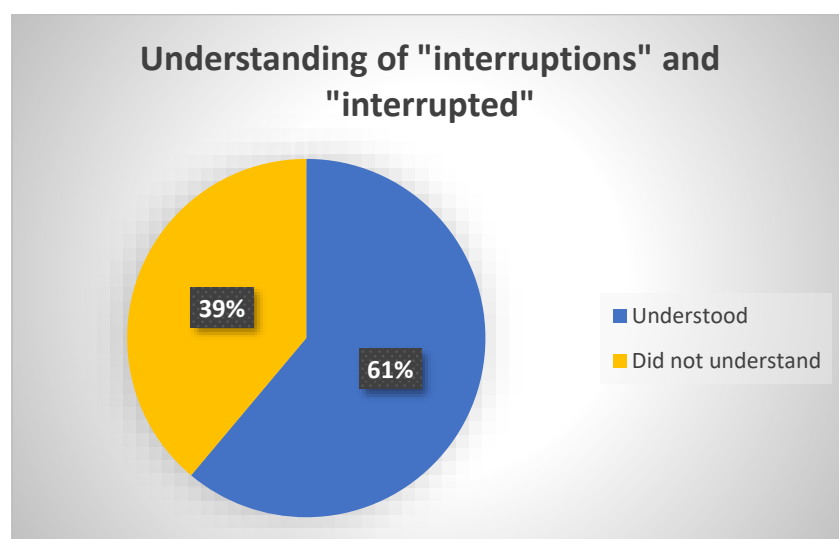


Figure 4: Understanding of “interrupted” and “interruption”

The domino effect in the questions about water interruptions was also compounded by recall issues. For example, respondents forgetting regular interruptions and only remembering those that had a profound effect on them.

Other barriers to appropriate answering

Other factors that lead to inappropriate answers are discussed in detail in the report. The ones with the biggest impact on appropriate answering are listed here:

The structure of the question impairs appropriate answering, for example:

- Long and complex questions and response options
- Double negatives
- The use of the passive voice.

It has been found in Plain Language research that it is more difficult for readers and hearers to process sentences in the passive voice in English than it is for them to process sentences in the active voice (subject-verb-object). Several of the questions have passive structures, but the research found that any processing difficulties that respondents might have had with the passives were overshadowed by terminology that they did not understand. In the examples below, the passive verb is underlined; the terminology that respondents struggled with is in bold:

*Has this **household** municipal water supply been interrupted at any time during the last 12 months? What type of toilet **facility is used** by this **household**?*

Respondent task issues

- The second Census water question which asks the main source of household water has overlapping response options. For example, the options “a neighbour’s tap” and “water tanker” could also be supplied by the municipality, which is also a response option. Which one must the respondent select?
- Too few response options (discussed above with reference to interruptions)
- Singular mention when the respondent needs multiple mention. For example, several respondents answered during the probing that they get their drinking water from different sources or different end user points: A respondent from Hammanskraal selected “the neighbour’s tap” as his main source but he actually gets drinking water alternatively from the neighbour’s tap and a municipal water truck.
- Recall issues, especially when a question has a long list of response options.
- Ambiguous and irrelevant options. “Poor lighting” as a toilet problem is an example. Respondents asked if this mean that there is no natural light, or that there is no electric light in the toilet. One respondent asked why there should be a light as they (and everyone else) do not use the outside toilet at night.
- Irrelevant scenarios are not a problem for respondents if they can answer “not applicable”. However, if “not applicable” is a term that they don’t understand, or if they miss it, they answer Yes or No, even though the scenario is irrelevant.

An exacerbating factor

In the first two water questions of the Census, and in the sanitation question, the order of the response options follows the rungs of the water services ladder, from top to bottom. This might feel logical from a water and sanitation management perspective, but, if you are at the bottom of the ladder, you have to listen to all the options that you don’t have. It is also a long and tedious experience in which respondents must wait for the option that applies to them to come up.

3. Summary

The findings indicated that inappropriate answering is further compounded by the complexity of the South African population and its stratification in terms of income, diversity, language, and history.

Many citizens/consumers, especially vulnerable groups who are the target of improved water and sanitation delivery, are disempowered to report on their situation, because they are unable to answer the current Census and GHS survey questions appropriately without the mediation of a fieldworker.

The negative experience of vulnerable citizens entrenches inequality; it does not eradicate it.

These citizens could well ask: *Why does government not want to hear my voice?*

4. Outcome

The outcome of the study was a set of water and sanitation questions that respondents found easy to understand and answer. The research findings and the consultations with DWS and StatsSA informed the design and wording of these questions as follows:

1. The Census and the corresponding GHS questions are exactly the same. The research has shown that every word has an effect on how respondents understand and answer questions.
2. The questions:
 - a. Avoid terminology that respondents in the research did not understand.
 - b. Avoid response options that are not mutually exclusive.
 - c. Match respondents' realities.
 - d. Use a frame of reference that respondents are familiar with.
 - e. Encourage truthful responses. The WASH questions were revised to give respondents the opportunity to say that they cannot always afford soap or that they do not always wash their hands with soap and water.
3. The sanitation questions were aligned with SDG 6.2 and the needs of DWS. In consultation with the DWS sanitation team, questions on faecal sludge management, safe disposal of menstrual material and nappies, and sewage running in the streets, were added.
4. Self-supply was included in the response options. Self-supply of water and sanitation services is a growing trend (Royston, 2019) as municipal services deteriorate. This affects the affordability of services for poor people. The recommended questions added options that reflect self-supply, which will give government data on this trend.

5. General recommendations

The study recommends that the risk of inappropriate answering in the Census and major surveys be mitigated as follows:

Test the questions

Cognitive Action Research provides a methodology to reduce inappropriate answering and ensure data integrity. It is recommended that this methodology be applied to test and adjust the Census and major survey questionnaires before they go into the field.

Translate the questions

In the study, only respondents with a basic conversational proficiency in English were interviewed. The actual levels of inappropriate answering are therefore probably higher.

It is recommended that the Census and GHS questions, which are in English, be translated into the official South African languages or the official provincial languages. Respondents can then indicate in which language they prefer the fieldworker to read out the questions. In computer-assisted

interviewing, it should be simple to change the screen to the selected language. Translations could introduce new comprehension issues and should also be tested.

If tracking outweighs appropriate answering

Data collected through a national census and large-scale surveys are used to track trends and measure progress on for example service delivery, goals and targets. Hence, it is understandable that organizations like StatsSA may want to keep questions as close as possible to previous questionnaires for tracking purposes. It is possible to retain tracking and adjust questions to cover deviations stemming from inappropriate answering. For example, one could:

1. Include the recommended Census water and sanitation questions in one GHS survey, let's say 2023, to determine response differences, and adapt data accordingly until the next Census in 2031, or
2. Double the number of GHS respondents in one year, for example, 2022, and set up two matched samples. Include the current Census questions for the one sample, and the recommended Census questions with the other sample. Determine response differences and adapt future data accordingly. Repeat the exercise in 2029 and adapt as needed in time for Census 2031, or
3. Conduct a separate survey with the recommended water and sanitation questions with a smaller sample of 5 000 - 10 000. Determine response differences and adapt future data accordingly.

Making sure that Census and survey questions are easy to understand, and answer, will increase appropriate answering and hence improve the integrity of data that is critical for the water sector. It will also remove the risk of fieldworker intervention and mediation.

Accurate data will furthermore ensure that the money spent on water and sanitation infrastructure and services meet the actual needs of citizens/consumers in those areas where improvement will make the biggest impact.

Acknowledgements:

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