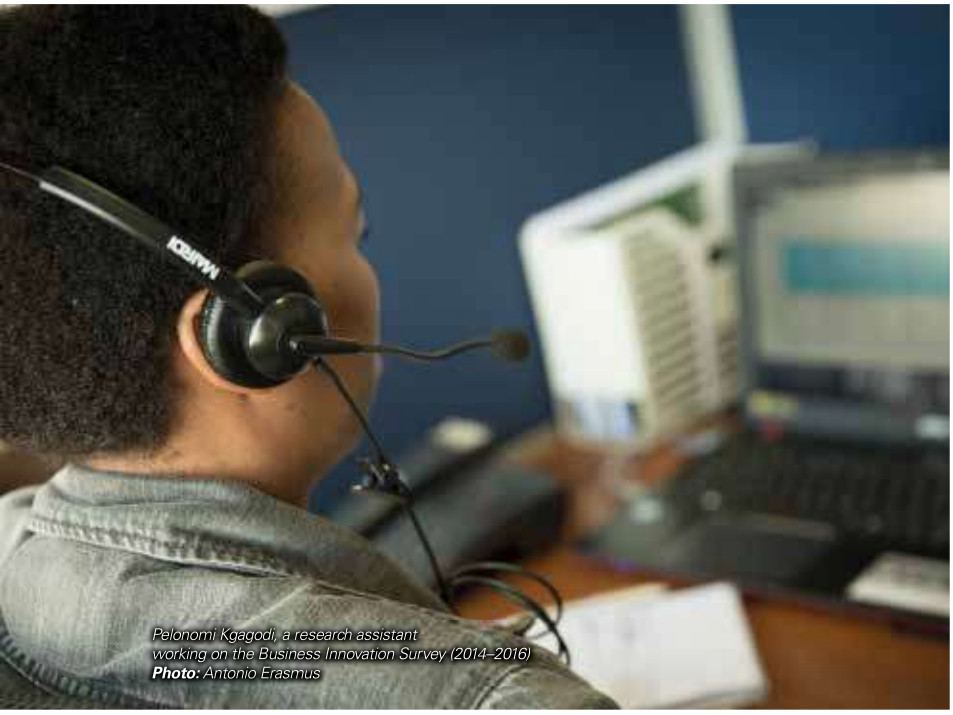
Research resilience during the COVID-19 pandemic: Are there alternatives to conduct **health research with minimal risk exposure?**

Since the emergence of the first COVID-19 case in South Africa, the epidemic has evolved into three waves. We quickly had to change how we conduct health research. Based on a rapid review of published telephonic survey literature, *Mahloko Mogashoa, Usangiphile Buthelezi, Inbarani Naidoo* and *Mosa Moshabela* discuss some pertinent issues for conducting remote health research during epidemics and crises.



Pelonomi Kgagodi, a research assistant working on the Business Innovation Survey (2014–2016)
Photo: *Antonio Erasmus*

As the COVID-19 pandemic emerged and cases surged, non-essential services ground to a halt. Public health researchers had to find ways to adapt their existing research focus to fulfil project funding commitments to clients or redirect research resources to COVID-19 itself. While scientists were used to relying on technology at the stage of sharing their research findings with peers, stakeholders and the public, contact restriction during the pandemic forced them also to turn to technology at the outset of the research process, as the sole means of data collection.

Resilience to do health research

These adaptations required them to develop resilience in order to be able to conduct their work. Resilience generally implies the ability to adapt and cope under shocks or stressful conditions. In the context of healthcare, Wiig and colleagues define resilience as 'the capacity to adapt to challenges and changes at different system levels, to maintain high-quality care'.

While some clinical research continued for ethical reasons, Mourad and colleagues mention that start-up activities for new randomised controlled trials had to be deferred, recruitment for new trials was suspended and some projects lost revenue. Also, healthcare workers employed as research personnel were redeployed to assist in caring for patients at the frontline.

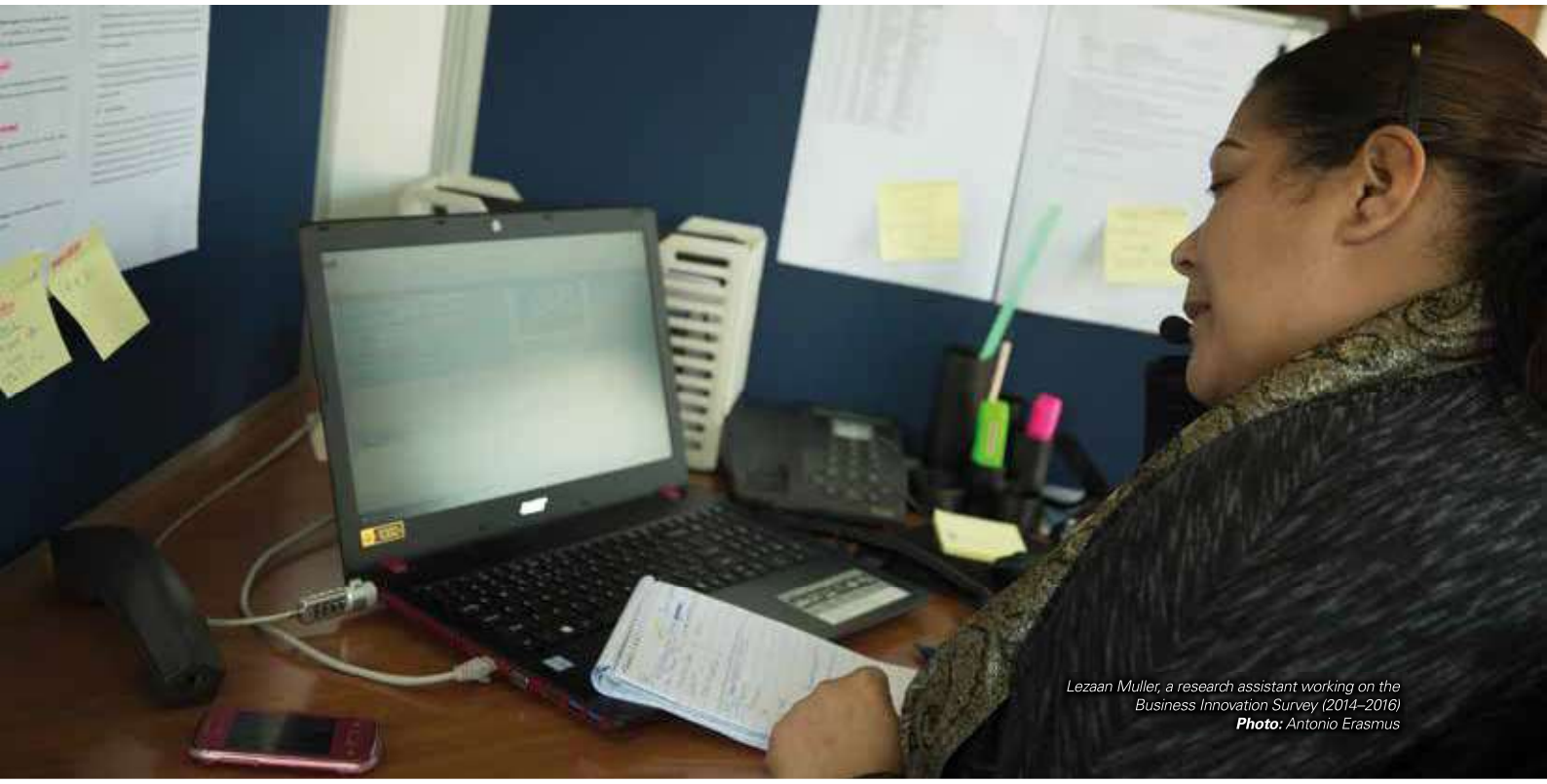
Korbel and Stegle wrote about the impact of COVID-19 on life scientists, drawing from a survey among colleagues in the USA, Canada, and Europe. Scientists were worried about sustaining their careers, while the public, government officials and media put pressure on them to provide scientifically proven answers to COVID-19 issues.

Being able to access target groups in the population is an intrinsic part of public health research. While dealing with the COVID-19 response in South Africa, population movements were again recently restricted by unrest in KwaZulu-Natal and Gauteng. For instance, routes along the N2 and N3 national highways were closed, while other main roads, such as uMgeni Road and Nandi Drive, were inaccessible due to debris from the protest action. This points to the need for renewed resilience in the context of epidemics.

Taking into consideration the need for some type of research to continue among communities during crisis situations, telephone and mobile phone surveys have been shown to be effective alternative modes of remote data collection to deliver both quantitative and qualitative research studies such as surveys.

The art of the telephone survey

By late 2019, 45% of the population (477 million) in sub-Saharan Africa were subscribed to mobile phone services. This is expected to reach 678 million or 50% mobile penetration by 2025, making mobile phones useful devices to reach people to collect data over wide geographical areas in a short period of time and in constrained settings. Our rapid review of published telephonic survey literature found that telephone and mobile phone surveys are usually conducted by one of three methods, namely, computer-assisted telephone interviews (CATI), interactive voice response (IVR), and short message service (SMS), with pros and cons for each (Table 1).



Lezaan Muller, a research assistant working on the Business Innovation Survey (2014–2016)
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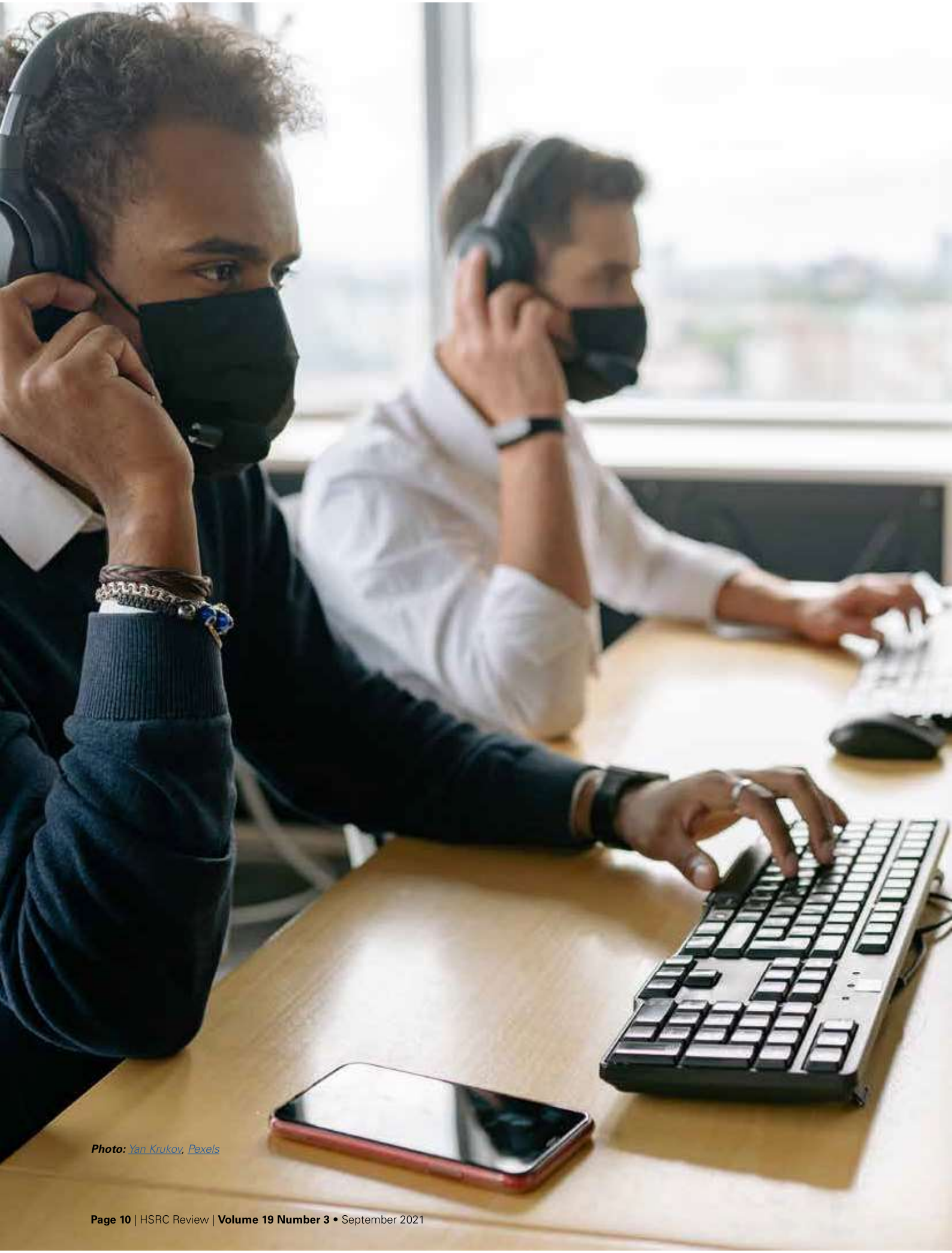

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Table 1: Telephone and mobile survey methods

	Computer-assisted telephone interviews (CATI)	Interactive voice response (IVR)	Short message service (SMS)
Mode	A software program provides a script, which an interviewer (usually at a call centre) follows to communicate with survey participants while digitally recording the data on a device.	The respondents interact with a computer through voice commands. They press the number on their phone's numeric keypad that corresponds to the answers provided in a prerecorded message.	Researchers use SMS/text messages to communicate with respondents. Participants are asked to use SMS to respond to questions and researchers can access the SMS web database to track survey completion and view responses.
Strengths	The interviewer can provide clarifications and keep respondents engaged, which enhances data accuracy.	This is a convenient, accessible, reliable, cost-effective and acceptable distribution channel for health information. Automation decreases health workers' workloads and permits responses to personalised questions in real-time as opposed to voicemail.	Participants can complete the study at a time convenient to them. Privacy and relative anonymity can reduce social desirability bias. As an incentive to participate, airtime or money vouchers may be sent via phone in real time. SMS also provides frequent, real-time data collection, reducing recall bias associated with infrequent study visits. SMS services can serve as a tool for surveillance from peripheral healthcare facilities to higher levels and to monitor epidemic outbreaks.
Limitations	Respondents are likely to complain about the length of the survey. In several Africa-based studies, there is a discrepancy between data collected using face-to-face interviews and CATI.	Usage is affected by low literacy levels, poor internet connections, insufficient IT infrastructure in some areas, and a lack of knowledge about IVR technology, especially among older or illiterate individuals.	Timing of SMS messages may at times cause inconvenience and interruption to an individual's routine, thereby resulting in non-response. In the event of shared devices, there might be a privacy breach if other people are able to read an SMS. Power supply or network connectivity disruptions may cause fluctuating system performance.
	Non-response errors occur due to failure to contact the sampled participants.		This method restricts the ability to probe responses during qualitative surveys.

We note several limitations of telephone surveys. Sample selection is an important consideration. Researchers need to consider the representativeness of the target population's characteristics, e.g. by education, geographical location, language and age. Random digit dialling has been used to create a sample frame representing anyone with phone access. Sample frame error is a concern, particularly in countries where mobile phone ownership is <80%, as individuals without cell phones in rural settings are likely to be underrepresented. Non-response errors arise due to failure to contact respondents in the sample, their refusal to participate, and language and ability limitations.

Furthermore, respondents may intentionally mislead interviewers or provide socially acceptable responses. Other barriers include lack of user familiarity with IVR or SMS tools, a lack of cultural sensitivity in the process, no incentive to answer the phone or to participate for the duration of the call, low literacy levels, administering the survey in an unfamiliar language, and infrastructural issues such as network outages or low bandwidth.

Nevertheless, telephone and mobile phone data collection can mitigate some access to healthcare challenges, such as geographical or physical access to a health facility and transport costs to get to research sites. Remote health data collection can potentially enhance data quality and implementation efficiency. It allows researchers to reach people adequately while balancing research costs and personnel safety in epidemic and other constrained conditions.

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