

# GCRO'S QUALITY OF LIFE SURVEY: SURVEY MANAGEMENT WORKSHOP BRIEFING DOCUMENT

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## Briefing document

This document was prepared as part of the Gauteng City-Region Observatory's Quality of Life survey ten year review process. It is a lightly edited version of the document provided to participants in preparation for the survey management workshop hosted on 06 March 2019.

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# 1 Background

## 1.1 GCRO's Quality of Life Survey

The GCRO's Quality of Life Survey (QoL) was launched in 2009, measuring the self-reported well-being and satisfaction of adult residents of the Gauteng City-Region (GCR), and has been repeated every two years since. The first iteration of the survey (2009) collected data from 6 639 randomly selected adult respondents, distributed across the entire GCR, including areas falling outside of the Gauteng province. The sample was representative at the municipal level. The second iteration of the survey moved towards a ward-representative sample, restricted to Gauteng province only. This required a substantial increase in sample size to 16 729 respondents. Subsequent surveys remained limited to Gauteng, and continued to pursue a ward-representative sample for all wards in Gauteng. All had sample sizes over 24 000, with a peak of 30 002 in 2015/16.

QoL is now recognised for providing high quality data at extremely low levels of geography. It represents an invaluable resource for provincial and local government in the province, as well as for numerous academic and non-profit research projects. Given the scale of the survey, the broad spatial distribution of completed surveys, and GCRO's commitment to ensuring exceptionally high quality data, implementation of the survey has become increasingly challenging over recent iterations. This is exacerbated by the relatively limited resources (financial and human) available for survey implementation. Given available resources, implementation of the survey as currently conceptualised has become unsustainable. In light of the value of the project, a careful review of all survey parameters is critical to finding the strongest path to return it to sustainability. This is a core part of the motivation for the GCRO's internally driven ten-year review of the survey.

## 1.2 Technical review workshops

As part of the ten-year review, the GCRO is implementing a series of three technical review workshops, focussed on reviewing key aspects of the survey. These are (1) sampling; (2) survey management; and (3) questionnaire content. Prof Mark Orkin has been appointed as the external technical chair of the workshop process, to provide guidance to the process, and to assist the GCRO by synthesising the recommendations of the three workshops. Each workshop is being externally facilitated, by Dr. Tara Polzer-Ngwato, and will be attended by a small group of 3-4 external experts, as well as core GCRO team members.

The objective of the series of workshops is to support the GCRO in re-balancing sample size and distribution, field processes, questionnaire composition, duration of data collection, and available resources in such a way as to facilitate survey sustainability over the next ten years, while also protecting as far as possible the continuity and value of the survey. Participants in each workshop will work towards the generation of a series of considerations for the GCRO.

## 1.3 Purpose of this document

This document aims to prepare survey management workshop participants for the survey management technical review workshop. It:

- Provides a problem statement, and highlights key issues that the GCRO is grappling with;

- Provides an overview of GCRO’s approach to survey management for the QoL survey over the years, highlighting areas in which particular challenges have been identified. These include the institutional location of the survey and division of roles, internal and external survey-related staffing, management of related relationships, quality control, and survey cost;
- Discusses in more detail potential approaches to resolving issues which have been challenging, drawing in part on the strategies adopted by other broadly similar surveys; and
- Poses key discussion questions for the workshop.

## **2 QoL survey management: Problem statement**

The QoL survey is a particularly challenging survey to implement: it combines a large and geographically dispersed sample, a high proportion of sample points in affluent areas, a relatively long questionnaire, stringent expectations around quality control and academic rigour, and a constrained budget. With the exception of the first survey iteration, all iterations have experienced delays, and service providers report going over budget. A different service provider has been used for each survey, limiting the transfer of learning from one iteration to the next. The underlying question facing this workshop is how practical aspects of survey implementation might best be managed moving into the future, to preserve quality and continuity, while restoring the balance between cost, timing and feasibility.

### ***2.1 Key concerns***

Key survey management related concerns are as follows:

#### *2.1.1 Survey size, timing, and frequency*

QoL was designed to provide a snapshot of the province, and service providers have been expected to complete data collection in 2-3 months. However, as sample size has grown it has become impossible to complete the survey with adequate rigour in this period. With the exception of QoL I, all surveys have experienced delays. QoL has also been implemented every two years, but since QoL III, the surveys have run across multiple calendar years. This has made maintaining the survey’s two-yearly cycle increasingly challenging. Sample size seems unlikely to drop much below 25 000 (see Section 2.2), but the option of alternating larger and smaller surveys might be considered.

#### *2.1.2 Institutional location of data collection*

Given the GCRO’s small size, and preferences of staff members, data collection has historically been outsourced. QoL I-IV were outsourced through a tender process, to the private sector – in each instance to a different (single) service provider. Partly in response to the challenges encountered in working with the private sector, QoL V was implemented through a partnership relationship with a university-based service provider. However this model presented challenges of its own.

### *2.1.3 Division of roles between GCRO and the service provider*

GCRO had minimal direct involvement in the implementation of the earlier surveys, although external consultants were brought in to provide independent quality control. Over time, GCRO has become increasingly involved in the details of survey implementation, planning and quality control. This has led to some frustration on the part of service providers, who complain of shifting goalposts and excessively onerous quality control expectations. This shift has also placed substantial pressure on GCRO as a whole, as well as those members of staff who become particularly involved.

### *2.1.4 Quality control*

GCRO's quality control requirements go beyond those standard in much of the market research industry. Several service providers have also complained of unclear expectations and shifting goalposts related to GCRO's expectations in terms of quality control. GCRO places particular value on having GPS coordinates for the exact location of each survey, as this is critical for appropriate spatial analysis. Providing accurate GPS coordinates has been particularly problematic for service providers. External, independent in-field quality control has been reported as useful by service providers, while there are some questions around the utility of telephonic call backs. The level of quality control required has implications for cost, timelines, staffing, and relationships with service providers.

### *2.1.5 Managing Gauteng's low response rates*

QoL protocols around how to manage substitutions in the field, when an interview cannot be conducted at a selected dwelling or with a selected respondent, have varied somewhat over time. Approaches have ranged from near-pure oversampling, as in QoL I, which did not necessitate much substitution, to the very demanding protocols in QoL II, requiring extensive revisits to attempt an interview with a member of a sampled household, and to the more relaxed approach in QoL III which reduced revisits to only those that could be managed within two working days. Given generally low response rates in Gauteng, and particularly in affluent areas, the approach taken to substitutions and revisits has substantial implications for cost and speed of fieldwork. Timelines for the project have also historically always been extremely tight, in anticipation of the data providing a 'snapshot' of the province. Timing needs to be brought into line with the selected approach to substitutions, as well as the low response rate typically encountered.

### *2.1.6 Mode of data collection*

Historically, all QoL interviews have been done face-to-face, with a randomly selected adult respondent. However, this is becoming increasingly challenging in more affluent areas. It is often impossible to properly implement random sampling in these areas, and in recent survey iterations, it has been necessary to accept a convenience sample in many complexes, estates and blocks of flats. Adjusting the mode of administration to telephonic or online surveying in certain areas may reduce challenges with access, and potentially strengthen sample composition. However, mode of administration is also known to have an impact on participant responses to questions.

### *2.1.7 GCRO team composition*

Appropriate internal staffing for QoL, including team composition, capacity and skill sets, is profoundly linked to all issues identified above. The first four iterations of QoL were conducted without dedicated internal staffing. Three to four staff members supported the survey in a part-time capacity, with some external capacity contracted in for various aspects of planning and quality control. As sample size and complexity of implementation have grown, this model has become unsustainable. QoL IV effectively became a full-time, year-long commitment for one researcher, and substantially burdened senior management and the administrative team. QoL V was the first iteration to have a dedicated senior researcher, but still place an enormous burden on senior management and the organisation as a whole. Additional junior level capacity was contracted to support quality control and data processing work in QoL V.

### *2.1.8 Geographical dispersion of the sample*

GCRO requires that all QoL surveys are completed in person with an adult respondent, at the respondent's home, and that all wards in Gauteng province are covered. This requires that data collectors physically visit all parts of the province. This adds substantially to the logistical complexity and cost of data collection. The geographical dispersion of our sample has also constrained relationship-building with the communities from which participants are drawn, meaning access must be negotiated anew for each survey iteration.

## **2.2 Additional considerations**

While not direct aspects of how a survey is organised, the available budget, as well as the nature of the sample and required sampling processes, are key constraints on data collection. They also impact substantially on appropriate timelines and the nature and quality of work which can realistically be completed. They therefore need to be considered together with aspects of survey management described above.

### *2.2.1 Sample composition and distribution*

The size and spread of the QoL sample, which covers all wards in Gauteng province, makes for particularly challenging survey implementation. Methods which work well for smaller samples don't always scale well, and the spatial distribution of points requires extensive travel, and substantial work in typically difficult areas. The requirement to randomly select adult respondents in their homes, with multiple return visits if necessary, further adds to the challenge. Sample composition and respondent selection has been the focus of another technical review workshop, and while historical practice may be adjusted in some ways, the overall parameters of the sample in terms of size and distribution are unlikely to shift substantially.

### *2.2.2 Resources and cost*

The GCRO funds QoL from its core grant, with additional contributions received from the Metros. Due to resource constraints, budget allocations for QoL have been relatively low given the scale of the project. Due to GCRO's small size and limited budget, dedicated staffing within the GCRO is also a constraint.

### 3 Historical practice

While details of survey implementation have varied over iterations, all GCRO QoL surveys have some common features. QoL is an individual level survey, completed by a fieldworker in a face-to-face interaction with a randomly selected adult respondent (typically 18 and older, though at times allowances have been made for younger respondents heading a child-headed household), at the respondent's home. Since QoL III, surveys have been collected purely electronically, and the ability to accurately spatially locate surveys using GIS coordinates has also developed substantially. Over time, the survey's sample size has grown, and GCRO has also become increasingly directly involved in details of survey implementation and quality control. QoLs I-IV were all conducted by private sector fieldwork agencies through a competitive tender process. A different model, involving a partnership with a university-based data collection entity was pursued for QoL V. Table 1, below, provides a few key details regarding each iteration of the survey. A more in-depth discussion of each survey iteration follows.

Table 1: Key parameters of each GCRO QoL survey conducted to date

No.	Year(s); months in field	Service provider	Data collection mode	Sample size	Key sampling, respondent selection and fieldwork implementation parameters
I	2009 (2 mos)	DRA	Paper; Manual capture of coordinates from independent GPS device	6 639	Entire GCR; municipality representative PPS at ward level; floor 160 per municipality Random starting point for every 5 interviews in a given ward; interviews at every 20 <sup>th</sup> household Oversampling of visiting points with minimal substitution Total field team of 60, working in teams for 4 fieldworkers and a supervisor in a vehicle.
II	2011 (5 mos)	Data World	Digital pen with cell-phone based GPS automatically integrated	16 729	Gauteng only; ward representative Ward level PPS: floor of 16, cap of 60 Variegated grid based on urban/rural land cover used to randomly select starting points for every 4 interviews in a given ward; interviews at every 5 <sup>th</sup> stand Substitution of stands and respondents Average of 150 fieldworkers in field at a time, working in teams of 3-4 in a vehicle with a supervisor.
III	2013/14 (7 mos)	GeoSpace	Tablet with integrated GPS; FormHub used for data collection	26 387	Gauteng only; ward representative PPS with floor of 60 per metro; 30 otherwise Attempts made to visit each SAL within each ward, with the SAL centroid used as a starting point, with interviews at every 4 <sup>th</sup> stand. Typically 1-2 interviews per SAL, determined on a PPS basis. Substitution of stands but not respondents Total of 120 fieldworkers in field at a time, working in teams of 4-5 with a supervisor.
IV	2015/16 (10 mos)	Ask Afrika	Tablet with integrated GPS & standalone	30 0002	Gauteng only; ward representative PPS with floor of 60 per metro; 30 otherwise.

			GPS device; Dooblo used for data collection		EA used as PSU within wards. Pre-selection of 5 visiting points per EA. Dwelling unit, household & respondent selected by automated Kish grids Substitution of stands but not respondents Average of 100 fieldworkers in field at a time. As they subcontracted, various working patterns, but typically 4 fieldworkers and a supervisor in a vehicle.
V	2017/18 (10 mos)	ResearchGo	Tablet with integrated GPS; Custom created application by Relentless Technologies managed most aspects of survey implementation	24 889	Gauteng only; ward representative Fixed sample per ward: 50 per funding metro; 30 elsewhere Preselection of visiting points per ward (no clustering). Dwelling unit & respondent randomly selected by data collection device. Substitution of stands but not respondents. Average of 105 fieldworkers in field at a time. Initially working independently, then in teams of 10-15 with a supervisor in a minibus, and finally in teams of 4 with a supervisor in a car.

### 3.1 Quality of Life I - 2009

GCRO's first QoL (2009) collected a total of 6639 surveys, covering 572 wards, both in and around Gauteng. Data collection was conducted by Development Research Agency (DRA). Data collection was completed using pen and paper, with GPS coordinates recorded on a standalone device and manually transcribed.

DRA carried out the recruitment and training of the full field team, including regional managers, research assistants, field teams, field managers, quality control managers and quality assurance personnel. The 3-day training was facilitated by training manuals drafted by DRA, and attended by GCRO "to observe the process as a quality control measure and to provide clarity relating to the study background content and purpose of the study." (DRA 2009).

GCRO and DRA jointly developed the questionnaire, but DRA prepared the questionnaire for data collection, providing input into layout, flow, and question structure "to ensure accurate and efficient data capturing of the instrument." (DRA 2009) DRA field managers piloted the questionnaire, conducting thirty interviews across a range of demographics and provided feedback to GCRO. The questionnaire was substantially shortened, and other adjustments were made.

Sample design and respondent selection protocols were designed by DRA, based on GCRO requirements. Wards were used as the primary sampling unit (PSU), and ward sample sizes were calculated based on ward level populations on a PPS basis, with no ward-level floor or ceiling. For every 5 surveys planned in a given ward, a random starting point was selected. The starting point was the site for the first interview. Subsequent sites were identified by counting 20 households to the left on an iterative basis (DRA 2009). Once a household was selected, adult residents (over

18) were listed, and the respondent was selected using a Kish grid. For child-headed households, the head of household was interviewed if at least 15 years of age. Substitutions could not be made following the selection of the respondent. Oversampling was used to minimise replacement of sample points. All interviews were completed face-to-face, at the respondent's home, using paper forms (DRA 2009).

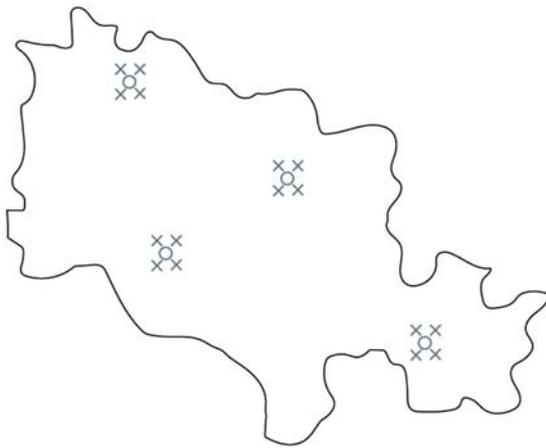


Figure 3.1: Hypothetical ward level sample distribution for QoL I (starting point illustrated by circle, and subsequent interviews illustrated by crosses)

Quality control was largely handled by DRA. Fieldworkers were trained to implement in-field quality control checks by ensuring that all questions were answered and skips were followed. Team leaders checked each completed questionnaire (once again focusing on skip patterns, logical processes and answers). Team leaders then sent the questionnaires to the DRA office once a whole survey area had been completed, and in-office quality control checks were run on each questionnaire. Following clearance, the quality assurance manager sent the information to the DRA data department for capture. Additionally, quality assurance personnel performed random, surprise site visits to check that fieldwork and interview procedures were being adhered to. Furthermore, random telephonic callbacks on 15% of the questionnaires were performed to ensure data quality and allow the respondents to provide feedback. (DRA 2009) Information on quality control of the sampling and respondent selection process is limited, but it appeared to involve a combination of in-field supervision, and telephonic and in-person back-checking. Additional external capacity was contracted to conduct some independent back-checking. GCRO received the dataset once data collection was completed.

The service provider was required to provide the GCRO with GPS coordinates of the completed surveys, a requirement that was amongst the first of its kind at the time. (Gotz 2019) This, together with determining the correct location for surveys, was challenging. Over 600 instances of fieldworkers incorrectly recording survey ward on the paper questionnaires were identified, and in a similar number of instances fieldworkers had inadvertently completed a survey in a neighbouring ward. Survey coordinates were incorrectly transcribed from the GPS device in almost 250 cases.

Other substantive challenges experienced during implementation related to limited community preparation as well as sample distribution. Difficulties included accessing affluent areas with

high walls, high levels of household refusals in affluent areas and plots, clashes over access with community policing forums despite clearance from local police, delays from tribal authorities, and delays from apartment block landlords. Management and implementation of appropriate sampling and respondent selection in field was also a challenge, resulting in oversampling in certain wards, and no interviews being completed in others. Survey length was identified as a challenge, with the shortest survey duration recorded as 45 minutes. DRA recommended that survey length should be reduced due to respondent fatigue and refusals. Fieldwork lasted roughly 2 months, including all training, and there were no significant delays.

Overall GCRO's approach to QOL I implementation was very hands off. The GCRO ED was the main point of contact with the service provider, with some other staff providing some internal support. An external consultant supported instrument development and quality control. (Gotz 2019)

### **3.2 Quality of Life II- 2011**

With QoL II (2011), the geographic scope of the survey was reduced to only Gauteng. 507 of Gauteng's 508 wards (2011 demarcation) were covered, and sample sizes were calculated at the ward level on a PPS basis, with a floor of 17 surveys per ward (Data World 2012). Total sample size increased substantially, to 16 729, facilitated by the introduction of electronic data collection, and enabling the analysis of data ward level. QoL II was implemented by DataWorld. A strong attraction of their proposal was their use of 'digital pen' technology – data collection was done on paper, but the pen automatically digitised responses. Responses and associated GIS coordinates were then directly uploaded from the fieldworker's cell phone. The hope was that this would resolve the GIS coordinate issues experienced in QoL I. (Gotz 2019)

GCRO provided the survey instrument, which was formatted by DataWorld for use with the digital pen technology. DataWorld conducted initial in-house piloting of the survey instrument, followed by a further two days of in-field piloting. (DataWorld 2012) DataWorld was responsible for fieldworker recruitment and training. DataWorld provided groups of fieldworkers based in different areas with two days of training. GCRO attended the first training, answering questions and providing other input. Subsequent training sessions did not have any GCRO involvement. Fieldworkers were provided with two manuals, developed by DataWorld, one outlining general field processes and covering the QoL survey, and a second covering appropriate use of the digital pen technology. Fieldworkers initially worked in teams of 9, with a dedicated team leader. This was later reduced to teams of 4 fieldworkers and a supervisor. DataWorld indicates that they would use the 5-person model were they to implement a similar survey again. (DataWorld 2019)

While DataWorld was responsible for sample selection and implementation in field, GCRO guided the process of selection of starting points. A variegated grid was placed over each ward, with the density of the grid at any particular point determined by whether the underlying area was urban or not. The grid was more tightly-knit, with more intersection points, in urban areas. (Gotz 2019) Based on the required sample size for the ward, DataWorld randomly selected the appropriate number of starting points from the grid intersections – yielding an appropriately greater number of starting points in more densely populated urban areas. There was on average one starting point for every four surveys. Figure 2, below, illustrates a variegated grid applied to a hypothetical ward. Circles indicate the randomly selected grid intersections which served as

starting points at which the first interview was conducted. The crosses indicate subsequent interviews conducted from a starting point. A 30m inward buffer around ward boundaries was used in selecting starting points, to minimise the chances of fieldworkers accidentally moving into adjacent wards. A 33% oversampling was applied to minimise substitutions.

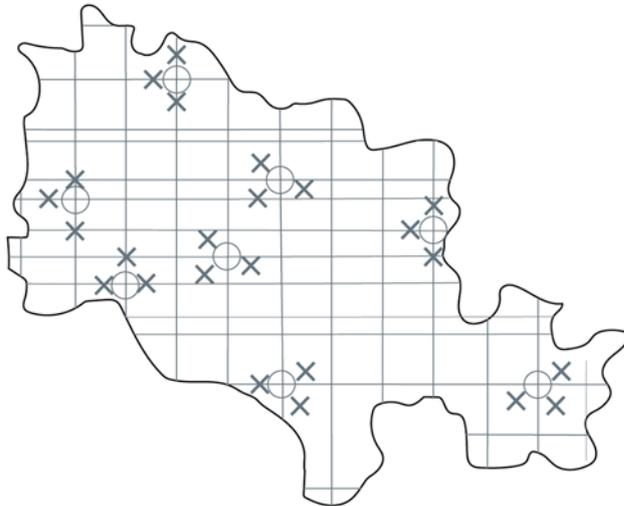


Figure 3.2: Hypothetical ward level sample distribution for QoL II, illustrating the variegated grid approach

Fieldworkers treated the starting point as their first stand. Subsequent stands were selected by counting five stands in the direction of an arrow provided to the fieldworker, alternating the side of the road. Substitution of stands with a neighbouring stand was permitted following 3 unsuccessful visits. Where multiple dwelling units or households were found on a stand, the appropriate unit or household was selected through a dice roll. Again, substitution of a sampled unit or household was permitted following 3 unsuccessful visits.

Following listing of adult household members, the adult (18+) whose birthday followed most closely after the date of fieldwork was selected as the respondent. When the selected respondent could not be interviewed after 3 visits, they were substituted with the adult with the next closest birthday, with 3 visits required before substitution with another adult. This was problematic, as in a household with 4 adults, this might require up to 12 visits before the stand could be substituted. (DataWorld 2019) In child-headed households, the head of household was interviewed (Data World 2012). The youngest respondents were 16 years old.

DataWorld was responsible for all aspects of fieldwork, including the implementation of the digital pen technology and the geocoding of all surveys, along with quality control. (DataWorld 2011) DataWorld applied multiple levels of quality control. In field, team leaders and supervisors would check completed hard copy surveys, flagging any potential issues. In field checks were also implemented to ensure that fieldworkers were in the appropriate location, implementing sampling and respondent selection appropriately. Responses were re-checked with respondents to ensure accuracy. Ross Jennings was also contracted by GCRO to independently conduct in-field quality control. When issues were uncovered, these would be escalated to DataWorld who would retrain, and remove problematic surveys from the sample. (DataWorld 2012)

In addition to in-field quality control, DataWorld also conducted back-office quality control, checking the contents of the hard copy questionnaires against the automatically generated electronic database. Manual data collection supplemented the automatically generated database where necessary. Telephonic call-backs were also implemented to verify details with randomly selected respondents. GIS coordinates recorded in field were verified against the recorded addresses. The accurate recording of GIS coordinates proved extremely challenging. Challenges with accurate recording of coordinates in the field included devices failing to obtain accurate coordinates, batteries running out, and systems not working well in areas with poor signals. As a result, coordinates were not available for over 5 000 of the 16 729 surveys completed, and had to be imputed based on other available information. Where feasible, survey coordinates were calculated using available information, such as street address and fieldworker whereabouts. Where this was not possible, but the ward could be confirmed, ward centroids were used as the survey coordinates. For 1008 surveys, the ward could not be confirmed.

As with QoL I, implementation issues related primarily to access, particular in more affluent areas. In some areas, despite a 33% oversampling, minimum targets could not be met without the inclusion of additional sample points. DataWorld also experienced significant challenges with going into field shortly after the completion of Census 2011. As many QoL questions were the same as Census questions, respondents were particularly reluctant to complete the survey. Survey length (averaging 40 minutes) was also again reported as problematic. The extent of revisits required by the sampling and substitution protocols was also problematic. All of this resulted in fieldwork progressing substantially more slowly than anticipated. Data collection took approximately five months of active fieldwork, spread over 7 months, rather than the anticipated 2 to 3 months. Data World reports contacting approximately 30 000 households in order to complete the 16 729 samples in the final dataset.

DataWorld was responsible for the preparation of the final dataset, including weighting, as well as provision of banner books. As with QoL II, GCRO involvement in the day-to-day implementation of the survey was fairly minimal. The core survey team within GCRO was again led by the ED, with some internal support from two colleagues. (Gotz 2019) An independent consultant was contracted to provide further support with fieldwork oversight. The GCRO team received the dataset at the end of data collection. Subsequent to receipt of the final data and presentation of preliminary results, dataset problems stemming from data management were identified. The issues were rectified, but the results generated from the revised dataset were substantively different to those initially presented, which was problematic for GCRO. (Gotz 2019)

### **3.3 Quality of Life III- 2013/14**

QoL III (2013/14) covered all 508 wards in Gauteng (2011 ward demarcations), but with a substantial increase in sample size to 26 387. This increase in sample size was facilitated by each of the 3 Metro municipalities contributing to the study budget, as well as the complete digitisation of data collection. The survey was implemented by GeoSpace International. QoL III was the first QoL survey to be completed on a completely electronic basis, with fieldworkers using tablets for data collection. This, combined with the availability of incoming data on a live basis to GCRO, were key attractions of the fieldwork proposal. (Culwick 2019; Gotz 2019) Collection of GIS coordinates was embedded in the questionnaire, which was hoped to resolve

the challenges with survey locations experienced in the first two iterations of the survey. (Gotz 2019)

GCRO provided GeoSpace with the survey instrument, and GeoSpace was responsible for digitisation. GeoSpace was also responsible for fieldworker recruitment, training and management. GeoSpace conducted a small, two-day in-field pilot in advance of the main fieldworker training. Their field report indicates that they felt a week long pilot, and adequate time to make subsequent adjustments, would have been extremely beneficial. They conducted a week long training following the in-field pilot, but again report that this was inadequate, and they would have preferred to have more time for training and practice with the digital data collection system. (GeoSpace, 2014)

GeoSpace was responsible for sampling design, in line with GCRO's requirements in terms of sample size and distribution (PPS with a minimum of 60 surveys per metro ward, and 30 surveys in all other wards, on a ward-representative basis). Within each ward, surveys were distributed across all inhabited SALs, and an effort was made to conduct at least one interview in each SAL. Interviews were finally conducted in 16 400 of the 17 840 SALs in Gauteng. SALs not covered included those without residential buildings, and those where access was not possible. Typically, between 1 and 2 surveys were completed per SAL, with an average of 1.6. The number of surveys per SAL was calculated on a PPS basis given SAL population relative to that of the ward, and the total number of surveys allocated to the ward. These calculations were conducted by GCRO (Prof Paul Fatti and Graeme Gotz). Using GIS, GeoSpace created a centroid for each SAL, and treated this as the SAL starting point.

Fieldworkers approached the stand closest to the centroid to attempt their first interview in each SAL. If they were not able to conduct an interview there, they walked in a random direction, established by dice role, and approached the 4th stand encountered, alternating sides of the street. This was repeated until the appropriate number of interviews for the SAL were conducted. According to GeoSpace documentation (2013), if access to a stand could not be obtained on the day of the first visit, immediate substitution of the stand was permitted without any revisits. It was only when contact was made resulting in the selection of a respondent that revisits were required. This was limited to two further visits following listing, and was restricted to a period of two days, after which the stand would be substituted. As in QoL II, when multiple dwelling units or households were encountered on a stand, fieldworkers selected the appropriate unit or household using a dice roll. Again, as for QoL II, following household listing, the adult (18+) with the birthday most closely following data collection was selected. In child-headed households, the oldest child was interviewed if they were 14 years of age or older. Figure 3 below illustrates a hypothetical distribution of interviews across a ward. The circles represent the centroid of each SAL in the ward, at which the first interview per SAL was conducted, and the crosses represent additional interviews in a given SAL.

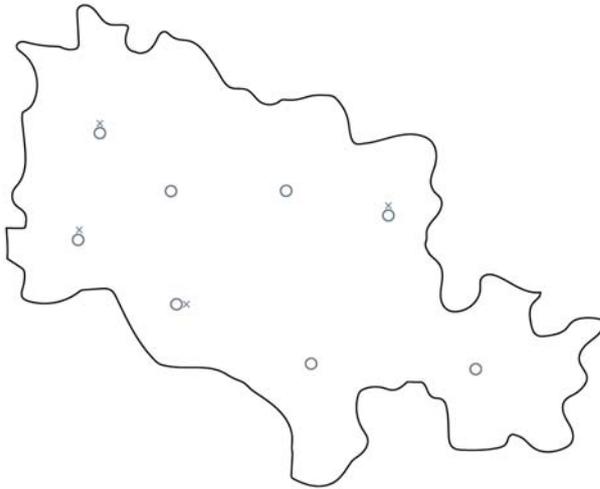


Figure 3.3: Hypothetical ward level sample distribution for QoL III

Interviews were conducted face-to-face at respondents' homes, using FormHub on tablets. GIS coordinates were automatically captured by the tablets. GeoSpace's processes for quality control of sampling and respondent selection included in-field oversight, viewing of survey locations on an online interface, and cross-checking survey locations with coordinates and field maps. Spot checks were implemented by team leaders and field coordinators for data quality and consistency. (GeoSpace 2014) In-office, GeoSpace cross checked GPS coordinates and location of interviews. Further spot checks were carried out on the digital database, but it was noted that more should have been implemented. (GeoSpace 2014) Team leaders were also responsible for taking photos of each SAL visited. An independent company, Gintar Tech, conducted telephonic call-backs with 6 423 randomly selected respondents. Ross Jennings was again appointed by GCRO to conduct independent field checks.

All data was available on a 'live' basis to GCRO. (GeoSpace 2019) On receipt of a full dataset from GeoSpace, issues due to data management challenges were identified. (Culwick 2019; GeoSpace 2019; Gotz 2019) Changes in the survey instrument, in response to problems identified with the correct functioning of skip patterns, also exacerbated data management difficulties. (GeoSpace 2019; GeoSpace 2014) Resolution of these issues required GeoSpace to return to the field for a full month. This process was also extremely time-consuming for GCRO team members.

The initial timeline for data collection was 60 days, which was found to be too short for the scale of work required. Timeline pressures were exacerbated as Metro funding was only obtained after much of the planning was in place, meaning that additional surveys were required without adequate adjustment to timelines and other planning processes. The project ran substantially over-time, with initial fieldwork lasting for 3.5 months. GeoSpace reported significant challenges with access, particularly in affluent areas, complexes, and mining hostels. Fieldworkers also encountered widespread abuse while conducting data collection, much of it racial. This contributed to high attrition of fieldworkers – approximately 15%.

GCRO was more directly involved in implementation issues with this iteration of the survey than in previous instances. Biweekly meetings were held with GeoSpace, and at least some parts of the data were inspected at a much earlier point in data collection. (Gotz 2019) The GCRO team

remained small, however, with no staff dedicated to the project on a full-time basis. The GCRO team was again led by the ED, with extensive internal support from Graeme Gotz and Chris Wray. Christina Culwick was brought into the team part way through data collection, with particular involvement in examining data and ensuring all aspects of the SPSS dataset accurately reflected the survey instrument. Ross Jennings was also contracted to support quality control. Prof Paul Fatti together with Grant Haywood developed the survey weights.

### **3.4 Quality of Life IV- 2015/16**

QoL IV (2015/16) again covered all 508 wards in Gauteng (2011 demarcations), but increased sample size to 30 002, maintaining representativity at the ward level. The survey was implemented by Ask Afrika, who were appointed following an externally managed and rigorous multi-stage process. Ask Afrika subsequently outsourced much of the data collection to a number of smaller data collection companies, which had not been clear to the GCRO in the tender documentation.

As with previous iterations of the survey, GCRO provided the survey questionnaire, and Ask Afrika was responsible for questionnaire digitisation. Data collection, which included some GPS coordinates, was conducted on tablets using the Dooblo system. Ask Afrika conducted two internal pen and paper pilot interviews, and two external pilot interviews. They provided feedback on length, flow and comprehension. Some adjustments were made by GCRO in response to this feedback. Once the survey was programmed into Dooblo, this was checked by both Ask Afrika and GCRO. (Ask Afrika 2016) A translation agency translated the full questionnaire into Afrikaans, Sesotho, isiZulu and isiXhosa.

Ask Afrika was responsible for recruitment of fieldworkers. They carried out formal training sessions at the start of data collection, along with in-field training sessions. High rates of staffing attrition required that new fieldworkers and team leaders were brought in. New individuals were “fully briefed when they joined the fieldwork team”. (Ask Afrika 2016) Final fieldwork staffing consisted of “a national field manager, regional field managers, 16 supervisors/suppliers, 66 team leaders and 536 interviewers.” (Ask Afrika 2016).

Ask Afrika contracted Dr Ariane Neethling, in cooperation with GeoTerraImage (GTI) and AfricaScope, to conduct the sampling for QoL IV, in line with GCRO specifications. Sampling was again PPS on the basis of ward population, with a floor of 60 in metro wards and 30 in non-metro wards. No formal ceiling was applied, but sample size in some large wards was reduced to compensate for smaller wards in which additional surveys were required to reach the floor target. QoL IV sampling relied on an EA-level sampling frame created by Dr Ariane Neethling, in cooperation with GeoTerraImage (GTI) and AfricaScope. This sampling frame was based on Census 2011 data, and incorporated up to date aerial photography, satellite imagery, and dwelling unit counts and coordinates from GTI. It was benchmarked against StatsSA 2014 mid-year population estimates (Ask Afrika 2015). EAs were stratified by ward, and based on each ward’s target population size, the appropriate number of EAs were sampled – one EA for every 5 surveys required. For each selected EA, 5 visiting points were randomly sampled from the GTI data included in the sampling frame. An additional 5 points were sampled as oversample points where substitution was required. Figure 4, below, illustrates a hypothetical distribution of surveys

across a ward. The squares represent the sampled SALs, and the crosses represent the pre-determined points at which interviews were conducted.

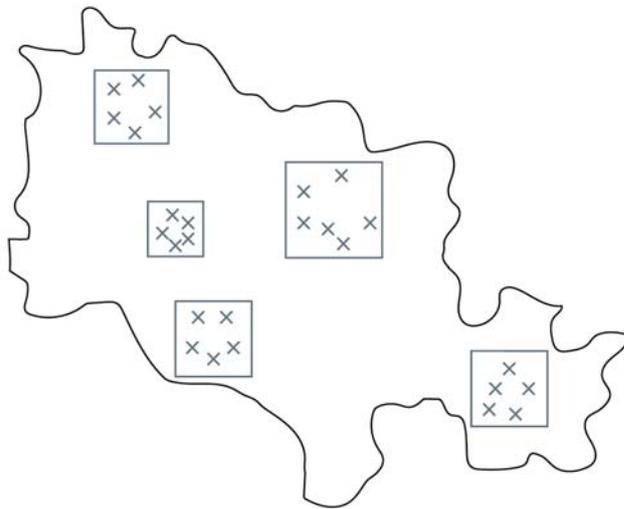


Figure 3.4 Hypothetical ward level sample distribution for QoL IV. Squares represent sampled SALs

Fieldworkers were provided with A3 printed colour maps to ensure they were able to locate the sampled visiting points. On arrival at a stand, listing of dwelling units and households was conducted if necessary, and the appropriate unit or household was selected through an automated Kish grid. All adults (18+) in the selected household were listed, and the respondent was also selected through an automated Kish grid. Child-headed households were not interviewed. Some convenience sampling was permitted in complexes and estates where access was extremely problematic, and standard procedures were unable to yield sufficient interviews.

Substitution of stands was permitted following 3 unsuccessful visits, or for the following reasons: refusal of entry to the property, vacant stands or houses, language barriers, no resident of the appropriate age, or no responsible person available to interview. Documentation does not detail the number of substitutions conducted.

Interviews were completed face-to-face at respondents' homes, using the Dooblo system on tablets, with integrated collection of GPS coordinates. As a fall-back, GPS coordinates were also collected using a separate TrackLocate device for some, but not all, surveys. Ask Afrika struggled to reconcile coordinates from the TrackLocate devices with the correct interviews, and consistency between reported interview locations and GPS coordinates was poor. Efforts to institute geo-fencing of interviews from January 2016 were not effective. (Culwick 2019)

Ask Afrika reports implementing multiple levels of quality control. Logic checks and skips were coded into the software to ensure appropriate implementation. Team leaders and supervisors conducted in field quality control, verifying location and respondent, as well as some survey content. Approximately 10% of surveys were checked in this way. Back office checks on incoming data were also conducted, comparing for example race, dwelling type and other details to the area in which the survey was conducted. Call centre back checks were also performed on a proportion of interviews. (Ask Afrika 2016) Ross Jennings was again contracted to support with in-field and

other quality control processes, and identified major problems with in-field implementation of the survey. (Gotz 2019)

Ask Afrika delivered SPSS datasets to GCRO on a fairly regular basis, from early in fieldwork, and GCRO was able to run a number of checks on these to ensure all skips were working well, and that incoming data was plausible (Culwick, 2019; Gotz, 2019). However, once GPS coordinates for interviews became available, serious problems quickly became apparent, with clear clustering of surveys in areas such as fast food outlets, malls, and taxi ranks. As a result, more stringent quality control was required, and around six thousand surveys had to be excluded from the dataset.

Initial data collection ran for 5 months, after which the service provider was required to return to the field for a further 3 months. Overall, 8 months of active data collection, spread over a 10 month period, was required to complete all fieldwork. This process was extremely time-consuming for the GCRO team.

Implementation issues were generally similar to those previously reported. Access was again a significant challenge, particularly in more affluent areas, complexes, estates, and gated communities. Fieldworker attrition was substantial, as fieldworkers were dissatisfied with remuneration and the difficulty of fieldwork. Theft of data collection devices by fieldworkers was also reported. Use of EAs as a sampling frame introduced some new challenges, as EA boundaries are not consistent with ward boundaries, meaning that some surveys were conducted in the incorrect wards.

QoL IV weights were calculated by Dr Ariane Neethling, and were subsequently updated to the 2016 ward boundaries by GCRO, under the guidance of Prof Paul Fatti.

During QoL IV implementation, the GCRO underwent substantial internal flux. The organisation's ED, who had previously largely led the QoL project, left the organisation as fieldwork was about to start (mid-2015). The acting ED took over a substantial role in managing QoL, but also left the organisation in December 2015, while the survey was still underway. GCRO was far more heavily involved in the implementation of QoL IV, throughout the survey, than was the case for previous iterations, with biweekly and sometimes weekly meetings held with the Ask Afrika core team (Culwick 2019; Gotz 2019). As two key members of historical QoL teams had left the organisation, this placed enormous pressure on the two remaining team members, who worked on the project on a near full time basis for a substantial period. This placed severe strain on team members and the organisation as a whole.

### ***3.5 Quality of Life V- 2017/18***

QoL V (2017/18) covered all 529 Gauteng wards (2016 demarcations). Although the planned sample size was 38 080, and included some work outside of the province, the final attained sample was 24 889 and limited to Gauteng. Data collection was implemented by ResearchG. GCRO contracted ResearchGo on a partnership basis, as an alternative to working with a commercial organisation, and because they offered innovative technological platform. (Culwick, 2019; Gotz, 2019) ResearchGo demonstrated technology which allowed for full management of survey implementation, live tracking of fieldworker whereabouts, and integrated mapping of multiple coordinates for every survey on a web-based viewer, which appeared to be an ideal fit for

GCRO's needs. Additionally, the ResearchGo model was cost effective, and had a 'social good' component in that it trained unemployed youth as fieldworkers.

The survey questionnaire was provided by GCRO, and internally piloted and workshopped extensively between GCRO, Social Survey Africa (SSA), and ResearchGo. Key terms were translated into Afrikaans, Sesotho, Setswana, isiZulu and isiXhosa by the UJ linguistics department, and then also workshopped extensively. ResearchGo undertook internal piloting, and SSA conducted internal and external piloting, all using pen and paper, after which the survey was finalised. Programming of the survey into ResearchGo's platform was conducted by Relentless Technologies. This process required substantial updates to the software system, and took 4 months. The programming of the questionnaire itself did not change once data collection had begun. However, software related challenges persisted throughout the data collection period.

ResearchGo was responsible for recruiting and training fieldworkers, and did so in partnership with Harambee Youth Employment Accelerator. All incoming fieldworkers received a minimum of eight days of training, and often more. This included in-field use of the instrument – which, with the first cohort of fieldworkers, also served as an in-field pilot. Supervisory staff received further training. GCRO attended the full training for the first cohort of fieldworkers, providing input as applicable, and subsequently attended parts of other training sessions. At various points during data collection, fieldworkers were also brought together for day-long training sessions related to particular areas of challenge. In total, 526 fieldworkers were trained and contracted to work on the survey, together with 20 in-field supervisors, and a number of logistical and quality control agents based in the ResearchGo back office.

GCRO, in close consultation with Prof Paul Fatti, developed the sampling strategy for QoL V. Sampling shifted away from a PPS approach, and a fixed sample per ward was used. This boosted sample size in wards with smaller populations, increasing precision of ward level results, without inflating overall sample size too substantially. Sample size was initially set at 50 surveys per non-metro ward, and 65 per metro ward, but due to implementation challenges was finally reduced to 50 per ward for Johannesburg and Ekurhuleni metros, and 35 elsewhere.

As with QoL IV, visiting points were selected from GTI's building based land use (BBLU) data, updated to 2016. This dataset provided the coordinates and number of dwelling units for all residential buildings in the province. ResearchGo was responsible for the selection of sample points, while GCRO checked the sample points once they were drawn, to ensure that they were in line with specifications. Points were not clustered, and were selected on a purely random basis at the ward level. Once the sample had been drawn and verified, up to 5 substitution points were randomly drawn from unselected points within 200m of each visiting point. This was intended to facilitate unbiased, live substitution in the field when necessary, but did not work well in practice. Figure 5, below, illustrates the hypothetical distribution of interview points across a ward.



Figure 3.5 Hypothetical ward level sample distribution for QoL V

ResearchGo had not previously implemented a randomly sampled household survey, and approaches to staffing and details of survey implementation evolved over time, as understanding of the requirements of QoL grew. Initially, fieldworkers were expected to work largely independently, and use public transport to reach interview locations. Supervision and support was largely remote, which did not work well. Fieldworker attrition and cheating were widespread. Over several iterations, the model was revised, finally resulting in teams of 4-14 fieldworkers with a dedicated supervisor travelling together in a vehicle with a dedicated driver. An organogram of the final structure of the ResearchGo QoL project team is provided. (ResearchGO 2018, p7)

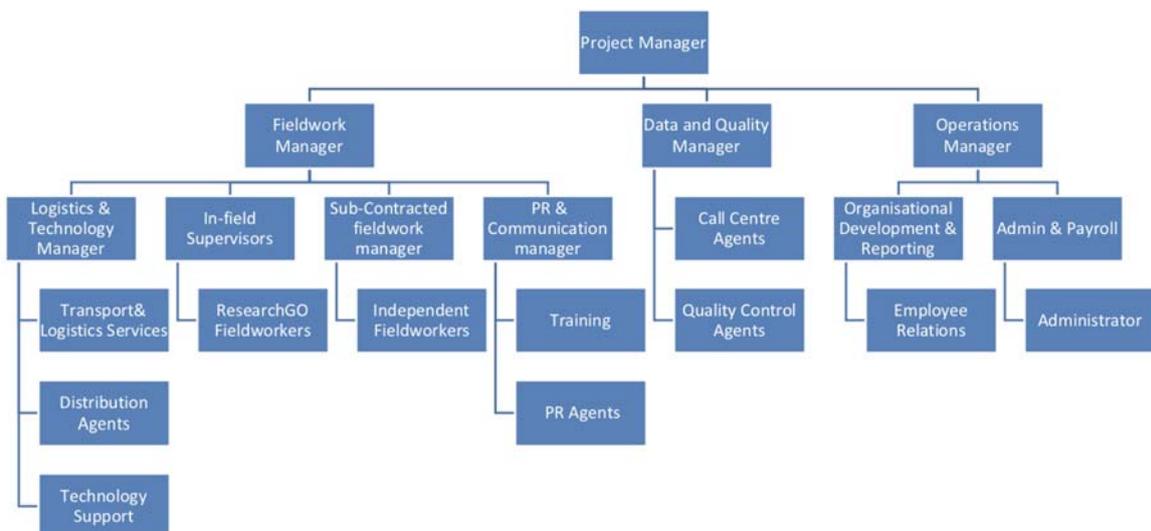


Figure 3.6 Organogram of final ResearchGo QoL project team (Source: Quality of Life V Fieldwork Report (2018))

GoogleMaps was used by fieldworkers, supervisors and drivers to navigate to visiting points. It was not possible for fieldworkers to see interview locations outside of the data collection

application, so it was not always clear which stand the visiting point was. Although an 80m geofence was implemented, interviews were often conducted at a neighbouring stand from the one which had been sampled. On arrival at a stand, fieldworkers listed all dwellings units, and the data collection application randomly selected a particular unit. All resident adults within the unit were then listed, and the application randomly selected the respondent. There was no separate listing of households when multiple households were found in a dwelling unit. Child-headed households were not interviewed.

Substitution was closely monitored, and 3 visits were required before a stand could be substituted. Fieldworkers were permitted one opportunity to substitute a dwelling unit within a stand on the first visit if nobody was home at the selected dwelling unit, but otherwise 3 revisits were required before substitution of a new stand. Substitution of respondents within a dwelling unit was also not permitted, and 3 visits were required before substitution of a new stand. Due to technical and practical challenges, there was limited use of the pre-selected substitution points, and team leaders or back office staff typically used standardised protocols to select substitution points.

Interviews were completed face-to-face at respondents' homes, using ResearchGo's own application on tablets. GPS coordinates were automatically collected by the data collection application at multiple points throughout the survey. This was an extremely valuable feature of the application, and compared to previous QoLs very few coordinate-related issues were experienced. The ResearchGo application also collected extensive paradata together with survey responses and coordinates, covering the full sampling process as well as the survey itself. This meant that the implementation of sampling protocols could (and did) receive very close scrutiny. Surveys in which sampling protocol violations were identified were typically excluded from the dataset.

Fieldworkers usually uploaded completed surveys at the end of each day, and ResearchGo quality control team members reviewed surveys as soon as they reflected on the system. All uploaded interviews received a range of automated and manual checks, for issues related to sampling, location and the quality of data collected. Issues which were identified were addressed with the field team, and when issues could not be plausibly explained, surveys were excluded. In addition to live examination of incoming data and paradata by both ResearchGo and GCRO, ResearchGo did telephonic call-backs about 25% of the sample. A small number of in-field call-backs were also conducted, although no external capacity was contracted for this purpose.

GCRO had full access to all data collected on a live basis, through a dedicated web-based viewer, which was extremely valuable. However, extracting all completed surveys from the ResearchGo system posed challenges, significantly increased the burden on both the ResearchGo and GCRO teams in terms of monitoring fieldwork progress, and ensuring that quality standards were adequately adhered to.

In the field, access was again a major challenge, and as in the past, elements of convenience sampling had to be applied with certain complexes and estates, as well as in mining hostels. Fieldworkers and supervisors were subject to extensive harassment and racism from potential respondents and also security personnel, and a number of muggings were reported. High levels of fieldworker attrition were experienced, even as supervision and support was strengthened over

time. Although over 500 fieldworkers were contracted, the average number working at any point in time was around 105.

While a 2-3 month period for data collection was initially planned, it was immediately apparent that this would be too short. Data collection finally ran for a period of 10 months, although with interruptions for the Christmas break and for an additional two month period.

GCRO used raw data from the ResearchGo system to monitor progress and quality control, and also took on responsibility for converting raw data to SPSS, and preparing the final dataset. GCRO also took on responsibility for the calculation of weights, under the guidance of Prof Fatti. These additional responsibilities placed extensive pressure on the GCRO team.

GCRO was substantially more involved in most aspects of QoL V implementation than was the case with previous survey – both by design, and as a result of challenges experienced during implementation. QoL V was the first iteration of the survey to benefit from a dedicated project manager, who joined the GCRO as negotiations with ResearchGo and questionnaire finalisation were underway. Prior to this, another researcher has led QoL V preparations, and constituted a QoL team including four other researchers. This team continued to provide project support, but as they were all researchers, were constrained by numerous competing demands on their time, as to some extent was the project manager. As the GCRO's responsibilities in terms of data-related work grew, a number of other junior individuals to assist on a short term basis. The project also required a substantial level of support from senior management, placing a strain on the organisation as a whole.

## **4 Resource considerations**

### ***4.1 Data collection budget***

Given the scale and difficulty of QoL, funding levels for the survey have historically been fairly low. In addition to the amounts paid to service providers to implement the survey, the GCRO incurs additional costs such as salary costs of GCRO staff involved in the survey, salaries of temporary staff assisting with the survey, administrative and overhead costs, survey launch costs, and any costs related to analysis or dissemination.

The GCRO is funded primarily by an annual core grant from the Gauteng Provincial Government (GPG), supplemented by extensive in-kind support from both Wits and UJ. GCRO funds QoL by earmarking a portion of each annual grant for the project – as the survey has run every two year, GCRO effectively saves for two years to fund a survey. The survey consumes a substantial proportion of GCRO's core grant. Since QoL III, the cities of Ekurhuleni, Johannesburg and Tshwane have contributed additional funding the survey.

GCRO may need to budget at a higher level for future surveys, which may require a smaller sample size, or a reduced frequency of survey implementation. Survey cost is of course not just driven by sample size – sample distribution, the nature of the sampling protocol, the stringency applied to appropriate implementation of sampling, and the general level of quality expected all play an important role.

## **4.2 Additional GCRO costs**

In addition to the funds provided to service providers for data collection and other aspects of survey implementation, GCRO invests substantial additional resources in the survey. Additional costs which are explicitly budgeted for include: technical/statistical support, supplementary quality control support, and costs related to the launch of the data and subsequent dissemination of results.

The cost of GCRO staff time does not reflect in the QoL budget, but is significant. Recent iterations of the survey have required substantial time from both senior management and research staff. Furthermore, implementation challenges have escalated demands on staff time rapidly, with negative impacts for other projects and the organisation more broadly, as well as on the well-being of staff and the organisation as a whole.

These costs – and the adequacy of dedicated staffing – are also closely linked to the scale of the project, levels of quality and quality assurance required, and sampling decision, along with the exact roles GCRO wishes to assume in the project. For the purposes of this workshop it is critical to bear in mind the multi-faceted cost implications of survey management and implementation choices.

## **5 Survey size, timelines and frequency**

While GCRO's budget provides some firm constraints, a ward-representative sample will likely continue to require a sample size of around 25 000. The sample is also likely to remain geographically dispersed, to ensure coverage of the full province. Conversations with stakeholders reveal that both of these features are core to the perceived value of the survey.

Historically, service provider contracts have required data collection to be completed within a period of 2-3 months. Given the substantial delays experienced with all recent survey iterations, this is clearly an unreasonable expectation for this particular survey. Fieldwork has almost always proceeded more slowly than planned for a number of reasons, but service providers have consistently highlighted difficulties in access, the rigour of the sampling process, and the stringency of quality control as key reasons. Considering a more realistic timeline for data collection might alleviate some pressure, both for the service provider and within GCRO, and allow for more timely completion of the survey.

The frequency of the implementation of the survey is another area for consideration. Working on a two year cycle, GCRO struggles with adequate time for implementation, analysis, dissemination, and then planning of subsequent iterations. Less frequent implementation – perhaps every three years – might reduce the internal burden of the survey. In addition, given GCRO's constrained annual budget, this might also enable an increase in the budget for survey, allowing GCRO to gather resources from three financial years, as opposed to only two. However, conversations with stakeholders and funders suggest a strong preference for the continuation of the survey on a biennial basis.

Another alternative to consider might be to alternate larger, ward-representative surveys, with small, municipal level surveys. If this is pursued it would be ideal to bear the dates at which

StatsSA release new data in account, to ensure QoL data is released when it is most useful. (Everatt, 2019)

## 6 Institutional location of data collection and division of roles

### 6.1 *Institutional location of data collection*

As described above, previous iterations of QoL have been outsourced by the GCRO. The first four iterations were outsourced to the private sector, through a tender process. Difficulties experienced with private sector fieldwork agencies peaked in QoL IV, leaving the GCRO extremely (and perhaps excessively) reluctant to engage with the private fieldwork/market research sector again. (Culwick, 2019; Gotz, 2019) Using a different service provider for each iteration of the survey has been costly. In addition to introducing a fair level of methodological variation, it also reduced the extent to which implementation-related learning from each survey could be applied to the next. Instead, each service provider was having to learn how to solve the same set of problems from scratch.

When GCRO learned about ResearchGo, their innovative technological platform, and their experience with rapid and large-scale data collection, partnering with them to implement the survey was extremely appealing. It appeared to present an opportunity to move away from contracting through the private sector, and to set up a long-standing public sector partnership for data collection purposes. The GCRO therefore decided to use ResearchGo to implement QoL V, and appointed them, with full approval of the GCRO board. While there was a legal contract with UJ for survey implementation, the relationship between GCRO and ResearchGo was understood to be a partnership, with both organisations fully invested in the successful completion of the project. The hope was that following QoL V, this would develop into a long-standing partnership, providing efficient and high-quality data collection without the need to engage with the private sector.

Unfortunately this approach did not resolve the difficulties previously experienced by GCRO with regards to QoL's data collection. ResearchGo's limited fieldwork experience meant that they did not fully understand many of GCRO's stipulations and what implementation would entail. They consequently enormously over-estimated their capability.

Given the difficulties already outlined, questions have been raised about whether GCRO should attempt to internalise all fieldwork operations, perhaps through setting up a dedicated arm which might conduct QoL and other public sector data collection exercises. While this would remove the need to identify a service provider, and guarantee some level of continuity in terms of implementation, the challenges associated with running large-scale fieldwork should not be underestimated. This would both require GCRO to substantially expand, and also to learn a new 'business'.

Another option might be to consider appointing a number of service providers to each implement part of the survey. This would require GCRO to specify key methodological aspects of implementation up front, and likely also to act as a 'coordination hub' of sorts. To ensure data harmonisation, GCRO would also likely need to take on responsibility for survey digitisation and

specify the data collection tool. This would require a fair amount of internal capacity, but would not carry the full administrative burden of directly hiring fieldworkers.

Our review of other large scale surveys has identified a number which are conducted internally – specifically the HSRC’s SABSSN (HIV prevalence) study, as well as the full suite of StatsSA studies (with the exception of the KZN CSS). Importantly, in both instances, the fieldwork is operating in a large organisation with substantial administrative capacity. Even then, the administrative burden of HR and fieldwork administration is substantial. (HSRC 2014; StatsSA 2016) The models do differ slightly – while StatsSA has a large force of permanent fieldworkers, the HSRC contracts individual fieldworkers on a short-term basis for SABSSN. By contrast, NIDS outsources data collection to a private company, but maintains a fairly large, dedicated survey team to support survey work. (SALDRU 2009; SALDRU 2018; Brophy and Ingle 2018) Importantly, NIDS has been able to maintain a strong working relationship with a single service provider for a number of years, providing continuity in implementation. The New Zealand Quality of Life survey also outsources data collection work. (Reid and Jamieson 2019)

Moving forwards, it will be important for GCRO to reflect on whether to pursue a public sector partnership approach, continue to outsource to the private sector, or whether to attempt to internalise part or all of data collection. In considering this, organisational capacity and the location of various skill sets are key, as is an understanding of how to develop and maintain the types of relationships needed for any of the approaches outlined to be sustainable over the long term.

## **6.2 Division of roles**

Over time, in response to the difficulties experienced with each iteration of the survey, GCRO’s level of involvement in details of survey implementation has increased. To some extent this evolution has been intentional: each iteration of the survey has had its challenges, and in preparing for the subsequent iteration, GCRO has tried to prevent the recurrence of the same challenge. GCRO has done this in large part by becoming more prescriptive with regards to various aspects of implementation, and quality control requirements in particular. Evidence of this can be found in the various Terms of Reference prepared and the reasons for the selection of particular service providers. Over time, practical changes are also evident: GCRO has required more frequent meetings with service providers over time, has insisted on live access to data, and more recently has required full access to all data and paradata. The level of live quality control has also increased over the years – often focussed on areas (such as skip patterns and GPS coordinates) which were problematic in previous iterations. Appointment of a dedicated researcher to support QoL is another signal of growing involvement, and recognition of what this requires.

Some of the shifts, however, have been less intentional, but have often become the new default arrangement in subsequent iterations of the survey. Examples of unplanned shifts in GCRO’s role include the growing rigour applied to quality control in QoL III, once issues with the data became apparent. Similarly, with QoL IV, as issues surfaced, GCRO became substantially more involved in quality control, and increasingly directive towards the service provider in terms of requirements and expectations – to some extent micromanaging the service provider. With QoL V, this level of close scrutiny of the data was built into plans from the beginning, with

expectations documented for the service provider before fieldwork began. But GCRO began to assume increasing responsibility for aspects of quality control implementation when it was clear that the ResearchGo was struggling to do so. Similarly, when ResearchGo's inability to manage data processing adequately became apparent, GCRO took on responsibility for this.

GCRO's increased involvement over time has both benefits, and drawbacks. On the positive front, closer involvement provides internal reassurance about data quality, allows for improved planning to account for issues previously encountered, and may assist in ensuring subsequent survey iterations are planned in a more manageable fashion. It also ensures that GCRO staff members are clear on all details of implementation, and have a good understanding of how this may impact data and findings. Less positive aspects, however, include the demand this involvement places on GCRO staff and infrastructure, and the extent to which it constrains the ability of service providers to function. Most service providers spoke of experiencing shifting goalposts, particularly with regards to quality control expectations, as GCRO became increasingly involved. Finally, with regards to a survey that can be used as a political tool, there are also political considerations around varying levels of involvement in implementation – arguments can be made both for, and against, a high level of involvement.

There is a need to consider carefully the extent to which GCRO predetermines for the service provider various aspects of fieldwork implementation and quality control. While a level of predetermination is important, to ensure adequate quality as well as consistency over time, excessive predetermination may make it difficult for a fieldwork organisation to implement the survey within existing structures. This will have implications for cost and efficiency. Service providers have raised concerns that the GCRO is overly prescriptive, to the point of hampering successful project completion, and even within the GCRO there are concerns that our Terms of Reference have simply become too demanding. GCRO needs to make a decision around what it will, and will not, prescribe to service providers, and then make sure that the resourcing implications of the prescriptions made are adequately accounted for.

Key aspects of fieldwork in which GCRO may want to consider its most useful levels of engagement include:

- Sampling: Setting of sample parameters; determining how and from what data sources the dwelling unit sample should be drawn; actual drawing of the sample; checking of the drawn sample; providing weighting parameters; implementing weighting
- Questionnaire: Developing the questionnaire; determining which data collection software should be used; programming the questionnaire; testing the questionnaire; in-house and in-field piloting; workshopping of questionnaire
- Field staff recruitment and management: Contracting of fieldworkers directly; stipulating qualifications or job descriptions; any level of engagement in HR and management processes; stipulating management structures (i.e. 1 team leader for every 4 fieldworkers); examining fieldworker and team level data and escalating concerns
- Training: Development of training manuals and materials; participation in training; implementation of training
- Respondent selection in field: Stipulation of parameters; stipulation of protocols (including substitution); quality control of implementation in the field

- Quality control (in-field and back-office): Providing guidance on quality control based on previous experiences; stipulating required types and details of quality control; appointment of 3<sup>rd</sup> parties to conduct independent quality control; implementation of quality control
- Data processing: Stipulating final dataset structure and formatting; quality control of data processing; implementation of processing from raw data to final dataset

The two other large-scale surveys we reviewed which outsourced data collection demonstrated very different levels of engagement in various aspects of data collection. NIDS is extremely involved in all aspects of data collection, and largely stipulates what is required from the service provider. NIDS team members also play an extensive role in multiple forms of quality control, accompanying fieldworkers to the field, engaging in back-checking, and multiple forms of data driven quality control, including cross-validation of new data with data previously collected. This is supported by a relatively large and dedicated team. (Brophy & Ingle, 2018; SALDRU, 2018). By contrast, the New Zealand QoL team takes on a far smaller role, and acknowledges their limited internal capacity as much of the reason for this. The project team is responsible for sampling guidance, questionnaire design, weighting and the final reports, with final sign-off on each of these components. However, the contracted research company undertakes the field work, manages queries from the public during data collection, collates and checks the data, and prepares technical and topline reports. (Reid & Jamieson 2019)

GCRO needs to reflect on the most appropriate levels of engagement in all aspects of the data collection process, bearing in mind costs and benefits of various permutations of involvement. This can then guide appropriate resourcing, staffing, and decisions around when to contract in additional capacity.

## 7 Quality control

GCRO prides itself on the production of extremely high quality data. As the data is funded by government, and feeds into governmental planning, high quality is non-negotiable. However, as described above, the current balance between available resources, sample size, timelines, and quality expectations is not sustainable.

As described above, GCRO's approach to quality control has become increasingly hands-on and stringent over the years. Given the importance of data that is representative at the ward level, much of GCRO's quality control efforts have focussed on ensuring that the location of each survey can be accurately determined. Location data has also proven invaluable in detecting fraudulent surveys. In QoL V, particular attention was paid to respondent selection process. In addition, some additional quality control in terms of assessing completeness and a relative degree of internal coherence have been applied to survey data over the years.

GCRO's approach to quality control has been facilitated by the development of increasingly sophisticated data collection platforms, which have with each iteration of the survey provided greater insight into what actually happens in the field. While this transparency is positive, in that it can facilitate higher levels of data integrity, this also comes at a cost.

Firstly, fieldworkers conducting randomly sampled household surveys in Gauteng have an incredibly challenging job, and are not always able or incentivised to implement all processes as per research protocols. When they are held to protocol standards, particularly without appropriate incentivisation and support, the task simply becomes too difficult, and no longer worth their while. This is particularly true when they are only paid for completed surveys, and are working with stringent sampling requirements often necessitating a number of revisits. Secondly, the level of quality control staffing required also escalates as the volume of data and paradata to be examined increases. While many processes can be automated, this requires appropriate skill levels, appropriate data flows, and advance planning. Some tasks, such as visual inspection of location data, still appear to be best performed manually.

Furthermore, GCRO's experience with QoL V highlights the limits of a quality control system focussed on after the fact, technology based checks. Initial efforts to implement the survey without close human oversight were unsuccessful, resulting in both high attrition and high levels of inappropriate survey implementation in the field. Strong and supportive in-field supervision were critical in ensuring that fieldworkers were able to conduct surveys which met quality control standards.

The location and independence of quality control efforts is also an important consideration. All large scale surveys reviewed, with the exception of the New Zealand QoL survey, conducted independent quality control, in addition to the quality control built into the data collection processes themselves through layers of supervision and live checking of incoming data. NIDS, which outsources data collection, requires the data collection organisation to do first line quality control in field. However, it also conducts its own checks on incoming data, and feeds concerns back to the data collection agency for resolution. In addition, NIDS runs its own call centre to conduct various checks, and to follow up on refusals. (Brophy and Ingle 2018) Within StatsSA, the quality control process built into GHS implementation are supported by the services of a separate quality control unit. This conducts full back checks on 5-7% of the sample, to verify both process and data quality. (Roux, 2018) SABSSN, internally implemented by the HSRC, has a similar process, in which a separate and completely blinded team revisits a proportion of sample points. These examples suggest that GCRO would stand in good company if it were to maintain a strong involvement in quality control, either directly, or through a contracted third party.

Quality control expectations, and the location and processes around this, need to be communicated clearly and in advance to the service provider. However, there is also a need for both the GCRO and the service provider to be able to respond flexibly to the emergence of new data quality challenges. In these regards, the nature of the relationship with the service provider is likely to be critical.

## **8 Managing Gauteng's low response rate**

Gauteng is known to have a particularly low response rate in household surveys. Multiple service providers report that response rates and access in general have been worsening over recent years. Data collection is particularly challenging in affluent and middle class areas, high rise buildings, hostels and farming areas. The GCRO QoL sample typically includes a substantial number of points in these areas, making implementation particularly challenging. This section

reviews the way in which various aspects of survey implementation might support more timely and cost effective data collection.

## **8.1 Substitutions**

As previously described, all iterations of QoL have allowed for some extent of in-field substitution to assist in managing low response rates. The details around the implementation of substitution have, however, varied across survey iterations. A standard protocol for substitutions, which maintains methodological rigour while adequately accounting for the manageability and cost of fieldwork would be valuable.

### *8.1.1 Oversampling*

Oversampling was only used in QoL I and II. While ideal from a methodological perspective, without full insight into how oversampling is implemented, it is hard to gauge its benefits relative to the substitution of stands. If not all oversample points are visited, it is in effect the same as simply preselecting stands for substitution. If fully implemented, oversampling would need to take into account the varying levels of non-response in different areas, and would likely need to be quite extensive. In QoL I and II, substitution of stands was still required in addition to oversampling. If a fairly precise sample size at a local level is required, oversampling seems likely to be an inefficient approach.

### *8.1.2 Substitution of stands*

Substitution of stands was accepted in all iterations of QoL, although in QoL I and II oversampling was used to reduce the need to substitute stands at which interviews failed. QoL III appears to have been particularly lenient in terms of allowing substitution of stands after a single visit in which nobody was home, while most other iterations required 3 visits before substitution. Selection of substitute stands has also varied, ranging from complete pre-determination in QoL IV and parts of QoL V, to in-field selection through a particular protocol (QoL II & III), or even to the discretion of the team leader and fieldworker (parts of QoL V). Typically, fieldworkers have been required to start the random selection process again from the beginning at a substituted stand. Some service providers indicate that they typically allow convenience sampling once a substitution is made, as sample integrity has already been lost.

### *8.1.3 Substitution of dwelling units or households*

Details around substitution of dwelling units or households are limited. In QoL V, fieldworkers had one opportunity to substitute within a stand, without needing to make a revisit. Substitution of dwelling units or households was accepted following 3 visits in QoL II, but it is not clear whether this could be within the same stand, or how often it could be done. It is worth noting that the substitution of dwelling units or households within a stand is particularly challenging to manage from a quality control perspective.

### *8.1.4 Substitution of respondents*

In QoL II, when a sampled respondent could not be interviewed after 3 visits, they were replaced with the individual with the next birthday, again requiring 3 visits – working through all resident

adults before substitution of the stand. This was highly inefficient. In QoL III and QoL V, substitution of respondents was strictly discouraged. Where a sampled individual could not be interviewed, substitution of a stand or dwelling unit was required. Greater leniency around stand substitution than respondent substitution makes some sense from the perspective of minimising bias to the sample. If fieldworkers are simply able to replace respondents who are not at home, this substantially reduces the chance of interviewing individuals in full time employment or studies. However, if a stand with no-one at home is substituted, while this does reduce the chance of an interview in households where all adults are in full-time employment or education, there is still a reasonable chance that the sampled individual at the replacement stand will be employed or studying.

#### *8.1.5 Management of substitutions*

Excessive stringency around substitutions simply makes the survey too difficult, resulting in fieldworker demotivation and attrition, as well as in cheating – for example conducting inappropriate listings, or interviewing someone other than the sampled respondent. QoL V implemented extremely rigid and tightly controlled sampling processes, and these contributed to the challenges experienced with fieldworker cheating, fieldworker attrition, and slow progress of data collection. Data collection was simply too difficult. In some instances, some leniency was introduced - for example in complexes and flats, and providing team leaders authority to make substitution decisions. Together with enhanced fieldworker support, this facilitated completion of data collection.

In QoL V, due to the greater transparency afforded by the mode of data collection, we could see instances in which fieldworkers conducted interviews at inappropriate dwelling units and with incorrect respondents. The extent of these practices, particularly among more experienced fieldworkers, suggests that ‘unofficial’ substitution was likely occurring with some frequency in previous iterations of the survey. This highlights the importance of close quality control of sampling and respondent selection processes, but also of ensuring that these processes are designed to be practical and manageable, and only as stringent as necessary to ensure a reasonably unbiased sample.

To the extent that substitution is used, our experiences with QoL V also made clear the importance of a system which permits ‘live’ substitution, while a fieldworker is still in an area. Initially, substitution required a series of back-office checks, which meant substitutions could not be implemented on a live basis. This escalated the number of times fieldwork teams would need to return to particular areas, and reduced the likelihood of interviews being completed at each visit. This had serious implications for costs, timelines, and fieldworker motivation. Once team leaders were able to authorise substitutions in field, with back-office support, efficiency improved substantially. However, balancing the need for live substitution with ensuring that appropriate substitutions are made is a critical consideration.

Appropriate incentivisation of fieldworkers is also essential – if fieldworkers are remunerated only for completed surveys, they are motivated to take short cuts in sampling to reduce the potential need for revisits. In QoL V, providing fieldworkers with per diems and transport helped to address these challenges.

Of other large scale household surveys reviewed only Kenya - State of the Cities (2014) indicates use of substitution. This was done at the EA level, for EAs no longer including households. Replacement EAs were selected using the sampling plan, but in some instances replacements could not be made (World Bank 2014). StatsSA surveys, initial recruitment for NIDS, and SABSSN all do not allow for substitutions.

## **8.2 Mode of data collection**

Historically, QoL has always been implemented face to face, at the respondent's home. Access has been problematic since the first iteration of the survey, and numerous service providers and research practitioners report that access is becoming more challenging over time. In QoL V, a number of golf estates proved completely inaccessible, and despite extensive negotiations, many estates and complexes simply refused entry. Most blocks of flats pose similar challenges. As homes in suburban areas have become increasingly walled off, obtaining any kind of response in these areas – even a refusal – is challenging. The challenges historically experienced in the most affluent areas are now encountered in more middle class areas, including those in townships such as Soweto.

Access to mining hostels has been variably challenging over the years. For QoL V, some hostels refused entry, and data collection teams resorted to convenience sampling at the gate. Attempts to conduct interviews in more rural areas and plots have regularly been met with some hostility, often racially based. While access is less of a concern in informal settlements and most township areas, sporadic outbreaks of violence do pose threats to fieldworkers. The challenges fieldworkers face in these areas are also often exacerbated when they are thought to be linked in any way to government.

Efforts to pursue face-to-face interviews in areas which are often overtly hostile to typically young and black fieldworkers raise a number of concerns. They are costly, often requiring extensive negotiations in advance, and multiple revisits. They are also likely to result in a biased sample. Even when respondent selection is implemented to protocol, a somewhat biased sample is probably achieved, guided by the characteristics of the (non-typical) residents in these areas who are responsive. In many instances, however, data collection teams have no option but to implement a degree of convenience sampling. This was done in QoL III, QoL IV, and QoL V. Finally, there are clear ethical considerations around repeatedly sending fieldworkers into areas where they are treated with hostility.

For these reasons, an exploration of alternative respondent selection methods in various hard to access areas might be considered. Potential modes might be telephonic or online. To the extent that phone numbers can reliably be linked to addresses, whether through private databases or municipal account data, this might provide an alternative mechanism for contacting respondents, and potentially also for conducting the interviews themselves. While mode of implementation does impact on responses received, internationally a number of large scale surveys (for example the New Zealand QoL) and Censuses do make use of mixed modes. In South Africa, exploration of this area is growing. StatsSA is planning to implement some level of online completion for Census 2021, and both the City of Tshwane and the City of Johannesburg are

making use of mixed methods in their Customer Satisfaction Surveys – using telephonic surveys in hard to reach areas, and continuing with face to face household surveys elsewhere.

## 9 GCRO team composition

As QoL has grown in terms of size and GCRO's level of involvement, the implementation of the survey has placed substantial pressure on the GCRO. The need for dedicated survey staffing was recognised in QoL IV, and partially implemented in QoL V. However, there is a need for a stronger alignment between the demands of the survey, and internal skill sets and capacity.

All of the content previously discussed is important in understanding what an appropriate internal staffing model might look like. Staffing – administrative, research, and implementation – needs to be in line with the level of engagement that GCRO pursues in various aspects of survey management. If GCRO continues to maintain a high level of engagement, additional dedicated internal capacity – either ad-hoc around fieldwork, or permanent - is likely to be needed.

If QoL is to continue on a biennial basis, it may make sense to explore a permanent team which focuses purely on the survey. One year could be an implementation year, with the second year is used for reporting, analysis, and planning for the subsequent survey. This is the model followed by NIDS. (Brophy & Ingle, 2019) An important question for GCRO is whether the survey should be internally managed by academic staff members as it has been to date. Management by a dedicated technical person, with an academic 'steering committee', might serve to reduce the burden of the survey on research staff and the organisation as a whole. (Culwick, 2019)

It would be possible for GCRO to combine this with bringing in additional capacity on an ad-hoc nature to fulfil particular organisational requirement. If, however, the survey becomes smaller, or less regular, it may be possible for researchers to manage the process. It will, however, be critical to ensure that survey implementation does not prevent researchers from doing their own jobs.

GCRO's ability to respond to requests from government in terms of data use is also critical. Building government relationships and ensuring government is easily able to access and use QoL data is critical to both the sustainability and utility of the project. This is also an area in which dedicated staffing might prove valuable.

Finally, there is also an obvious trade-off to consider, in that resources directed to internal staffing cannot be directed to outsourced data collection, and vice versa. In a context of limited resource availability, finding the appropriate balance between data collection and internal capacity is a challenge.

## 10 Key questions

- Given broad sample parameters, and GCRO's resource constraints, what is the most appropriate frequency and duration for the survey?
  - o Is it feasible to continue to implement the survey every two years, or can this be reduced to every three years?

- Is a model of alternating larger more fine-grained surveys with smaller ones worth exploration?
- What is an appropriate duration for data collection for a sample of this size and distribution?
- Should GCRO return to the private sector to contract service providers, or are there alternatives?
  - If GCRO continues to work with service providers, how should service providers be selected?
  - Is there scope to consider using multiple providers for a single survey?
  - How can relationships with implementing partners be developed into long-standing partnerships?
- What is the most appropriate role for the GCRO in the implementation of QoL surveys?
  - How prescriptive should the GCRO be, in which areas?
  - How hands-on should the GCRO be, and in which areas?
  - Where might it make sense to bring in additional independent capacity?
- What level of quality control is feasible, given budgetary and other constraints?
  - What types of quality control provide the highest return?
  - How stringent does the GCRO need to be to ensure a high quality product?
- What strategies could be used to reduce the difficulty of fieldwork implementation (and by extension the cost)?
  - What is a methodologically sound, but practical, approach to non-response?
  - Could telephonic or online surveys be considered in hard to access areas?
- What are the ideal levels of dedicated staffing internally at GCRO for a project of this kind?
  - Would a dedicated, internal QoL team, working on a two year cycle, work for QoL
  - What is an appropriate size and skill composition for GCRO's internal QoL team?
  - What additional capacity might be required on a more short-term basis, for example during data collection?

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