



GCRO ANNUAL REPORT



ANNUAL REPORT

2020/21



GCRO | Gauteng
City-Region
Observatory

The GCRO comprises a partnership of:



GCRO ANNUAL REPORT 2020/21

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Gauteng City-Region Observatory Annual Report 2020/21



Photograph by James Oatway

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Photograph by James Oatway

An aerial photograph of a construction or development site. A wide, light-brown dirt road curves through the upper right portion of the image. To the left of the road is a large area of green grass, some of which is covered with reddish-brown soil. In the lower half of the image, there is a grid-like pattern of reddish-brown soil blocks, possibly for erosion control. Several cars are parked on the grass in the lower right, and a few more are visible in the upper right near the road. The word "Introduction" is centered in a white box over the middle of the image.

Introduction

Introduction

Foreword from the Chairperson of the GCRO Board

This has been a highly unusual year for the Gauteng City-Region Observatory (GCRO), as it has for the rest of the world. The onset of the COVID-19 pandemic has challenged us all in far-reaching ways, and it has been widely commented that the crisis has had the effect of exposing both the strengths and the frailties of organisations, and that what we learn from coping with the pandemic will be important for strengthening our systems for the future.

Given this, it is interesting to reflect on how the GCRO has responded during this challenging year. Although the organisation moved swiftly into the remote 'work-from-home' configuration, it was able to position itself immediately in March 2020 as a support to government, through the production of two maps that illustrated the varying levels of vulnerability to the pandemic of populations across the city-region. The GCRO was able to draw on its existing rich database derived from previous Quality of Life (QoL) surveys to illustrate the vulnerability of communities both because they would not be able to take the basic preventive precautions and because of their precarious health determinants. Some notable responses include:

- The GCRO continued throughout as an essential data-analytic resource, able to offer analysis of the spatial patterns of transmissions that were not available elsewhere;
- The GCRO assisted the Solidarity Fund in identifying target destinations for food aid;
- GCRO analysts played a key role in signalling the vulnerability of care facilities for the elderly, and in helping to identify and map the many facilities across the city-region;
- The GCRO provided an important gender analysis of the impact of the pandemic, illustrating the differential impacts;

- The GCRO served on the Premier's Advisory Committee on COVID-19 and acted as advisors on the Vaccine Rollout Tech Committee;
- The GCRO was also called upon to play a major role in assisting the Premier's Office with some of the activities associated with its efforts to achieve adaptive governance and to be a reflective, learning organisation;
- The GCRO hosted two Governance Dialogues and researched and wrote a chapter on leadership and governance for the Gauteng Provincial Government's (GPG) deep dive case study on how Gauteng responded to the pandemic;
- GCRO researchers made a great number of presentations to government audiences throughout the year.

In spite of all its resources being deployed towards supporting government's response to the pandemic, the GCRO nevertheless continued to publish at its usual pace.

The GCRO partnered with colleagues at the University of the Witwatersrand (Wits) to host the Southern Africa City Studies Conference, which attracted more than 900 participants and was characterised by strong engagement throughout the very full programme of 46 online events.

Extraordinary to note that, under the conditions of the pandemic, the GCRO first postponed the commencement of the sixth iteration of the QoL Survey, but then, under very judicious and highly controlled circumstances, went ahead with this important household survey fieldwork. By the end of this financial year, the survey was almost complete.

Reflecting on the activities and responses above, the strengths of the GCRO become very evident.

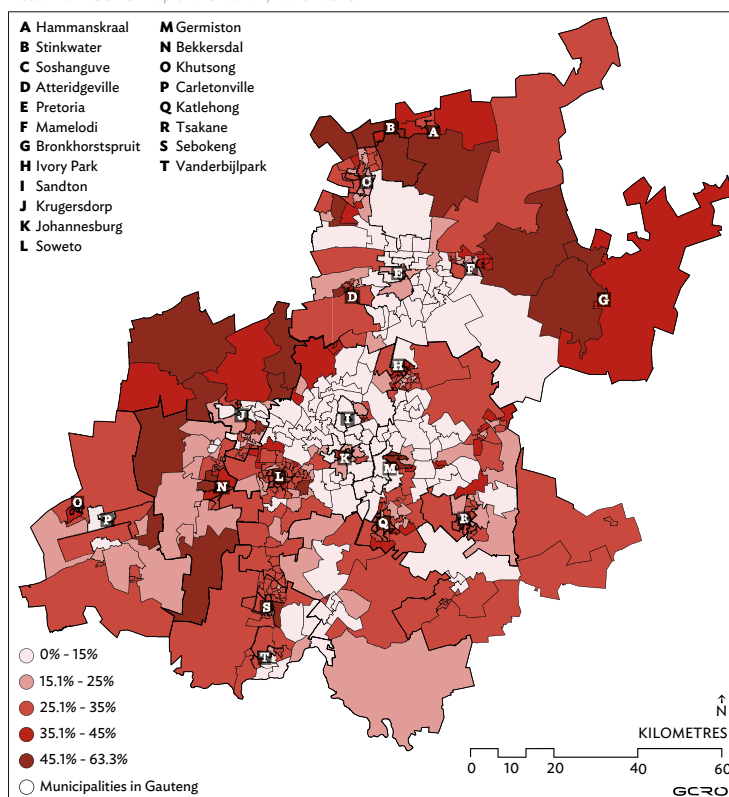
It is clear that the organisation consists of a group of highly skilled individuals who were able to quickly turn their talents to an unprecedented situation, and to do so very productively and innovatively. That this came at some considerable personal cost, working in the conditions of the pandemic, I have no doubt. I know that some previously planned work was necessarily delayed, but rather less than one might have predicted. On behalf of the Board, I would like to express our appreciation for the work done this year, and the resilience shown by all.

This period also included the important process to appoint a new Executive Director for the GCRO as Dr Rob Moore looks forward to his retirement. The GCRO thanks Dr Moore for his service as Executive Director of the GCRO, and for the positive momentum he brought about between the GCRO and partner organisations in Gauteng – particularly during the COVID-19 period. We have appreciated his approach towards building consensus and collegiality. While we will miss Rob, we know that he will remain engaged within the academic sector in his retired and less formal capacity.

The GCRO Board has had some changes this year and I would like to congratulate Prof. Zebulon Vilakazi, who was appointed the Vice Chancellor of Wits. Prof. Joao Rodrigues receives our gratitude for stepping in to guide the appointment of the new Executive Director while acting as the Wits Deputy Vice-Chancellor: Research and Postgraduate Affairs Chairperson. Mr Seana Nkhahle has also played an important role on the GCRO Board while acting in the Gauteng Director position at the South African Local

COVID-19: Index of risk factors to maintaining social distance and preventative hygiene

Detail from GCRO Map of the Month, March 2020



Government Association, a role he will hand over to the incoming Director.

On behalf of the GCRO Board, I convey our congratulations to Mr Rashid Seedat, our incoming Executive Director. Mr Seedat, with his prolific work in the world of policy, brings this experience to the research-policy nexus fostered by the GCRO. Together with the GCRO team, we look forward to further the impact of this unique combination for the province and beyond.

Prof. Saurabh Sinha
GCRO Board Chair
and Deputy Vice-Chancellor: Research
and Internationalisation, University
of Johannesburg

Message from the outgoing Executive Director: Taking the gap – reflections on hybridity

As I take my retirement from the GCRO, my colleagues have insisted that I should capture some reflections on my tenure as Executive Director (and perhaps my association with its governance in earlier years), and the comments below are an effort to sort out some central themes from the very full and busy arena within which the GCRO pursues its mission.

It is important to acknowledge at the outset that initiating the GCRO 12 years ago was a bold innovation, responding to a need in a wholly fresh fashion, risking a new institutional form, and investing significant trust in a pact with social partners. We tend to rattle off the basic facts about the form and mission of the GCRO too easily: it is a partnership between government and two local universities, and its job is to generate insight into the city-region in ways that are helpful for policy-making. In my many international engagements, I have come to learn that these two details alone are enough to generate envy among some of our colleagues in city-regions elsewhere, where the scarcity of reliable data on complex urban environments is a serious stumbling block to effective planning, and where productive relationships with universities are hard to come by.

But there are important underlying qualities in this arrangement that I think are equally, if not more, significant. First, both of the participating institutional types (university and government) had to take a risk in committing to an interstitial organisational form that would be hybrid in character. On one hand, it would be scholarly in its intellectual methods and its research would concentrate solely on urban issues likely to feature on the government agenda. It would carry the privileges and powers of the university in its autonomy and scholarly enquiry while being relieved of the teaching and administration load normally carried by departments and research units. On the other hand, although the provincial government committed to providing substantial core funding

to the GCRO, it nevertheless undertook to respect the autonomy and intellectual independence of its research. In other words, government was paying skilled researchers to independently generate insight into the conditions of the city-region, including into government performance, yet respecting the GCRO's right to publish these insights freely. Both institutions, universities and government, had to relinquish their traditional controls within their respective spheres of interest and instead stake trust in a social partner in order to advance a common purpose – a better-informed city-region.

That the experiment with this innovative organisational form has been successful is, I believe, common cause. It is not the purpose of this piece to recap the achievements of the GCRO, but it is important to note a few key features that are constitutive of its effectiveness and worth noting if the model is to be replicated elsewhere. The core grant from government, with annual cost of living increments, plus the in-kind support from the two university partners, have been essential for the stability and continuity of the organisation. This has enabled the GCRO to grow a multidisciplinary team of innovative and seasoned urban researchers. The in-depth, long-term systematic research programmes of the GCRO have been vital to its ability to provide well-informed advice for the strategic frameworks of policy, as well as quick responses to government's many short-term needs. The GCRO's relative independence in setting its research agenda has almost always succeeded in anticipating what would eventually become issues for government policy-making. The data-analytic and other intellectual strengths within the GCRO have proved to be very supportive for government, especially at moments of phase-change or crisis (including the current pandemic). The GCRO has developed relationships of trust and reciprocity with colleagues in government and other research organisations, and has often proved to be a helpful broker or intermediary with other parties

(sometimes even within government itself). Very significantly, no administration (even when different political parties controlled local government) has ever questioned the credibility of GCRO data or reports. By agreement, almost all GCRO outputs are freely available for download from our website, and innovative ways are found to circulate these to an ever-widening distribution list.

This hybrid structure – a state-funded entity, to serve the state's purposes, but granted the autonomy and independence of academia – was left alone to constitute its own inner substance: its staffing and research programmes. It immediately asserted its independent stance by instituting the Quality of Life (QoL) Survey as its bedrock programme of research rather than pursuing the notion of a 'competitive city-region', as had been suggested in some founding documents. This was a fundamental choice, directing the GCRO's enquiry towards the intentions of the Constitution, particularly those fundamental human rights that should be progressively realised. The QoL Survey also positioned itself as a monitor of social change for a society in transition, and an observer of the provision of government services. The QoL Survey has acted as a keynote, and an inexhaustible source of data, for understanding the post-apartheid project in South Africa. While not a rule, all research projects in the GCRO are quietly inflected with an interest in social justice and how this finds effect in urban spaces. As the staff of the organisation grew and diversified, so our gaze into the corners of the city-region widened and sharpened. What we were able to see and understand depended upon who we counted among ourselves as observers.

In summary, then, the establishment of the GCRO is perhaps a case study in adaptive governance undertaken by its partners: it can bring multidisciplinary teams together to produce independent insight into complex phenomena of interest to policy-makers; it has

accumulated enviable data-analytic capability; it can work collaboratively with partners in government, academia and beyond, either directly or as intermediary; and it is itself an innovative organisational form that finds unique strength in hybridity. We must acknowledge its architects for their vision and foresight. It is a model worth celebrating.

Over the years, the GCRO has found its voice, indeed has innovated a variety of voices for itself in fresh ways, starting with its iconic Maps of the Month (sustained now for over a decade, in April 2020, the most densely populated areas of Gauteng marked the GCRO's 100th Map of the Month) and progressing to its interactive web portals, vignettes, exhibitions and story-maps, in addition to its full-bodied Research Reports, Occasional Papers and Provocations. The audience has grown, both by design and by surprise, and we have sometimes felt overwhelmed by the level of demand for our contributions. The appetite for our presentations came from senior levels of provincial and local government, *Iekgotlas* and strategic planning meetings. More substantive contributions found their way into strategic frameworks and plans, and end-of-term reports. We were pleased to be invited to present internationally and provide master classes to policy-makers from across the African continent.

The demand was part exhilarating, part exhausting. But the question about the reach of our work began to concern us, and the extent to which it penetrated below the levels of leadership who sat in on our presentations, and whether it was making a difference to practices on the ground. We knew we were successful when we worked with the willing, as for example in the production of the water security plan for Gauteng. But there are many critical areas of government where the 'willing' are less apparent, and the need for evidence-informed decision-making seems critical. We realised that we needed to better understand the receptive context in which we hoped our work was landing.

'That the experiment with this innovative organisational form has been successful is, I believe, common cause'

It goes without saying that the context of government is profoundly sensitive and protective, whether or not it can be counted as a society in transition. With this question in mind, a colleague was commissioned to undertake an enquiry among our local government client base, with results that were by turns encouraging, depressing and alarming. Separately, a systematic ethnography of a local government department was quietly and patiently undertaken over an extended period for a doctoral study. Elsewhere, judicious enquiries into the adaptive governance strategies of the Premier's Office were commenced.

But it was the onset of the pandemic that threw the context of government into sharp relief. The GCRO was drawn dramatically closer as a partner to provincial government in its responses to the crisis, not least as a reflective partner on the issue of governing the response. Through a range of engagements, the GCRO deepened its insight and analysis into some of the dynamics at work in this crucial seat of government, including the deep contradictions between visionary and adaptive leadership on one

hand and a collection of other interests, some arrayed in self-interested schemes or confounding immobility, on the other. The GCRO's insights were called on again and again by a leadership determined to hold on to the lessons of the crisis. Understanding government and governance in our city-region has to be a priority for the future.

What is clear is that the work we have done so far in theorising the GCRO as an organisation within the field of 'science advice' has just begun, and we must continue to understand the distinctive and changing positionality of the GCRO in the South African and Gauteng policy-research domain, and the particular affordances available to us. I believe the GCRO's profile and relationship with its client base has evolved in productive ways in recent years, with the pandemic accelerating that trajectory. The arrival of Mr Rashid Seedat as the new Executive Director provides an outstanding opportunity to deepen the reciprocal and influential relationships with government, and to do so with a reflexive insight into the conditions that make for



Dr Rob Moore | Photograph by Graeme Götz

effective evidence-informed decision-making, and without compromising the independence of the research platform.

A final thought: I am not sure that we in the GCRO – or indeed in the city-region more broadly – have a ‘theory of the city-region’. In other words, do we have a high-level understanding of the intentions that should be informing the long-term project of urbanisation in the city-region, and that should be informing the myriad of micro-level urban planning decisions that are taken on a daily basis? I do not believe a coherent vision exists yet for the future of the city-region, nor yet the values that should underpin it. Elsewhere Ivan Turok and Justin Visagie have discussed the idea that urban areas could be understood as ‘engines of growth’, providing enhanced opportunities for people to access within easy reach of the amenities that enable upward social mobility – education, employment, social capital, affordable housing, etc. But, as they note, cities can have paradoxical effects on the lives of their residents, they can also concentrate poverty and generate despair and discontent. The issue lies in the intention – inclusion or exclusion? If we are to be an inclusionary society, as our Constitution enjoins us, then we need to anticipate the likely in-migration into our city-region, understand the varying conditions, ambitions and purposes that drive people to move, and plan our city-region accordingly, taking into consideration of course the range of actors that shape the urban form, because of, and in spite of, our planning. Equally, we need to work with the other futures (known and unknown, such as climate change, other pandemics, etc.) that are bearing down upon us, and what these mean for how we think about ‘the urban’. The pandemic has inspired some of our leaders to begin thinking at a larger scale, beyond those that fetter us now, and understand the associative governance that this will require. I think the GCRO has a growing role to play in providing insight that helps us think about the shape of these possible futures, and how we might get there.

I feel privileged to have been associated with the GCRO, in one way or another, for most of its life, and extend my gratitude to all my fellow travellers over these deeply rewarding years. My thanks to the GCRO Board, who individually and collectively have

been so encouraging, supportive and appreciative, and who have provided important guidance during tricky moments. I really want to acknowledge our partners in government, especially those individuals with whom I have worked so closely on a number of projects. I know how much good government depends on people like you. But my most sincere gratitude and appreciation goes to all my colleagues within the GCRO, who are a group of extraordinarily talented, innovative, resilient and cheerful professionals – I have learned so much from each one of you. I hope the reflections above provide a glimpse into the multifaceted policy scholars that you grow to become, the complex space that you occupy, and the very nuanced performances that you pull off again and again. And again. Thank you.

The GCRO is a very busy and fast-moving space, with multiple projects moving forward simultaneously. There is a lot happening, and potentially a lot can go wrong, but, because of the management structure, very little does. I owe a debt of deep gratitude to Graeme, Melinda, Richard and Ruth, who run an outfit that is completely ship-shape, and which enables our researchers to pursue their work with all the support and back-up they need. Thank you for the unfailing attention to detail, the relentless quest for quality, for spotting issues before they happen, for seeing someone who needs a helping hand, for being such problem-solvers, and for the unquenchable sense of humour. Heavens, I shall miss you all.

I have worked very closely with Mr Rashid Seedat for many years, both when we were together on the GCRO Board in earlier years, and when we collaborated on partnerships between Wits and the Gauteng Provincial Government. During the last five and half years, Rashid and I have been in constant communication, liaising and fine-tuning the GCRO’s relationship with the Gauteng Provincial Government. It is from this long association that I know how fortunate the GCRO is to have Rashid take on the role of Executive Director at this juncture, and how well positioned he is to steer the organisation into the next phase of its life. Strength to your purpose, Rash, I shall be following what lies ahead with huge interest.

Dr Rob Moore



Photograph by James Oatway

An aerial photograph of a densely packed informal settlement, likely a slum. The structures are built from various materials, including corrugated metal, cardboard, and plastic. Many of the buildings have signs or advertisements on their walls, such as 'Cash', 'Free Local', 'BIGGE', 'C.R. VISSER', 'TO LET', 'ATTACC', 'LET', 'WATERFALL', and 'BIBUR'. The ground is dirt and littered with debris. A central white rectangular box contains the text 'Governance and organisational development'.

Governance and organisational development

Governance and organisational development

Staff and structure

The year 2020/21 saw some changes within the GCRO's staff complement. The GCRO team said goodbye to Ms Sandiswa Mapukata, who moved to the Wits Institute for Economic Justice, and to Mr Samy Katumba, who has taken up a position at the University of Pretoria.

The GCRO embarked on a recruitment exercise to appoint an Executive Director during this year and Dr Rob Moore agreed to delay his retirement by some months to assist the GCRO with this process

and provide continuity during a time of societal stress. The new Executive Director was appointed on 1 April 2021.

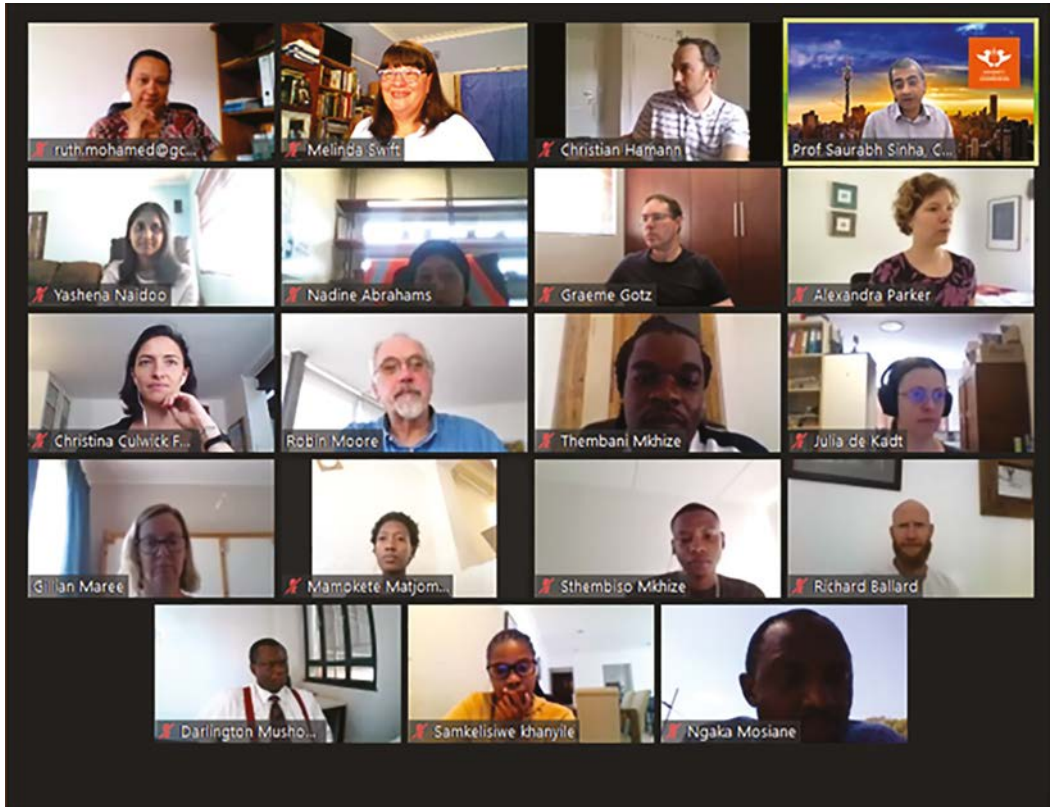
We wish all of those who have left the GCRO every success in their future careers, and we warmly welcome all the new staff, who are sure to make this an exciting new phase for the GCRO.

The GCRO is delighted to announce the appointment of Mr Rashid Seedat as our new Executive Director from 1 June 2021.

Table 1: GCRO staff members, 2020/21

Ms Nadine Abrahams, Office Administrator	Ms Mamokete Matjomane, Researcher
Dr Richard Ballard, Principal Researcher	Mr Sthembiso Mkhize, Quality of Life Intern
Ms Christina Culwick Fatti, Senior Researcher	Mr Thembani Mkhize, Researcher
Dr Julia de Kadt, Senior Researcher	Ms Ruth Mohamed, Finance and Office Manager
Mr Graeme Götz, Director, Research Strategy	Dr Rob Moore, Executive Director
Mr Christian Hamann, Researcher	Dr Ngaka Mosiane, Senior Researcher
Mr Samy Katumba, Researcher	Mr Darlington Mushongera, Senior Researcher
Ms Samkelisiwe Khanyile, Researcher	Ms Yashena Naidoo, Junior Researcher
Ms Sandiswa Mapukata, Intern	Dr Alexandra Parker, Senior Researcher
Ms Gillian Maree, Senior Researcher	Ms Melinda Swift, Senior Manager

Various GCRO staff members on a Zoom call, December 2020



The GCRO's incoming Executive Director, Mr Rashid Seedat

Staff development

Ongoing staff development is a key organisational commitment for the GCRO and some of our staff members participated in important development opportunities locally and abroad through various online platforms.

The future-proofing of staff, focused on the GCRO five-year strategic framework goals, commenced initially with prioritising leadership and self-development. Adapting to the online work environment and the use of online tools for facilitation and teamwork ensured that these learning opportunities were multifaceted.

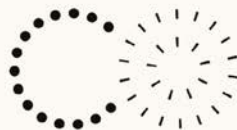
Equity, Diversity and Inclusion Programme

The Equity, Diversity and Inclusion (EDI) Foundation Programme, presented by Cohesion Collective and attended by all GCRO staff, was aimed at developing the awareness, language and literacy of individuals and teams to appreciate the importance and challenges of EDI, providing both a behavioural and a structural awareness of the nature of exclusion. The course was run virtually on Zoom over a five-week period and the aim was to achieve the following objectives:

- To raise awareness and continue the conversation around EDI within the GCRO;

- To continue developing and improving the language capacities around EDI within the GCRO;
- To outline and begin developing the skill set required to drive EDI internally, which in turn is set to drive engagement;
- To engage the team about the sensitivities, as well as the importance of EDI for the GCRO, particularly around talent, leadership and culture; and
- To engage with and unpack unconscious bias and how it plays out within the workplace, and more importantly, how to identify appropriate measures to mitigate the effects of bias within the GCRO.

Following a discussion and initial workshop on learning styles as a useful approach to developing leadership skills and self-awareness, the GCRO senior research and management teams embarked on an introductory course on 'Gestalt – Living and leading in challenging times', presented by Baobab Training & Consulting and Distillery. This course is designed to support leaders, managers and facilitators who wish to gain insight into themselves, and develop their ability to impact teams, organisations and clients. The first course was presented online on 17 and 18 March 2021 and included Dr Alexandra Parker (Senior Researcher),



Equality | Diversity | Inclusion

Take the next step on your journey with us!

Dr Ngaka Mosiane (Senior Researcher) and Ms Gillian Maree (Senior Researcher). All participants attended all sessions and were issued with course certificates. Further cohorts of GCRO staff will attend this course in the 2021/22 financial year.

GCRO wellness during a pandemic

Throughout this financial year, GCRO staff have remained productively working from home, and intermittently from the office as the pandemic allowed. A flexible risk-management approach to working in the office has allowed staff to access this space in full safety. Much was asked (and will still be asked) of all GCRO staff, who have been a little stretched due to the relatively small teams focused on the pandemic-related and government-facing work, and on the Quality of Life 6 (2020/21) household survey fieldwork launched in late 2020. Much planned work was displaced, which has generated anxieties for this output-oriented team of researchers. The well-being of the GCRO staff remains one of our primary concerns, and it is notable that so much purposeful work was delivered while working from home, many staff with young school-going children or newly born infants, managing the strains of COVID-19 lockdowns and being privy to much distressing data and information. All workplaces are confronting this new context and the GCRO, similarly, will continue to find ways to

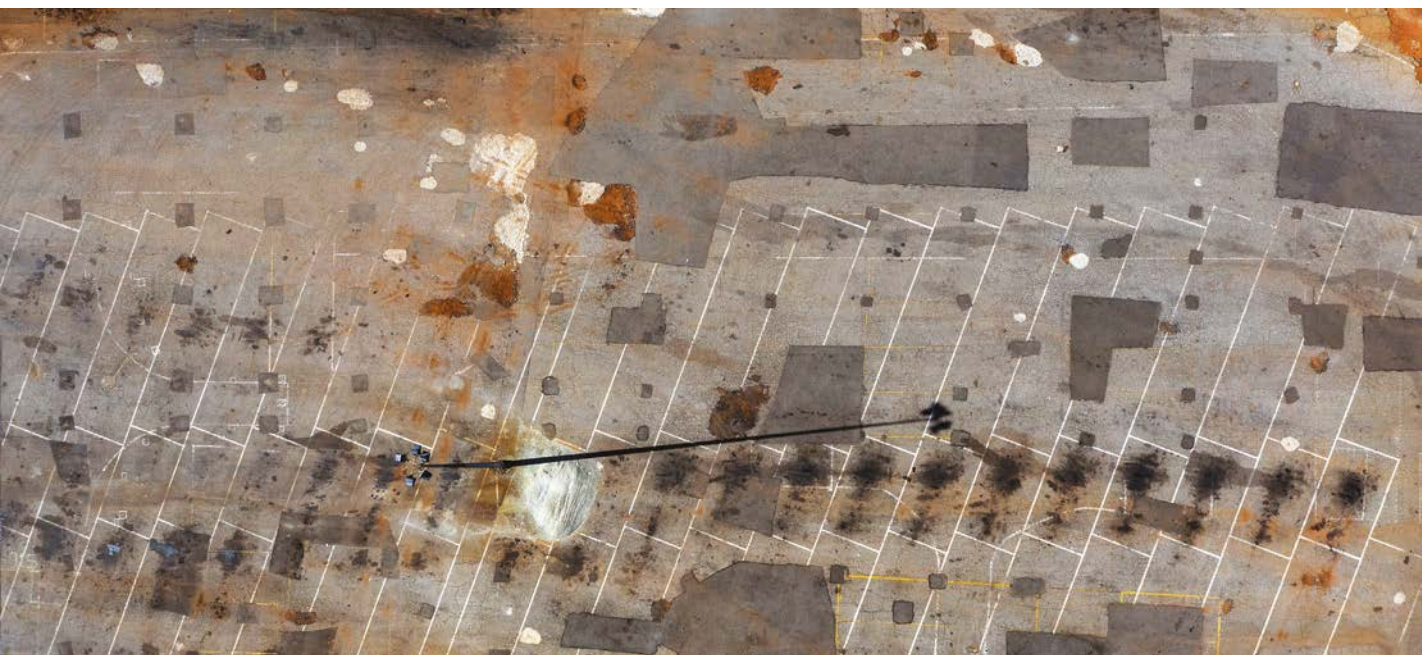
support staff and to provide the security of employment and purpose needed to continue delivering our important work.

GCRO policies and governance

During the course of 2020/21, the GCRO worked on a set of proposals to revise the GCRO Constitution on the basis of a legal opinion from Eversheds Sutherland about the status of the GCRO as an organisation and its policy architecture. The purpose of this work was, first, to appraise the legal status of the GCRO and provide views on whether, in light of such determination, the GCRO is optimally positioned to attain its objectives in its current form while ensuring that all of its members are adequately protected. Second, this work focused on the further alignment of some of the GCRO's policies in relation to Wits (given that the GCRO is embedded within the university's administrative systems, as part of the in-kind support provided by Wits to the GCRO). The matter will be resolved by the GCRO Board during the 2021/22 financial year.

In close consultation with all staff, the GCRO promotions policy was reviewed, particularly as regards promotion criteria. Plans are in place for the new Executive Director to present a revised promotions policy to the GCRO Board during the course of 2021.

Photograph by James Oatway





Photograph by James Oatway

An aerial photograph of a large parking lot filled with numerous shipping containers. The containers are arranged in rows and are painted in various colors, including blue, white, red, and green. Some containers have the letters 'e' and 'f' painted on them. The parking lot is paved with asphalt and has yellow parking lines. In the background, there is a road with a white dashed line and a black street lamp. The overall scene suggests a busy industrial or logistics area.

**Support to
government**

Support to government

Strategic support to the Gauteng Policy Unit, Office of the Premier

COVID-19 support

Throughout this financial year, intensive support was given to the Gauteng Policy Unit in the Office of the Premier (OoP) to inform and assist the Gauteng Provincial Government's (GPG) response to the COVID-19 pandemic. Some of this support is also covered under the 'Responding to the COVID-19' project in the write-up under Applied Research, but a number of key elements are worth highlighting here.

Together with the OoP, the GCRO convened two Governance Dialogues on how the GPG was responding to the pandemic. With a variety of speakers from both academia and government and attended by an engaged audience, the dialogues provided an important point of reflection on both the strengths and weaknesses of the GPG's response to the COVID-19 crisis.

In the first quarter, the Service Delivery Unit in the OoP asked the GCRO to work together with a range of National Research Foundation (NRF)-funded professorial chairs, contracted by the Government Technical Advisory Centre (GTAC), to research and write a 'deep dive' case study detailing the GPG response. Various sections of the study covered the comprehensive health response, communications, the economic strategy, and so on. Rob Moore and Graeme Götz were asked to write up the governance and leadership section of the report. The work was based on approximately 15 in-depth interviews, as well as participant observation of various COVID-19 structures and processes. After a number of presentations on the emerging insights, a first draft of the chapter was submitted in November 2020, and then subsequently revised. In addition to the research work done, Melinda Swift

contributed by sitting on the GPG steering committee for the project.

In mid-2020, Rob Moore was asked by Premier David Makhura to be a member of the Premier's Advisory Committee on COVID-19. This committee met weekly throughout the rest of the financial year, considering inputs from various quarters, and preparing advisories on ways to improve the response.

Starting in April 2020 and through much of the year, the GCRO worked on assisting the GPG with various data requirements related to COVID-19. In the first quarter, at the request of the Head of the Gauteng Policy Unit, we worked to try to connect Gauteng officials to various national processes modelling the local spatial spread of COVID-19, as well as data being collected and geocoded nationwide. Subsequently, after accessing geocoded data from the Gauteng Department of Health Mpilo database, we mapped and analysed this information for various processes, including the Premier's weekly media briefings as well as a series of presentations to the Gauteng Provincial Disaster Management Command Centre (PDMCC). The GCRO also became a regular participant in the PDMCC-linked Data and Analytics Workstream, which met weekly over the second half of 2020 to consider matters of data quality and access.

The Data and Analytics Workstream did not reconvene after the December 2020 break. However, in the final quarter of the financial year (January to March 2021), Rob Moore and Gillian Maree assumed new responsibilities by participating in various structures to help plan the COVID-19 vaccine rollout. As part of the Premier's Advisory Committee on COVID-19, Rob was asked to give input on plans emerging from the Department of Health, and

Gillian supported a subcommittee by helping to map vulnerable populations for vaccine prioritisation.

Proposed professorial chair on inclusive economies

The GCRO met a number of times with the Policy Unit of the Office of the Premier to take forward discussions on the institution of an inclusive economies chair at the GCRO. A detailed concept note was prepared, proposing direction to the chair, and this was presented to the Provincial Executive Council. Further discussions are ongoing within the GPG, dealing with some legal matters around the establishment of the chair.

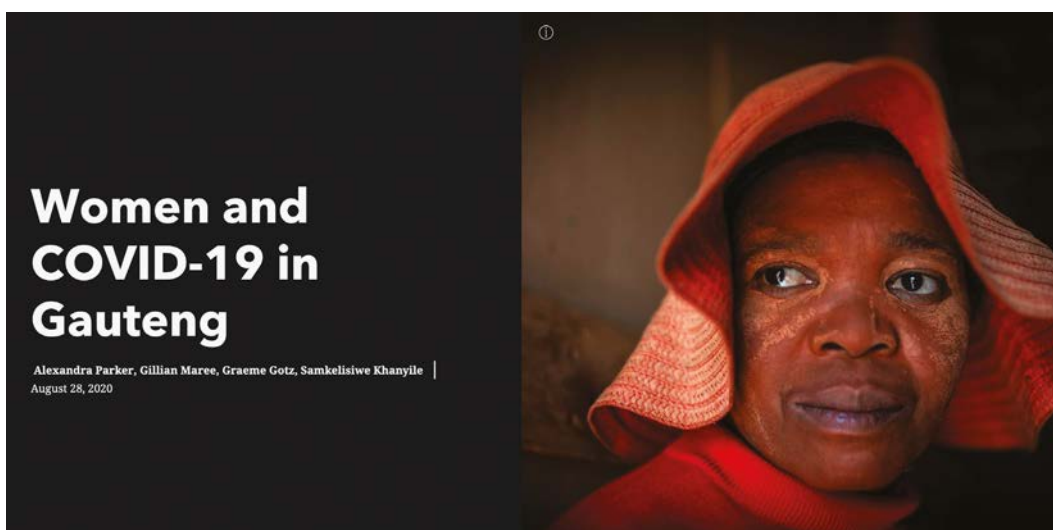
Firm-level survey

Some years ago, the GCRO was asked to assist the Gauteng Growth and Development Agency (GGDA) with a firm-level survey to explore the costs of doing business in the GCR. Through discussion with the GGDA, three components were identified: a pilot firm-level survey, using as the sample base respondents in the GCRO's Quality of Life Survey who had identified themselves as business owners; a scan of the knowledge-intensive tradeable services

industry, undertaken by the Human Sciences Research Council; and an initial census of firms in ten industrial areas around Gauteng, conducted by the University of Johannesburg's Centre for Competition, Regulation and Economic Development. This last component was unfortunately somewhat delayed but was delivered in the 2020/21 financial year. It completes the formal deliverables intended under the project. Some of the material will be taken forward to be written up as an Occasional Paper under the GCRO's 'Urban space economy' project.

Other government support

Inaugurating a new model of work, and a new kind of output, the GCRO responded to a request from the City of Johannesburg's Group Strategy Division to develop two rapid research papers. The first paper developed a Health Vulnerability Index and considered the policy implications of some of the insights derived from a mapping of this issue. The second paper considered the challenges of food security in Johannesburg and possible points of policy focus for the City to respond to this challenge. Both papers, delivered in January 2021, will contribute to the City's revision of its long-term growth and development strategy.





Photograph by James Oatway

An aerial photograph of a dry, arid landscape with reddish-brown soil and sparse green vegetation. Several long, blue corrugated metal sheets are scattered across the ground. Four people wearing red clothing and red hard hats are visible, each standing near a metal sheet. Their shadows are cast on the ground. A large, light-colored rectangular box is superimposed in the center of the image, containing the text "Applied research".

Applied research

Applied research

Overview

In late 2014, the GCRO Board approved a five-year strategic plan to guide the organisation's research work over the period 2015/16 to 2019/20. This financial year, 2020/21, has been a transitional year as the new strategic plan for the period 2020/21 to 2024/25 was only finalised for adoption by the Board in late 2020. With the finalisation and approval of the new strategic plan, the GCRO sees the number of research themes adjusted from seven to nine, with each more narrowly focused on a more clearly defined programme of research.

Because the 2020/21–2024/25 strategy was only concluded within the course of the financial year, this annual report accounts for each project against the old thematic structure, as indicated in the table below. The end of the financial year, March 2021, saw a number of projects closed off, and new ones in line with the new thematic focus areas defined to begin in April 2021.

The GCRO's annual report for 2021/22 will report on these and older projects that have been carried forward into the new thematic framework.

Table 2: Number of 2020/21 projects in each theme

Themes	No. of projects
1. Analytics, cartographies and visualisations	6
2. Changing social fabric	10
3. Rationalities of government and governance	4
4. Histories and futures of the GCR in comparative perspective	5
5. Landscapes in transition in the GCR	7
6. New regional economies	4
7. Sustainability transitions in the GCR	4

1. Analytics, cartographies and visualisations

Analytics and visualisations are necessary for communicating the GCRO's work to a wide-ranging audience. The data analysis and visualisations produced are able to present valuable information in innovative and engaging formats. This section includes projects related to the website and dissemination outputs as well as the GCRO's flagship project, the Quality of Life (QoL) Survey.

QoL V (2017/18) and QoL 6 (2020/21)

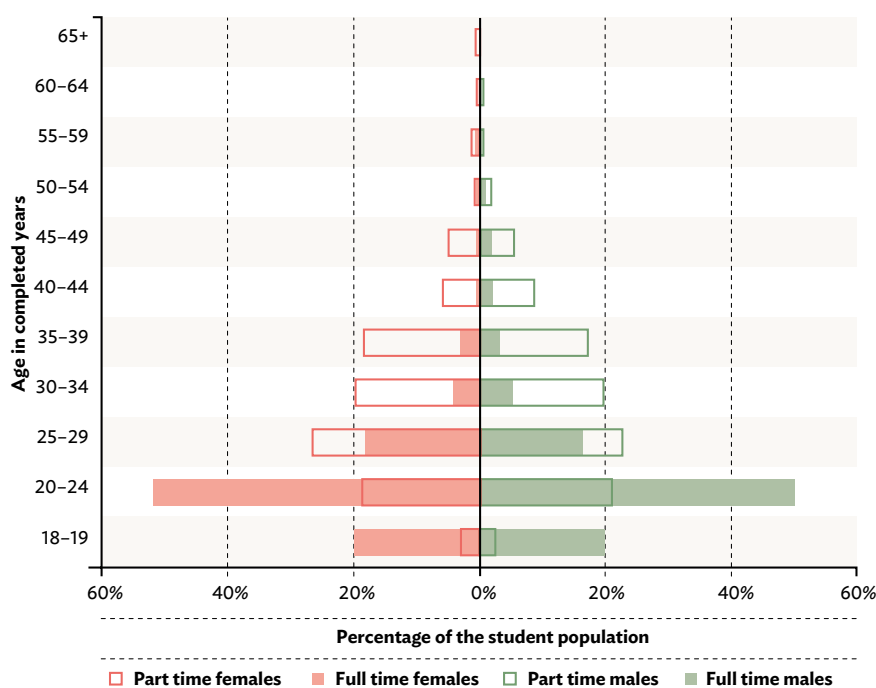
The GCRO conducts an iteration of the large-scale, randomly sampled, face-to-face QoL survey every two years. Started in 2009, these surveys have developed into one of the largest and longest-running social surveys in South Africa. Sample sizes have ranged between 6 000 and 30 000, with adult respondents drawn from each of Gauteng province's wards. Each survey iteration covers core content, such as living conditions, satisfaction with a range of political,

social and personal aspects of life, social attitudes and opinions. Other, iteration-specific content, shaped by current events and public priorities, is also included. The survey aims to provide crucial information in support of data-driven decision-making and governance in Gauteng province. Data and findings are used by government, researchers, civil society and the general public. This section reports on progress with disseminating results and data from the QoL V (2017/18) survey iteration, as well as progress with the preparation for and implementation of QoL 6 (2020/21).

QoL V (2017/18)

During the 2020/21 financial year, key priorities related to QoL V dissemination have included the preparation of a GCRO WaziMaps web application, the finalisation of remaining QoL V outputs, and strengthening our approach to sharing QoL survey data.

Student population pyramid | Figure from GCRO Data Brief No. 10





Photograph by GeoSpace fieldworker

The development of a GCRO WaziMaps web application aims to make key QoL V results easily available, at a range of geographical levels, to individuals who may not have the time or capacity to work with the raw survey data. All relevant data and results were loaded into the online application, and a series of engagements with WaziMaps resulted in substantial improvements to the interface. The web application was finalised early in the 2021/22 financial year.

The GCRO Data Brief on the quality of life of students, based on data from QoL V, was published in July 2020. This concluded the series of QoL V-specific GCRO outputs, drawing this process to a close. A two-part special session focusing on the collection, sharing and use of the QoL data was held during the September 2020 Southern Africa City Studies Conference, with a total of six presentations by GCRO staff members.

QoL data sharing and dissemination

In order to enhance access to and use of the QoL data, the GCRO began sharing QoL data under a CC-BY SA 4.0 Creative Commons licence. This provides greater clarity to data users about permissible use, and allows a broader range of use cases while protecting against commercial abuse. This decision allowed the GCRO to shift all oversight of data sharing to the University of Cape Town (UCT) DataFirst service, freeing up QoL team time and also ensuring automated and centralised recording and reporting. The QoL team continued to respond to data requests, directing users to DataFirst, and providing technical support and guidance in relation to analysis. In addition, the QoL team continued to provide support with data or analysis to government on an ad hoc basis.

QoL 6 (2020/21) preparatory phase

The 2020/21 financial year saw substantial headway in preparations for and implementation of the QoL 6 project despite the uniquely challenging context of the COVID-19 pandemic. Following an extensive tender process, GeoSpace International was appointed to implement data collection for the QoL 6 survey in April 2020. This appointment was supported by the commitment and delivery of additional survey funding by key partners. The Gauteng Provincial Government and the City of Johannesburg each contributed an additional R1.5 million to project funding, and the City of Ekurhuleni and the City of Tshwane each contributed R1 million. While data collection was initially anticipated to begin in May 2020, this was delayed in response to the COVID-19 pandemic. Data collection began in late October 2020 when South African lockdown regulations had been eased, and evidence to support appropriate COVID-19 protocols was available.

During the first quarter of the 2020/21 financial year, GeoSpace provided the GCRO with a Fieldwork Plan, a Project Management Plan and a Project Timeline, as required by the contract. These documents were reviewed by the GCRO, revised by GeoSpace, and then accepted as final. This enabled payment of the first tranche of the QoL 6 contract to GeoSpace.

Sampling for the survey also took place during this period under the guidance of Prof. Paul Fatti, and all sample points were provided to GeoSpace for review and inclusion in their survey management platform. With the agreement of GeoSpace, development of a small additional suite of questions to gauge the impact of COVID-19 on Gauteng residents was undertaken. This involved consultation with government stakeholders, academics working

on the COVID-19 response and medical practitioners. Processes of questionnaire translation, digitisation and testing began during the first quarter and were finalised during the second quarter. The GCRO was also able to review the overall survey management and data collection system, and dashboards were developed to support management and oversight.

In preparation for the initiation of data collection, a comprehensive COVID-19 risk-management strategy and contingency plan was jointly developed by GeoSpace and the GCRO. In addition, detailed protocols were drafted to ensure that the safety of team members, respondents and the general public would be protected during both training and data collection. These documents were presented to the GCRO Board in August 2020 and were also submitted to the Wits Human Research Ethics Committee (non-medical). Ethics approval to commence with training and data collection under these protocols was received in late August. The GCRO management committee also provided approval for the commencement of training and piloting, subject to close monitoring of COVID-19 case numbers in Gauteng.

Following the preparation and review of training materials, the first round of fieldwork training was held during the week of 28 September 2020, providing training to all field management staff as well as 28 fieldworkers. The training was attended by the GCRO QoL team and was observed to run smoothly, with all COVID-19 protocols in place. In addition to the standard training content, Dr Abigail Hatcher, from the Wits School of Public Health, provided an excellent module on sensitive content, and in particular the questionnaire content related to gender-based violence. The field pilot commenced on 5 October 2020, providing an opportunity to test all aspects of data collection, including the COVID-19 protocols. A debriefing, attended by the GCRO, was held on 15 October 2020, which provided valuable information allowing for the finalisation of the field protocols.

QoL 6 (2020/21) data collection

Training for the full fieldwork team began on 19 October 2020, and full-scale data collection began on 26 October 2020, and concluded early in the 2021/22 financial year (May 2021). The GCRO and GeoSpace met on a weekly basis during data collection to

ensure the rapid identification and resolution of any challenges. A brief break in data collection took place over late December 2020 and early January 2021. All fieldwork team members were provided with refresher training on the resumption of work in January. Early 2021 posed some challenges to the pace of data collection due to a combination of increasing COVID-19 cases and extreme weather, which resulted in logistical difficulties. Nonetheless, at the end of the financial year (31 March 2021), over 12 000 of the necessary 13 500 interviews had been completed and met all quality standards.

Fieldwork largely progressed smoothly, albeit with the expected access and security challenges. GeoSpace has reported excellent cooperation from the South African Police Service and private security companies; in addition, the Namola app was installed on all fieldworker devices for use in emergencies. In a particularly concerning instance, the attempted rape of a fieldworker after the completion of an interview was reported. Fortunately, she was able to call for help and management arrived rapidly. She did not sustain physical injury but was taken to a hospital and received counselling. A police case was opened, and the fieldworker was supported in her return to work.

Due to COVID-19, interviews were not conducted in retirement villages or old age homes, but in other regards access challenges have been similar to those experienced in previous survey iterations. During periods of increasing case numbers, particularly in January and May 2021, refusals citing COVID-19 concerns were higher; nonetheless, data collection targets were met in a timely manner, and both field team members and respondents were satisfied with the COVID-19 protocols in place. During the January and February 2021 period, coinciding with Gauteng's second wave, the COVID-19 protocols were temporarily enhanced to ensure that team members and respondents were protected. These enhancements included providing KN95 masks to all fieldworkers and surgical masks to all respondents to use during interviews, ensuring that all interviews were conducted outdoors, and temporarily halting data collection in hostels and apartment blocks with poor ventilation. Although one fieldworker was diagnosed with COVID-19 following travel in December, no transmission of COVID-19 during data collection was identified.

Work on preparation for data finalisation, analysis and the launch of results has also been a key focus. The GCRO QoL project team has worked closely with GeoSpace to ensure that the structure of the final dataset will meet analytical requirements. In addition, the QoL team has engaged thoroughly with a range of approaches to the weighting of the final dataset to ensure that QoL 6 weighting will generate accurate results, and will be suitable for use in comparing results across survey iterations. Templates for key launch outputs have been prepared, and GCRO colleagues have committed to various contributions to QoL 6 launch preparations, as well as to more substantive outputs to follow the launch. Preliminary launch planning meetings were held with stakeholders in government, as well as the Wits communications, events and functions departments which will support the launch.

QoL survey ten-year review process

Following on the successful launch of QoL V, the QoL review process provides an opportunity to celebrate the accomplishments of this remarkable survey while also exploring ways in which to strengthen QoL moving forward. During the

2019/20 financial year, a series of review workshops provided valuable insights and guidance that supported the preparations for and implementation of the QoL 6 survey.

Early in the 2020/21 financial year, Prof. Mark Orkin, the external chair of the review process, signed off on the final version of his synthesis report. This report drew together learnings from the review process, and developed these into a series of recommendations related to the planning and implementation of future iterations of the QoL survey. This report, together with a separate report based on the data use and dissemination review workshop, were submitted to the Board, and subsequently published on the project website page. The recommendations included in these reports are noted to have substantially guided and shaped QoL 6 preparation and implementation. Briefing documents prepared for the review workshops were redacted slightly, and also published on the project page.

During the review process, a substantive piece of technical work on the refinement of the QoL aggregate index was undertaken. This led to the development of a revised, data-driven Quality of Life Index. A journal article detailing this work was submitted

Photograph by GeoSpace fieldworker



to *Social Indicators* in January 2021 and was under review as of the end of the 2020/21 financial year.

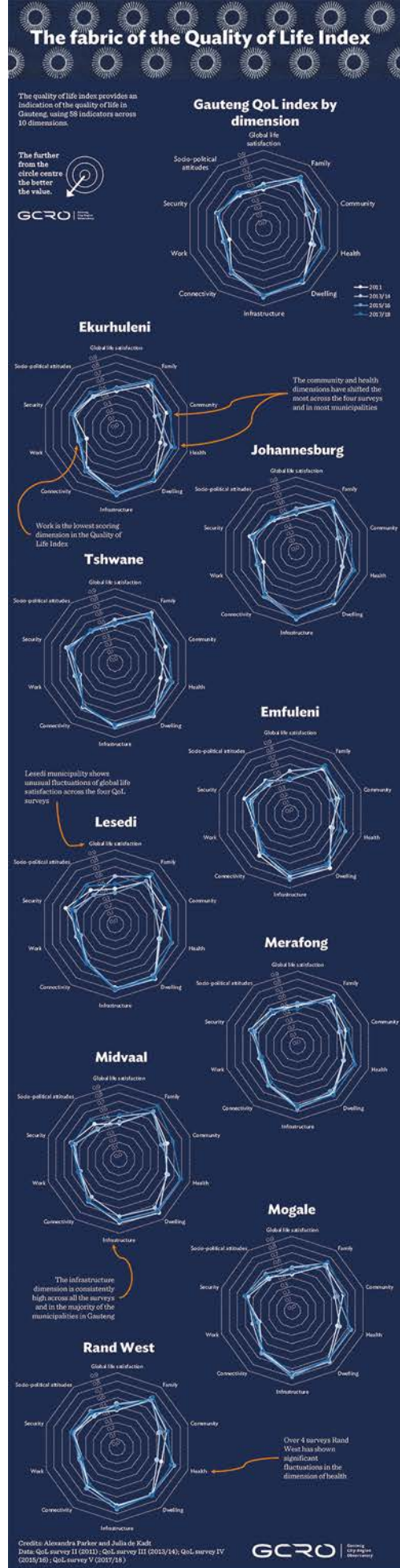
Early in the QoL survey ten-year review process, preliminary work to compile a bibliography of academic publications making use of QoL data was pursued. In early 2021, Kiera Crowe-Pettersson was contracted to update this work and consolidate all existing information into a single bibliography. Substantial progress has been made in developing and implementing a comprehensive search strategy across multiple databases. Consolidation of existing GCRO records together with new content identified through the search strategy is under way. Finalisation is anticipated in May 2021.

Advancing data visualisation

The 'Advancing data visualisation' project, in its sixth year since inception, aims to develop data visualisation skills in the organisation and to produce innovative data visualisation outputs. The project is intended to enable the GCRO to continue to capture the public's imagination by presenting information in creative ways. With the onset of the COVID-19 pandemic at the end of the previous financial year, the project team engaged extensively with the 'Responding to the COVID-19 pandemic in Gauteng' project through several activities and produced a number of interactive visualisations. Project team members provided research and advice on various platforms to develop data displays and dashboards and to develop new skills across several platforms in the organisation. In addition, several team members attended training sessions or online courses.

The success of the project was recognised through several award nominations. Three GCRO data visualisations were longlisted for the Humanities and Social Sciences Awards 2021 in the digital humanities category and subcategory of best visualisation or infographic.

- Gillian Maree and the COVID-19 project team for GCRO COVID-19 Visualisations and Maps of the Month, which went on to also be shortlisted;
- Alexandra Parker and Julia de Kadt for The fabric of the Quality of Life Index;
- Samkelisiwe Khanyile and Alexandra Parker for Graffiti and urban art in Maboneng: A virtual tour.



In addition, the GCRO worked with Open Cities Lab to develop a series of data principles to guide the GCRO's approach to data management, use and sharing. These principles were included in the GCRO's strategic plan and will form the basis for additional internal data governance work.

This project was closed at the end of the financial year to enable the commencement of several new projects with specific focus areas on data visualisation in the next financial year.

Data smart GCR

This project aims to explore what the idea of 'smart-city' means for the GCR within a developing city-region, with specific reference to data as the pillar of any smart analysis or smart planning. The project focused on supporting the Gauteng Planning Division's efforts to establish a corporate GIS and a central spatial database. As part of an exploration of

prospects for a more integrated and coordinated GCR, a GCRO Provocation titled *Strengthening governance in the Gauteng City-Region through a spatial data infrastructure: The case of address data* was written by two commissioned spatial data infrastructure experts, Serena Coetzee and Antony Cooper, and Samy Katumba of the GCRO. The Provocation was published in May 2020, and this project is now complete.

GCRO QoL Viewer

This project worked towards the development of an integrated QoL data viewer, holding the Quality of Life Survey V (2017/18) data together with all previous datasets, and presenting results at the ward level. During the 2020/21 financial year, a series of team meetings supported the drafting of Terms of Reference for the identification and appointment of an appropriate service provider. With the departure of Samy Katumba, and the imminent release of the

Photograph by GeoSpace fieldworker



WaziMaps web application which meets short-term needs for presenting QoL data (see above), this project has been put into abeyance until after QoL 6.

Website and dissemination

The 'Website and dissemination' project ensures the day-to-day maintenance and updating of the GCRO's website as well as developing innovative elements of the website and promoting the dissemination of GCRO outputs. In the 2020/21 financial year, the project team grew substantially (now comprising seven staff members), with each team member taking responsibility for different aspects of updating and managing the content on the website. This year saw substantial content being uploaded onto the website with great frequency due to the extraordinary activity of the 'Responding to the COVID-19 pandemic in Gauteng' project. As a result of this activity, traffic to the website was significantly higher in the first quarter than in previous years.

The GCRO also made changes to its publication templates with two aims: to improve consistency and efficiency; and to optimise for search engines. The GCRO has begun working with a new typesetting service provider, Lumina Datamatics, on the production of outputs. Optimising our outputs and website pages for search engines, online referencing databases (e.g. Google Scholar and Scopus) and referencing software (e.g. Mendely and Zotero) has necessitated some changes to the structure of the website, inter alia to place each GCRO output on a separate web page. Work began with our service providers on this restructuring in the third quarter (October–December 2020). In the fourth quarter (January–March 2021), planning began around updating the website to reflect the new five-year strategy, as well as resolving short-term and long-term contracts for the hosting and maintenance of the website.





Photograph by Ihsaan Haffjee

2. Changing social fabric

The GCR has always been characterised by social, political and cultural diversity. The immigration of people into Gauteng from other parts of the country and the world has contributed significantly to the GCR's dynamism, cosmopolitanism and reputation as South Africa's cultural melting pot. Yet, with the cultural dynamism and vibrancy exist many social ills and/or injustices, including mass poverty, inequality, xenophobia, marginalisation, intolerance of diversity, political violence as well as social exclusion. This research theme is concerned with the socio-cultural changes that the GCR has undergone or is currently experiencing.

Graffiti in the city

This project stems from the idea that public art in the GCR, whether legal or illegal, is an important historical marker of culture, politics and society, and is tied to urban renewal and the creative economy. The main focus of this project in 2020/21 has been the drafting of a journal article using visual and spatial analyses of creative visual inscriptions (graffiti and street art) to illustrate the need for a more nuanced understanding of the potential impacts of implementing the creative city discourse in cities of the global South. Another focus of this project has been the development of a mobile application which will serve as a collaborative space for sharing spatially referenced photographs of graffiti and street art across the GCR. The

finalisation of the development of the application was delayed due to the uncertainties of the COVID-19 pandemic.

Hungry city-region

The project examines urban food systems in the GCR, and is connected to various research interests in the GCRO, including 'poverty and inequality' and 'green infrastructure'. Work in this project was largely put on hold during the financial year due to the COVID-19 pandemic. Data collection and participation at Food Systems Community of Practice meetings did continue during the year, and this will be included in the project to complete an Occasional Paper on food systems in the GCR in December 2021.

Post-apartheid social mixing

This project examines the legacy of urban segregation in the GCR. During the 2020/21 financial year, two chapters that had been in preparation for different volumes were submitted for review, accepted and revised for publication. The first of these is in a global volume on socio-economic segregation, for which Richard Ballard and Christian Hamann wrote the Johannesburg chapter. The second of these is a volume on segregation in South African cities that is a follow up to the 1991 *Homes Apart* book by Anthony Lemon. The Johannesburg chapter for this book is authored by Richard Ballard, Christian Hamann and Themban Mkhize.



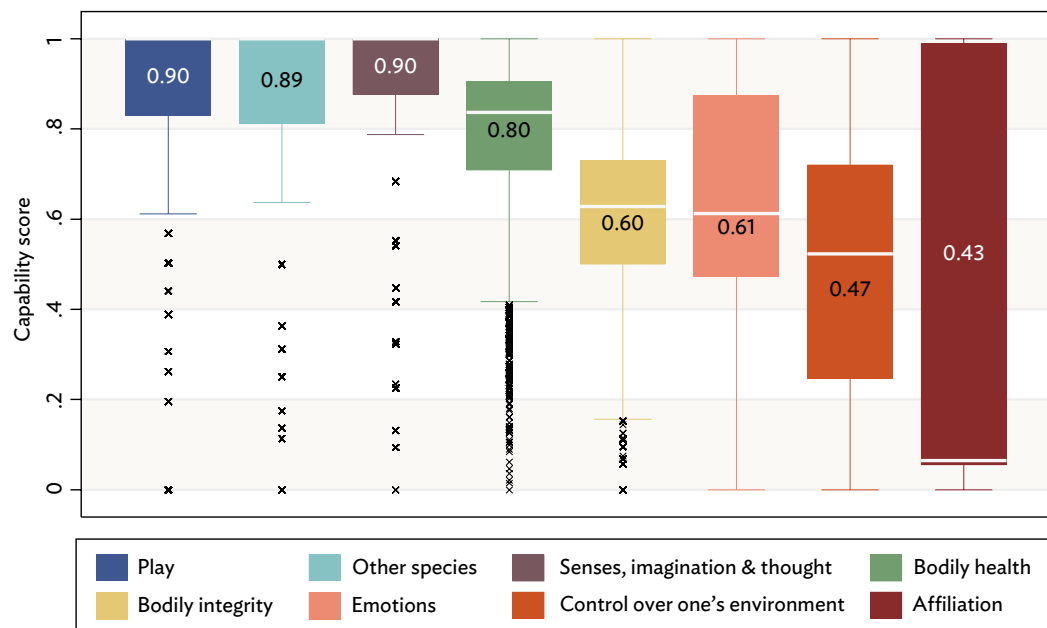
Poverty – a capabilities approach

This project builds on the study of poverty and inequality in the GCR begun in 2014. This further research work aims to deepen our understanding of poverty in the GCR through the lens of the ‘capabilities approach’.

Lead researcher Darlington Mushongera, together with

Associate Professors Prudence Kwenda and Miracle Ntuli from the Wits School of Economics and Finance, worked on a paper examining poverty from a capability perspective and using GCRO Quality of Life survey data. This GCRO Occasional Paper underwent a rigorous peer review process and was published in December 2020.

Capability indices – overall | Detail from GCRO Occasional Paper No. 17



GCRO

Place and street renaming

The pronounced battle over the renaming of places and streets in certain parts of Gauteng for the past decade reflects their importance as symbols of identity, political history, power and socio-cultural relations in Gauteng and South Africa. This project uses two case studies that have undergone a significant spatial metamorphosis as a result of street name changes – Pretoria Central and the Johannesburg central business district (including Newtown) – to interrogate and explain the reasoning behind the renaming of streets after political and cultural icons. Among other things, the project also explores the implications of street renaming for governance and discusses the degree to which renaming processes would be affected by party politics; it is aimed at assisting local governments – and the Gauteng Provincial Government – to mitigate costs and conflicts associated with renaming processes in Gauteng. The main focus of the project in the 2020/21 financial year was the preparation of a presentation for the Research Committee 21 (RC21) virtual conference slated to take place in July 2021. The other focus of this project was the preparation of material for two larger outputs – a photo essay and an Occasional Paper.

Scale, belonging and exclusion

This project consists of a series of case studies on changing scales of spatial configurations in Gauteng. With the case studies having been drafted in the previous financial year, Richard Ballard and Alex Parker proposed a special issue to *Urban Forum*, which the editors accepted. Authors submitted case studies in 2020 for review and received reviewer comments in early 2021. The material is in preparation for a special issue to be published in June 2021, on the 30th anniversary of the end of the Group Areas Act.

Mothers in the city

Initiated in 2014 at the National Research Foundation Chair of Spatial Analysis and City Planning at Wits, this project came to the GCRO in late 2016 and has evolved over the years to include

a number of components. The main focus is a study called ‘Families in the City’, which explores the mobility, daily practices and identities of parents in different households in Gauteng. The fieldwork was concluded across five case study sites at the beginning of the financial year. The research was presented at the Southern Africa City Studies Conference in September 2020, and the first paper of four was submitted to the journal *Gender, Place and Culture* in early March 2021.

A second component of the project is an exploration of gender and household dynamics using QoL V (2017/18) survey data. A paper on this work was presented at a Wits Institute of Socio-Economic Research seminar in August 2020 and submitted for publication to the journal *Social Indicators* in November 2020. In addition, a more detailed GCRO Occasional Paper is planned for the next financial year, combining QoL 2017/18 and QoL 2020/21 survey data.

Gauteng’s geographies of education

This project examines the geography of education in Gauteng to gain a better understanding of the complex variations in the quality of education, and how policy might enhance the provision of universal access to quality education. The main focus in this financial year was the publication of a journal article, ‘Accessing quality education in Gauteng: Intersecting scales of geography, educational policy, and inequality’ in a special issue of *Urban Forum* as part of the ‘Scale, belonging and exclusion’ project. The article was accepted in February 2021 and is expected to be published in the first quarter of the 2021/22 financial year, which will mark the close of this project.

Network for Gender and Urban Research

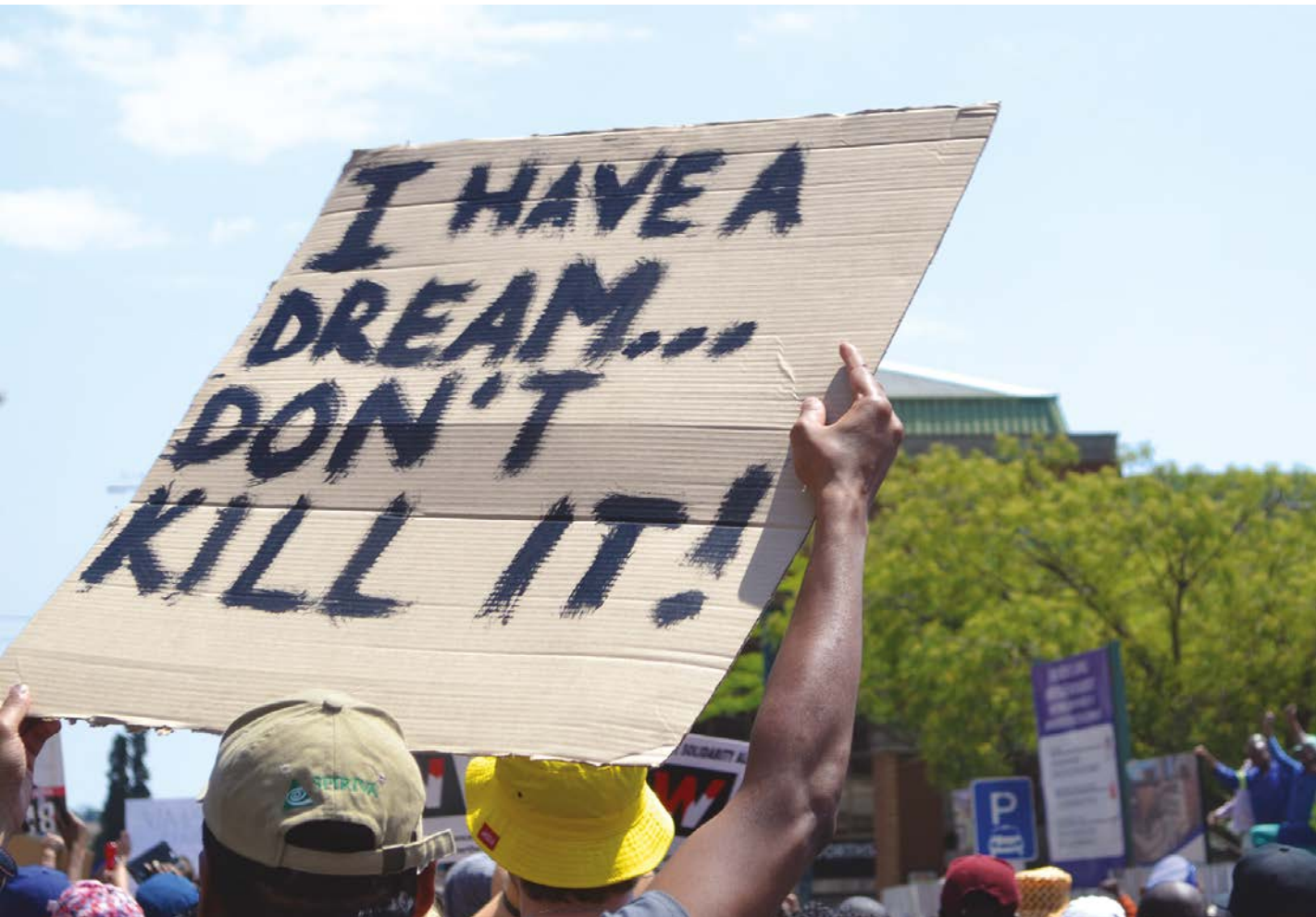
The aim of the Network is to bring together scholars and practitioners engaging in research or practice to do with gender (defined broadly and inclusively) and the urban landscape. A workshop planned for May 2020 had to be postponed due to the COVID-19 pandemic. In September 2020, the Network hosted a themed session at the Southern Africa City

Studies Conference that was well attended. As part of expanding the Network, Alexandra Parker joined two other international networks: the Gender and Geography Commission of the International Geographical Union, and the Gender and COVID-19 Working Group.

Social change

In 2017, Richard Ballard, together with Clive Barnett at Exeter University, submitted

a proposal to produce a *Routledge handbook of social change*, which was accepted. The book is planned to contain 30 chapters, which the editors commissioned and edited during the course of 2017–2019 and prepared them for review. In 2020, two thirds of the chapters were reviewed and feedback given to the authors, who are currently in the process of revising their chapters. The editors are gathering final chapters and preparing all content for production.



Photograph by Beth Pulane Crankshaw

3. Rationalities of government and governance

This thematic area examines how government functions and how government relates to society in general. The GCRO has been particularly interested in teasing out what it has called the rationalities of government, that is, how government defines its objectives and how that subsequently influences the way government organises itself to meet those objectives.

Ethnographies of the state – the politics of service delivery planning

‘Ethnographies of the state’ is a multi-year research project that studies the internal decision-making processes related to water service delivery planning in the City of Johannesburg. The study took an ethnographic approach in order to extract first-hand experience of how service delivery planning processes actually play out in practice. Darlington Mushongera, the project lead, completed a draft paper based on his experience of ethnographic research in the City of Johannesburg’s department of Environment and Infrastructure Service Department. During the year under review, the paper went through both internal and external peer review processes by experts in the field of governance in general and water in particular. This project was closely linked to the lead researcher’s PhD project and, due to competing demands, revisions to the final draft were deferred to May 2021. The expected output is a GCRO Provocation.

Photograph by Alan Mabin

Knowledge partnerships for urban futures

This project comes to an end in this financial year with the retirement of GCRO Executive Director Rob Moore. It had two components. The first was to work with the Gauteng Planning Division to establish pilot strategic knowledge partnerships between government and universities. The second was to conduct research into global and local practice on how university–government knowledge brokering and partnerships can be forged. The GCRO was used as the local case study of such a partnership. Work on this project was also affected by the COVID-19 pandemic. However, there was a hive of activity during the year under review, including the following:

- Governance Dialogues, convened jointly with the Policy Unit in the Gauteng Premier’s Office and the NRF Chair in Spatial Analysis and City Planning at Wits. These dialogues were intended to reflect on the governance of the COVID-19 pandemic in the GCR.
- Continued participation in a report on observatories, commissioned by UN-Habitat in partnership with University College London and the University of Melbourne in Australia.
- Economy-related research partnerships with universities in the GCR. Barring some challenges, discussions commenced between the GCRO and Gauteng Provincial Government on the need to develop a fresh strategy to drive research in this area.



- Public transport-related partnerships. This theme developed along two fronts. The first was the GCRO partnership with the Gautrain Management Agency (GMA) to inform planning towards future rail transport infrastructure in the city-region where the GCRO provided a presentation to the GMA Board Lekgotla. A highly successful webinar series was hosted and run during the GCRO-GMA partnership, with Jesse Harber (GCRO Research Associate) hosting the sessions and GCRO Senior Researcher Christina Culwick Fatti presenting on one of the panels. The second was the development of indicators for African urban public transport systems in partnership with teams in Barcelona, Dakar and Maputo. This Metropolis-sponsored project received impetus through the appointment of transport specialist Geoff Bickford, and several meetings were held with Gauteng Department of Transport aimed at clarifying expectations and work programmes.
- Regional System of Innovation. Although progress on this project was hampered by the pandemic, the GCRO managed to participate in a European Commission-hosted webinar on local innovation systems, which featured the experiences of Ghana, Ethiopia and Rwanda, among others.

Governing the GCR – a Provocations series

This project aims to advance the debate on how the GCR is to be governed – and indeed what the GCR is – by questioning how governance in the city-region is being or could be institutionalised. The project aims

to publish a series of short GCRO Provocations on various facets of governance in the GCR. Two Provocations were published during this financial year, one by Alan Mabin on the Paris city-region and another by Jesse Harber on the bus rapid transit system as it has evolved in Johannesburg. Another Provocation by GCRO Researcher Ngaka Mosiane, on governing the edge of the city-region, went through a peer review process and was revised. At the end of the financial year it was undergoing final editing. In addition, GCRO Researcher Thembani Mkhize wrote a GCRO Occasional Paper on demarcation politics in Sedibeng. This Occasional Paper also went through a peer review process and is expected to be published as a GCRO Occasional Paper in the coming financial year.

Towards a metro form of government in Gauteng

Over the last decade a consensus has begun to build that Gauteng needs to move towards a ‘province of metros’, where all two-tier district/local municipalities are replaced by wall-to-wall single-tier structures. This project aims to investigate the reasoning behind the idea, how the idea is being activated in visions and plans, and what the likely benefits and costs of a further round of municipal amalgamations. Research also focuses on how some of these older ideas of institutional restructuring are finding expression in the current push for the district development model. Progress on this project was hampered by the need to give attention to the COVID-19 pandemic, and it was deferred to the 2021/22 financial year.

Photograph by Ntobe Dlamini





Photograph by James Oatway

4. Histories and futures of the GCR in comparative perspective

The 'Histories and futures' research theme was always intended to be a space in the GCRO for more theoretical explorations, whether those are modelling the future of the city-region, conceptualising the city-region in relation to current urban theory, or tracing the history of the city-region in order to understand its current context and future. However, the 2020/21 financial year saw unprecedented activity and published outputs based on empirical research linked to the 'Responding to the COVID-19 pandemic in Gauteng' project.

Futures of the GCR

This project has seen an external specialist, Prof. Edgar Pieterse, commissioned to write a GCRO Occasional Paper that provides a 'futures perspective', situating the GCR within projected long-term global urban trends and dynamics. Contracts for the commissioned work were signed in April 2020, but progress was unfortunately delayed because of COVID-19 and other pressures. A first draft of the work is scheduled to be delivered in mid-2021.

What is the GCR?

The 'What is the GCR?' project was initiated in 2016 by Guy Trangoš and has evolved in the last five years. The project aimed to examine the concept of the GCR in relation to the research being conducted at the Observatory as well as the global debates in urban theory. Several visits to urban research centres in

different parts of the world were planned, starting with the UK in 2020, although this could not be achieved due to the pandemic conditions. Instead, substantial progress was made on building a dataset of research institutes around the globe doing research on the urban condition. This dataset was partially completed and archived, and the project was closed at the end of the financial year.

Responding to the COVID-19 pandemic in Gauteng

The COVID-19 pandemic has had a profound impact on the world over the last year and this is reflected in the shift of work on COVID-19 by the GCRO. This project was initiated in April 2020 following the publication of the March 2020 Map of the Month, *Mapping vulnerability to COVID-19 in Gauteng*. The GCRO adapted its research outputs substantially over the 2020/21 financial year, working quickly and collaboratively to compile data and visualisations to inform disaster response planning, and to support government and the Gauteng Command Centre. The project outputs focus on understanding a range of social, economic and health vulnerabilities and risks across the GCR at the lowest level of analysis possible. With a large team of GCRO researchers working together remotely, this has been extremely productive since March 2020.

In addition, the project team gave over 27 presentations to a range of stakeholders, including the Gauteng Command Council, various provincial



workstreams, the Premiers Advisory Committee, academic conferences and other seminars. Other notable GCRO contributions over the past year include:

- GCRO Executive Director Dr Rob Moore was appointed to the Gauteng Premier's COVID-19 Advisory Committee, set up to help inform response planning;
- Graeme Götz and Gillian Maree participated in the data and analytics workstream for the GPG;
- Dr Rob Moore, Gillian Maree and Graeme Götz supported the vaccine rollout workstreams, including revising the GCRO vulnerability index to develop a ward-level risk index and geocoding locations of long-term care facilities;
- As part of the GPG Data Analytics and Research workstream, the GCRO spent considerable time in 2020 looking at the geospatial data and trying to understand spatial patterns of spread at the ward level (presented in multiple forums and contributed to an online COVID-19 visualisation platform for Gauteng developed by IBM, available at <https://gpcoronavirus.co.za/>);
- Presidency/DPME/Government Technical Advisory Committee (GTAC)/National research Foundation Country Report on COVID-19. Gillian Maree and Alexandra Parker were co-authors on two national chapters on vulnerability and gender;
- Rob Moore and Graeme Götz wrote the governance and leadership chapter of a deep dive case study on Gauteng's response to COVID, requested by the GPG and facilitated by GTAC;
- The GCRO was asked by the Solidarity Fund to support the targeting of its national food distribution efforts. This involved mapping:

high-priority wards across the country based on an index of multiple deprivation; the presence of civil society organisations potentially involved in food distribution; and therefore gaps in coverage of key areas of need;

- Helped provincial government departments and municipalities with QoL survey and other data to develop ward profiles relevant to COVID-19, as part of attempts to understand risk and plan for potential outbreaks;
- Supported efforts by the Gauteng Department of Cooperative Government to map priority areas for the allocation of water tankers;
- Input to Gauteng and Gautrain Management Agency Lekgotla on COVID-19 and public transport.

Rewards and recognition

GCRO work on COVID-19 was covered in the media on a number of occasions. Formal recognition of the GCRO and researcher contributions includes:

- The GCRO COVID-19 visualisation work was shortlisted for the Humanities and Social Sciences Awards 2021 in the digital humanities category;
- GCRO visualisations and analytical work were featured in the April 2021 *Wits Review* magazine;
- The team received a letter of recognition from Wits in acknowledgement of service to the university and the broader South African community during the pandemic.

The project is expected to continue for the foreseeable future with a focus on some longer-term outputs, academic outputs and analysis based on the Quality of Life Survey 6 (2020/21) data.

Table 3: Timeline showing GCRO outputs from the COVID-19 project

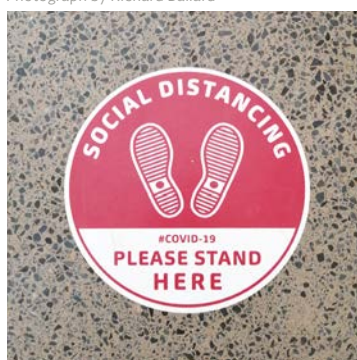
Date	Title	Output type
20 March 2020	Mapping vulnerability to COVID-19	Map of the Month
31 March 2020	COVID-19 cases in South Africa by province	Visualisation
02 April 2020	Relating COVID-19 risk indices to population density in Gauteng	Insight
06 April 2020	COVID-19 risk indices per municipality and metropolitan municipality planning region	Insight
06 April 2020	Challenges in accessing food during a lockdown	Insight
06 April 2020	Households vulnerable to income disruption	Insight
17 April 2020	Gauteng's elderly in the context of COVID-19	Visualisation
20 April 2020	Mapping food distribution points for Solidarity Fund	External output
21 April 2020	Income vulnerability in Gauteng	Visualisation
26 April	Why it's vital to protect older South Africans from coronavirus (<i>The Conversation Africa</i>)	Op-ed
30 April 2020	Vulnerability data supplied to CoJ and Tshwane	Dataset
11 May 2020	COVID-19 highlights South Africa's need for local level social data (<i>The Conversation Africa</i>)	Op-ed
29 May 2020	De-densifying Gauteng: A thought experiment	Map of the Month
29 May 2020	De-densifying Gauteng: A thought experiment	Visualisation
30 June 2020	Household characteristics in relation to COVID-19 risks in Gauteng	Visualisation
30 June 2020	Household characteristics in relation to COVID-19 risks in Gauteng	Insight
14 July 2020	Seminar 1: Collecting social data (during COVID-19)	Seminar
28 July 2020	Seminar 2: Understanding and responding to ethical challenges	Seminar
31 July	Gauteng going dark	Map of the Month
05 August	Household characteristics and COVID-19 vulnerability (<i>The Conversation Africa</i>)	Op-ed

A ward in Johannesburg Hospital in the early 1900s | Photograph in public domain

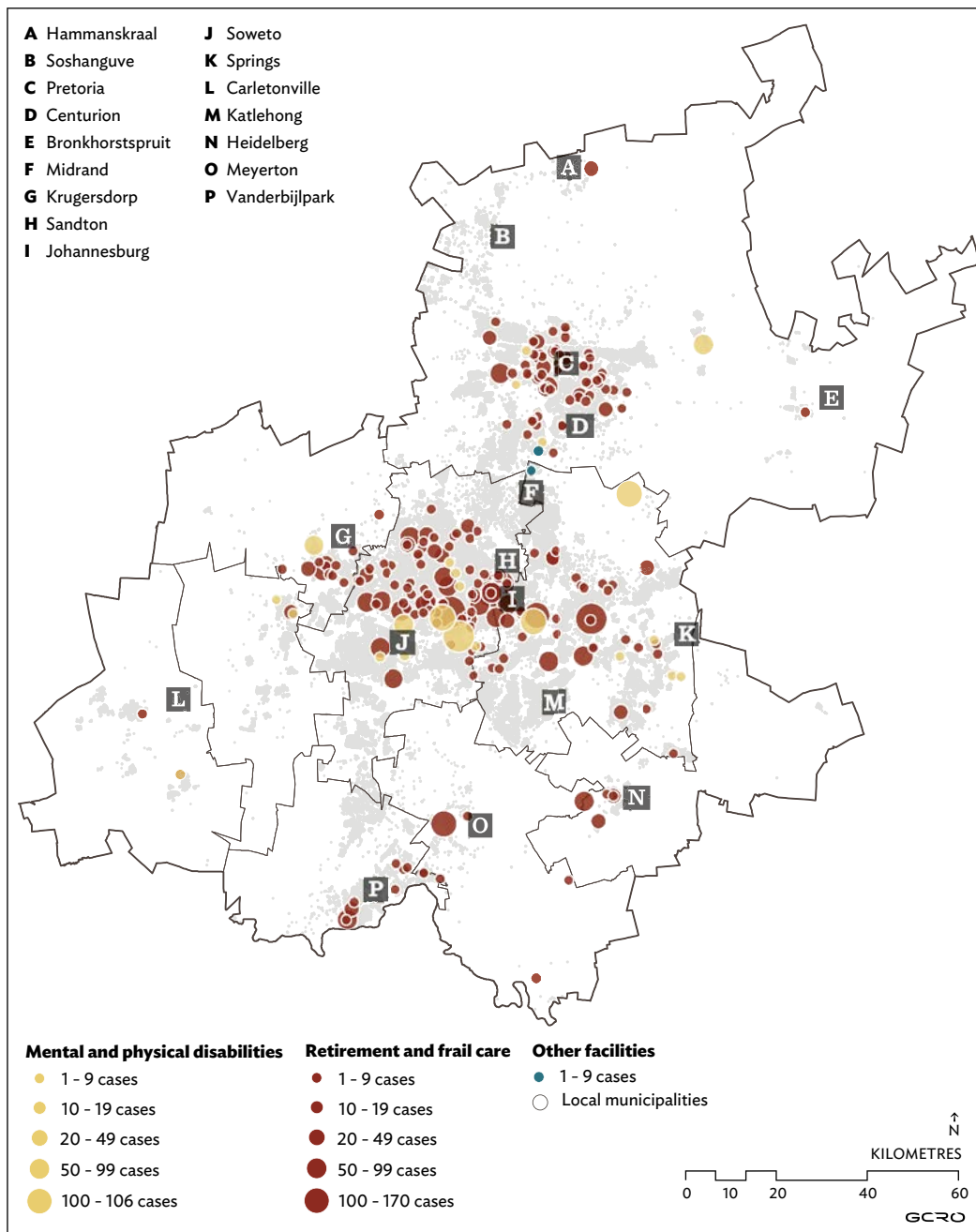


Date	Title	Output type
13 August 2020	Seminar 3: Trackers and panels	Seminar
18 August 2020	Change in exponential growth of confirmed COVID-19 cases	Visualisation
27 August 2020	Seminar 4: Community-level research	Seminar
31 August 2020	Women and COVID-19 in Gauteng	Map of the Month
31 August 2020	Women and COVID-19 in Gauteng	Insight
31 August 2020	COVID session and presentations at Southern Africa City Studies Conference	Conference
09 September 2020	IBM interactive viewer for Gauteng: Corrections to GCRO components, and launch of viewer	Visualisation
10 September 2020	Seminar 5: Technological platforms to support data collection and generation	Seminar
30 September 2020	The impact of COVID-19 on long-term care facilities	Map of the Month
08 October 2020	Seminar 6: Monitoring & evaluation and health data	Seminar
22 October 2020	Seminar 7: Large-scale surveys, and plans/experiences with returning to the field	Seminar
30 November 2020	Draft submitted: Department of Planning, Monitoring and Evaluation (DPME) COVID-19 country report – Chapter 3: Gender	Report
30 November 2020	Draft submitted: DPME COVID-19 country report – Chapter 5: Vulnerability	Report
02 December 2020	<i>Johannesburg and its epidemics: Can we learn from history?</i>	Occasional Paper
07 December 2020	Data insight on women and COVID-19	Insight
07 December 2020	Draft submitted: GPG deep dive case study on leadership and governance of COVID-19 in Gauteng	Report
11 December 2020	COVID-19 in children and adolescents in Gauteng	Vignette
21 December 2020	COVID-19 puts women at more risk than men (<i>The Conversation Africa</i>)	Op-ed
28 February 2021	Integrated Vulnerability Index to support vaccination rollout	Visualisation
20 March 2021	Geocoded dataset on COVID-19 cases in long-term care facilities in Gauteng	Dataset

Photograph by Richard Ballard



COVID-19 cases in long-term care facilities | Detail from GCRO Map of the Month, September 2020



End of term review/State of the GCRO thematic papers

In mid-to-late 2018, the GCRO was asked to assist the Gauteng Planning Division with a series of in-depth review papers and seminars reflecting on progress over the five-year term of office, key trends and dynamics shaping Gauteng, and possible future strategic directions. After the thematic papers were delivered, it was subsequently agreed they could be taken forward for publication as GCRO Occasional Papers. Two of three Occasional Papers – on environmental trends and spatial trends – have been through peer review, and this year saw work to revise them. They will be published in 2021/22. A third Occasional Paper on poverty, inequality and social mobility will be finalised in 2021/22 with data from QoL 6 (2020/21), which saw a new module of questions on social mobility.

Fifth Southern Africa City Studies Conference

From 31 August to 4 September 2020, the GCRO co-hosted the successful fifth Southern Africa City Studies Conference. The other hosts were the

South African Research Chair in Spatial Analysis and City Planning and the Centre for Urbanism and Built Environment Studies, both at the Wits School of Architecture and Planning. From the GCRO, Richard Ballard and Samkelisiwe Khanyile participated in a year-long planning process, including developing a call for papers and compiling the programme. Although the conference was initially intended to be an in-person gathering, the events of 2020 necessitated an online format. For the organisers, this was entirely uncharted territory, and required considerable systems development. The organisers opted to make this a free event, with the GCRO as one of several sponsors. The programme consisted of 46 sessions over a week, including 20 paper sessions, ten panels, eight themed sessions and eight events. The conference attracted a large number of registrations – 922 from 43 countries. There was an average of 51 delegates in each of the 46 paper sessions, panels and themed sessions. A number of sessions were convened by the GCRO, including on governing the COVID-19 pandemic, on quality of life and on just sustainability in housing development in Gauteng.

SOUTHERN AFRICA CITY STUDIES CONFERENCE

31 August - 4 September 2020



5. Landscapes in transition

This line of enquiry examines the changing landscapes of the GCR from socio-cultural, economic, ecological, political and spatial perspectives. Its major object of study is the urban, and to some extent farming areas and traditional villages. These components of the agricultural and communal land tenure system under traditional leadership are notable because the GCR extends to areas that are outside the Gauteng province within its commuting distance.

Untangling transport

The 'Untangling transport' project focuses on innovative ways in which transport and mobility in the GCR could be tracked and visualised. In 2016, the GCRO supported a project entitled 'myJoziMoves' in gathering detailed travel data of Gauteng residents through a mobile app. Work on this project during the 2020/21 financial year entailed editing the project report and visualising the data through various mapping and visualisation tools. It is anticipated these

visualisations will culminate in an interactive story map and that the project report will be uploaded onto the GCRO website in the coming financial year.

Spatial imaginaries

This project has produced several major outputs in the past, including a special issue of the *Transformation* journal. The final output of the project is a GCRO Research Report. All content – six chapters – was submitted to the GCRO's Research Oversight Committee and this was then given to two peer reviewers. The reviews were given back to the authors, who have since submitted revised chapters. The Research Report is expected to be produced and published during the course of the 2021/22 financial year.

Conceiving, producing and managing neighbourhoods

This project comparatively examined two instances of urban upgrading and neighbourhood improvement



Photograph by Clive Hassall

in Johannesburg. Using two fundamentally different case studies — the Ekhaya residential city improvement district in Hillbrow and the briefly implemented Grant Avenue Precinct Plan in Norwood — the project was primarily concerned with exploring different strategies and approaches to urban governance and upgrading adopted in vastly different subregions making up Johannesburg's urban landscape.

This project has been completed and written up as a GCRO Occasional Paper (with Aidan Mosselson) and a conference paper, which has been presented at several conferences and seminars (some were specified in the 2018/19 and 2019/20 Annual Reports). However, two more outputs – draft journal articles – have come out of this work. The focus of the 2020/21 financial year was drafting a journal article exploring the extent to which social cohesion makes itself manifest in Ekhaya – a bottom-up improvement district whose founders

see social capital and social cohesion as essential ingredients for urban regeneration – particularly how the stakeholders involved are tinkering with and operationalising the concept of social cohesion. The article was submitted to a journal for review. Another key focus of the 2021/22 period is the finalisation of a journal article on the everyday practices in Ekhaya of property caretakers – key 'transmission belts' between tenants, landlords, property management firms and the City of Johannesburg. This will be submitted to the journal *Urban Forum* in the 2021/22 financial year.

Landscapes of peripheral and displaced urbanisms

This project provides an overview of the northern GCR periphery, including a detailed analysis of the lived experiences of the people of former KwaNdebele, Rustenburg, Mabopane and Soshanguve – how they are remaking their lives, the activities which contribute to



Photographs by Alet Pretorius and Mark Lewis (bottom right)

their changing landscapes. A draft of the research is being prepared for submission to the GCRO Research Oversight Committee. This project has already supplied content for a number of publications that are either under review or in production for publication (specified in the 2019/20 Annual Report). The current research has the potential to continue providing content to more publications, including one on the 'Ecology of an egalitarian city'.

Drosscapes of the GCR

This project explores the historiography of the GCR's post-mining landscapes: their locations; their economic, demographic, social and environmental forms; their scholarly debates and policy documents; as well as issues around their restoration. The main project outputs this year were a journal paper exploring mine closures in South Africa and a final draft of the conceptual chapter of a GCRO Research Report. The project team also submitted a funding application, which has gone through to the

first round, with the Wits School of Architecture and Planning and TU Delft in the Netherlands for a proposed project looking at post-extractive landscapes and their impact on the water, energy and food nexus. We have also embarked on a project on mine closures in collaboration with colleagues at the universities of the Free State (UFS) and Fort Hare. The aforementioned journal paper on mine closures culminates from an ongoing project with colleagues from the UFS. Another of these projects examines mine downscaling and its social and economic consequences through a longitudinal analysis to establish a baseline study, which will be updated over time through subsequent research.

Micro-dynamics and macro-processes: A Maputo–Johannesburg comparative study of intra-household decision-making and state-investment in transit

This project was awarded funding from the Volvo Research and Education Foundation in December 2019



Photograph by Clive Hassall

and was intended to be completed within one year. The aim of the project is to contrast household decision-making around transport with how transport infrastructure is being planned and implemented in two city-regions: the Maputo city-region and the GCR. After a successful workshop in March 2020 in Maputo, fieldwork was severely delayed in both contexts because of the pandemic but was resumed in August 2020. There are three case study areas in each city-region, and a total of approximately 60 participants across all these locations. A mobile phone application was used to track the mobility patterns of participants, following which each participant was interviewed. In addition, key informants in the transport sector were interviewed, including local and provincial government officials. The report and other outputs will be completed in the 2021/22 financial year.

Biometric evictions

In an attempt to control access and use of their buildings, many property owners have invested

in security personnel and infrastructure, from guards to turnstiles operated through fingerprint scanners. These measures occupy an ambivalent status for tenants of such buildings. On one hand, many residents appreciate functioning utilities and protection from crime, overcrowding and antisocial behaviour; on the other, they can be locked out of their own accommodation as a result of late rent payment, or other circumstances. Whilst the mass eviction of residents in 'hijacked buildings' has received some attention, the unit-by-unit eviction and the plight of residents unable to pay their rent has received less attention. This pilot project, funded by the Security at the Margins network, was an exploratory study on the experiences of students and former students who have been locked out (for short or long periods) from their accommodation. It also seeks input from landlords, property managers, private security companies and other stakeholders. The project was concluded during the 2020/21 financial year with a report submitted to the funders.



Westbury focus group, 'Micro-dynamics and macro-processes' project | Photograph by Alexandra Parker

6. New regional economies

The GCR has made economic progress that has impacted significantly on key challenges such as poverty, unemployment and inequality in the post-apartheid era – progress has been achieved in a context of structural conditions inherited from past development paths. This thematic area contributes to building a regional economy that is competitive, inclusive and sustainable.

Understanding Gauteng's urban space economy

This project aims to investigate how the urban space economy of Gauteng works, and interrogate how the government has understood and taken up the challenge of intervening in this terrain over the last two decades. Work on this project has been delayed but will be resumed in the next financial year with a GCRO Occasional Paper that assembles data collected from the firm-level survey project (reported on above). The GCRO has also been approached by a previous consultant to the City Support Programme, with a view to publishing draft work she has developed for her PhD focusing on the use of anonymised tax data to map the geographic distribution of economic activity in Gauteng. A GCRO Brown Bag Seminar on the

work has been planned, and the idea of publishing the research will be further discussed in 2021/22.

Township economies in the GCR

This project examines the possible impact of the Gauteng Provincial Government's Transformation, Modernisation and Revitalisation agenda on the township economy. It builds towards multidimensional research on township economies including spatial fabric constraints and ways of intervening in townships to revitalise the economy through, for example, infrastructure and services, regulation and entrepreneurship. As part of the project, a draft GCRO Provocation titled *Interrogating the township economies concept in the Gauteng context* was presented at a GCRO internal review workshop in July 2020. A reworked draft of the Provocation was presented online at the Southern Africa City Studies Conference on 31 August 2020. Further revisions of the Provocation are under way with possible publication in the 2020/21 financial year. The project lead, GCRO Researcher Mamokete Matjomane, was cited a number of times in the media

Photograph by Richard Ballard



between October and November 2020 for her work on township economies, particularly her comments on the Gauteng Township Economic Development Bill.

Street trader organisations in policy processes

This project investigates the role and influence of street trader organisations on policy processes and practice through a comparative study between Johannesburg, Tshwane, Ekurhuleni and Ahmedabad in India. This project also forms the basis of lead researcher Mamokete Matjomane's PhD, under the supervision of Prof. Claire Bénit-Gbaffou (Sciences Po) and Dr Richard Ballard (GCRO). Mamokete handed in a full draft of her thesis in October 2020 for further input from supervisors before handing it in for examination in June 2021.

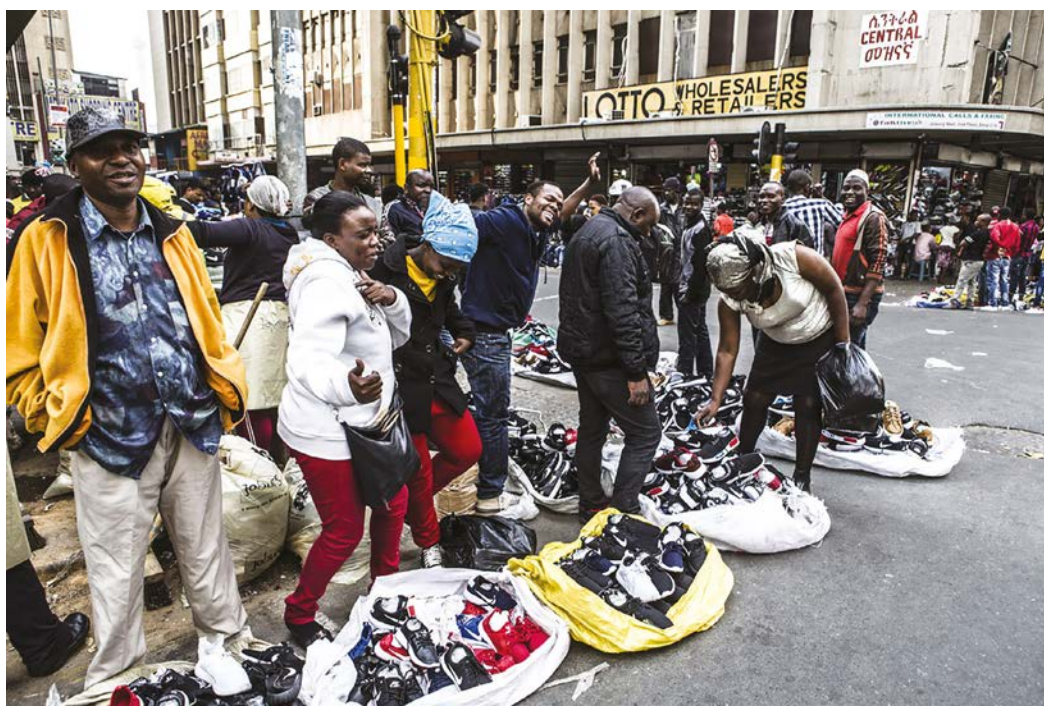
A number of academic papers have been drafted for publication in various platforms during the course of 2020. A manuscript for a paper titled 'Losing battles and winning the war? Traders' influence in policy processes in India' was submitted to a journal in 2020. The journal was not able to secure reviewers and consequently the paper will be submitted elsewhere. A book chapter titled 'Acting like the state? Leaders' participation in street trade management in the GCR' was submitted for internal review to the Practices of the State in Urban Governance publications committee in July 2020. The paper was also presented

at the Southern Africa City Studies online conference on 4 September 2020. A book chapter titled 'From the margins of the state to quasi-state bureaucrats: The shifting nature of street trader leaders' agency in Tshwane, South Africa' was submitted for internal review to the Question of Agency in African Studies review committee on 30 November 2020. The paper was submitted for external review in January 2021.

Everyday economies of megaprojects

In 2019, Nehan Akyelken (Oxford University) invited Richard Ballard to partner in an application to the John Fell Fund. The application was successful, and the grant provides funding to test financial diary research instruments with megaproject workers in Turkey and South Africa. During the course of 2020, this project became a telephonic survey following the restrictions on fieldwork. During the 2020/21 financial year, the team recruited a researcher (Matome Sekwatla); developed the instruments; signed a contract between Oxford University and the GCRO; transferred fieldwork funds to the GCRO; applied for ethics approval through Oxford University; recruited eight participants in Diepsloot and conducted the first interview with each participant. From April 2021, each participant will do a weekly telephonic reporting of their income and expenditure for three months.

Photograph by Mark Lewis



7. Sustainability transitions in the GCR

Recent droughts, electricity load-shedding and natural disasters have brought into acute focus the relevance of the global concerns around environmental sustainability and climate change for the GCR. Furthermore, the COVID-19 pandemic has placed renewed emphasis on the importance of building resilient cities and understanding multidimensional vulnerability. The GCRO's 'Sustainability transitions' theme has, over more than a decade, built arguments around ways in which Gauteng's developmental trajectory could be shifted towards a more sustainable and equitable future. The projects within this theme build greater understanding of the interconnections between ecological, social and economic systems in Gauteng with the aim of furthering sustainable transitions.

Metabolic flows and infrastructure transitions

Work continued in this financial year on a draft GCRO Occasional Paper on the governance of resource flows. The research has evolved to focus mainly on new technologies for infrastructure planning in the City of Johannesburg. Together with a commissioned external specialist from Pegasys Consulting, Alexis Schöffler-Thomson, the GCRO presented ideas emerging from the research to a session at the Southern Africa City Studies Conference in August 2020. Further work was done, in particular on the literature review, in the final quarter of the financial year.

Separate from the Occasional Paper, Christina Culwick Fatti began work with a range of colleagues on an academic paper on circular economies in

African cities. The paper is being coordinated by Paul Currie at ICLEI – Local Governments for Sustainability, an NGO that promotes sustainability (originally called the International Council for Local Environmental Initiatives).

The GCRO continued to build relations with other actors either researching or building change agendas around the need to reduce metabolic flows in cities. For example, in October 2020, Graeme Götz contributed as a panel member to a learning event in the City of Johannesburg convened by the Metabolism of Cities network. In the fourth quarter (January to March 2021), the GCRO agreed to support the Metabolism of Cities network with the development of two videos for a mass open online course, which will be undertaken in the 2021/22 financial year.

Green assets and infrastructure

For over a decade, the 'Green assets and infrastructure' project has been building the case for incorporating green infrastructure – the set of natural and socially produced ecological systems – into Gauteng's infrastructure network. During this financial year, a GCRO Occasional Paper, written by Master's students from University College of London's Department of Science, Technology, Engineering and Public Policy, was published after being adapted by Hannah Benn. This paper, entitled *Urban agriculture in the Gauteng City-Region's green infrastructure network*, builds the argument that food gardens are a multifunctional element of the green infrastructure network in the GCR.

Photograph by Clive Hassall



Towards the end of the financial year, the third report under this project, *Towards applying a green infrastructure approach in the Gauteng City-Region*, was shortlisted for the 'Research' category in the 2019/20 South African Institute of Architects awards for sustainable architecture. The winners will be announced in the 2021/22 financial year.

Water security in the GCR

The main goal of this project is to unravel the water security challenges in the GCR's major urban centres. This financial year saw the GCRO submit a joint funding proposal to the National Science Foundation in the United States with Brown University and the Global Change Institute at Wits. This work builds on existing institutional collaboration. Gillian Maree presented the GCRO's research on water security to various fora. The Water Security Perspective has featured in a number of media articles, including in a special feature in the March/April 2021 issue of *Water and Sanitation Africa*.

Justice and sustainability transitions

The aim of the 'Justice and sustainability transitions' project is to explore the intersection between social justice and environmental sustainability within Gauteng. This project draws on a range of case studies in which tensions exist between social justice and environmental sustainability, with the aim of furthering both the theorisation and practical challenge of building just and sustainable cities. During this financial year, significant progress was made towards a major report, provisionally entitled 'In pursuit of just sustainability', which features case studies on the energy, housing and transport sectors.

Authors revised their chapters based on peer-review comments and the full report was edited by the project lead, Christina Culwick Fatti.

Towards the end of the third quarter (October to December 2020), Christina was awarded an NRF grant for a project entitled 'Off-grid cities: Elite infrastructural secession and social justice', which will run from 2021 to 2023. The project includes academics from Wits, the University of the Western Cape (UWC), Cambridge University and the University of Edinburgh. The project kicked off in the final quarter of the year with various project initiation and management meetings, and a five-day workshop in which the project's conceptual framework, methodologies and logistics were discussed. Three UWC students were appointed to the project and plans were made to appoint two postdocs and a further three Wits students. The project is anticipated to start in earnest in the 2021/22 financial year.

Christina Culwick Fatti's PhD research, which falls under this project, saw progress on a number of fronts. Early in the financial year, a paper, entitled 'Building just and sustainable cities through government housing programmes' was published in the *Environment and Urbanisation* journal. In addition to this, she made progress on data analysis and writing through the year. Christina submitted an abstract which was accepted to a special issue of the journal *Current Opinion in Environmental Sustainability* on 'The role of infrastructure in societal transformations towards sustainability'. The paper, which is due in mid-2021, explores the conceptual and practical considerations within just sustainability through government-led housing. These journal articles will each comprise chapters in Christina's thesis.

Photograph by Clive Hassall





Photograph by James Oatway

An aerial photograph of a densely populated urban area, likely in a developing country. The image shows a complex network of buildings, narrow streets, and a high density of satellite dishes mounted on rooftops. A prominent feature is a large, rectangular structure in the center, possibly a public building or a large residence, with a flat roof and a blue-painted section. To the left of this structure, a long, narrow building is covered with numerous colorful laundry items hanging on lines. The overall scene suggests a high level of urbanization and infrastructure development, particularly in terms of telecommunications.

GCRO outputs

GCRO outputs

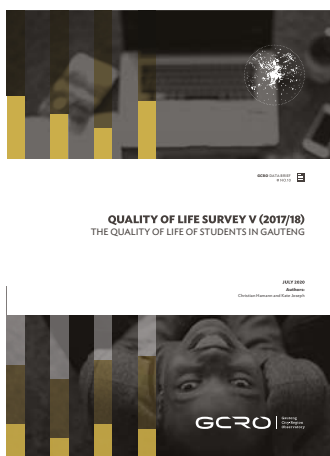
GCRO outputs and events

- Coetzee, S., Cooper, A., & Katumba, S. (2020). *Strengthening governance in the GCR through a spatial data infrastructure – the case of address data*. GCRO Provocation 5. May 2020.
- Hamann, C., & Joseph, K. (2020). *Quality of Life Survey V (2017/18): The quality of life of students in Gauteng*. GCRO Data Brief 10. July 2020.
- Mabin, A. (2020). *Governing the GCR series: The greater Paris debate – reflections for the Gauteng City-Region*. GCRO Provocation 6. November 2020.
- Harber, J., & Bryer, M. (2020). *Governing the GCR series: Unrealistic expectations, unrealised – bus rapid transit in Johannesburg*. GCRO Provocation 7. November 2020.
- Harrison, P. (2020). *Johannesburg and its epidemics: Can we learn from history?* GCRO Occasional Paper 16. November 2020.
- Mushongera, D., Kwenda, P., & Ntuli, M. (2020). *An analysis of well-being in Gauteng province using the capability approach*. GCRO Occasional Paper 17. December 2020.



GCRO data outputs

1st quarter	2nd quarter	3rd quarter	4th quarter
Map of the Month			
<p>April 2020: The most densely populated areas of Gauteng (the GCRO's 100th Map of the Month)</p> <p>May 2020: De-densifying Gauteng: A thought experiment</p>	<p>July 2020: Gauteng going dark</p> <p>August 2020: Women and COVID-19 in Gauteng</p> <p>September 2020: Impact of COVID-19 on long-term care facilities in Gauteng</p>		<p>February 2021: What are participants telling us as we collect data for the next Quality of Life survey?</p>
Vignettes and visualisations			
<p>March 2020: COVID-19 cases in South Africa by province</p> <p>April 2020: Gauteng's elderly in the context of COVID-19</p> <p>April 2020: Income vulnerability in Gauteng</p> <p>June 2020: Household characteristics in relation to COVID-19 risks in Gauteng</p>	<p>August 2020: Change in exponential growth of confirmed COVID-19 cases in South Africa and Gauteng</p>	<p>December 2020: Vignette 38 – COVID-19 in children and adolescents in Gauteng</p>	



Other key outputs

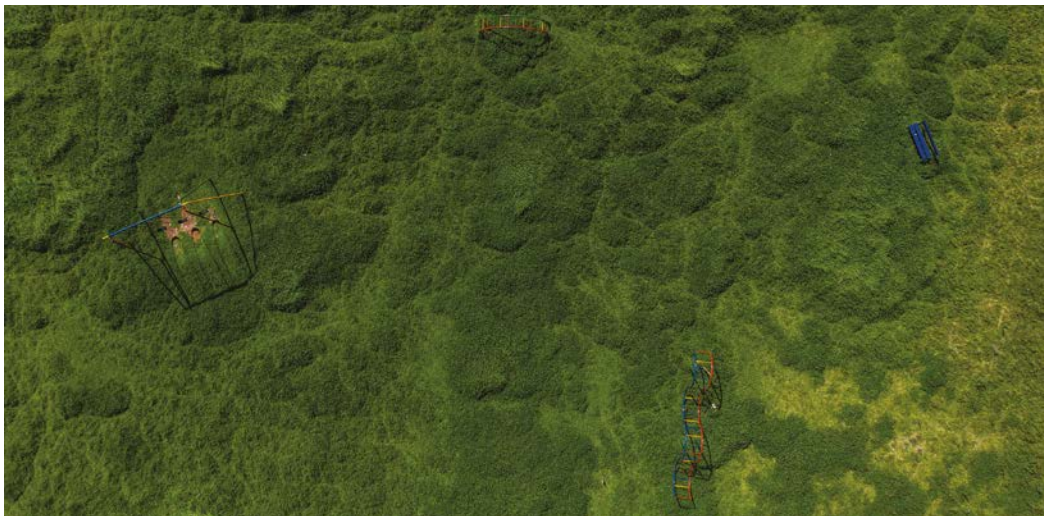
A number of insights, expanding on other outputs such as Maps of the Month, were published on COVID-19-related issues during this financial year:

- Relating COVID-19 risk indices to population density in Gauteng (2 April 2020)
- COVID-19 risk indices per municipality and metropolitan municipality planning region (6 April 2020)
- Challenges in accessing food during a lockdown (6 April 2020)
- Households vulnerable to income disruption (6 April 2020)
- Household characteristics in relation to COVID-19 risks in Gauteng (30 June 2020)
- Ballard, R., Cooper-Knock, S.J., Khanyile, S., Sondzaba, S., & Wafer, A. (2020). Locked out: Access to student accommodation in Braamfontein. In E. Oliveira, S.J. Cooper-Knock & J. Veary (Eds.), *SeaM: Security at the margins* (pp. 40–42). Johannesburg: African Centre for Migration Studies, University of the Witwatersrand. https://issuu.com/move.methods.visual.explore/docs/seam-_security_at_the_margins_9dbd6e979a67cd (3 July 2020).
- A data insight 'Gender, age and COVID-19 in the GCR' was completed and put up on the website from 31 August.

Conferences, seminars and symposia organised by the GCRO

- The GCRO continued to co-organise a seminar series with the National Research Foundation Chair of Spatial Planning and Modelling, the Wits City Institute and CUBES (the Centre for Urban and Built Environment Studies). The seminar series is called Faces of the City. The GCRO is responsible for coordinating the seminars in the third quarter of the calendar year.
- Together with Social Surveys Africa and the Human Sciences Research Council, the GCRO hosted a series of webinars on the collection of social data during the COVID-19 pandemic.
- The GCRO was co-organiser of the highly successful South Africa City Studies Conference, held online from 31 August to 4 September 2020 (as reported above).
- The GCRO worked with the Gautrain Management Agency to organise a series of webinars on public transport with the theme 'The recovery of the public transport sector post the COVID-19 pandemic'. Four seminars were successfully held during October and November 2020.

Photograph by James Oatway



Published works

- Ballard, R., & Hamann, C. (2021). Income inequality and socio-economic segregation in the City of Johannesburg. In M. van Ham, T. Tammaru, R. Ubarevičienė & H. Janssen (Eds.), *Urban socio-economic segregation and income inequality* (pp. 91–109). Cham, Switzerland: Springer. https://link.springer.com/chapter/10.1007/978-3-030-64569-4_5
- Ballard, R., Hamann, C., & Mkhize, T. (2021). Johannesburg: Repetitions and disruptions of spatial patterns. In A. Lemon, R. Donaldson & G. Visser (Eds.), *South African urban change three decades after apartheid: Homes still apart?* (pp. 35–55). Cham, Switzerland: Springer. <https://www.springer.com/gp/book/9783030730727>
- Crous, C., Owen, J.R., Marais, L., Khanyile, S., & Kemp, D. (2021). Public disclosure of mine closures by listed South African mining companies. *Corporate Social Responsibility and Environmental Management*, 28(3), 1032–1042. <https://doi.org/10.1002/csr.2103>
- Hamann, C., & Horn, A.C. (2021). Socio-economic inequality in the City of Tshwane, South Africa: A multivariable spatial analysis at the neighbourhood level. *GeoJournal*, 1–18. <https://10.1007/s10708-020-10346-6>
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Presentations

- Graeme Götz, Gillian Maree, Christina Culwick Fatti (March 2021). 'Using data to build a case for green infrastructure in the Gauteng City-Region'. Data Systems for Natural Resource Monitoring: Learning Event, Lesotho Integrated Catchment Management, ReNoka Data Reference Group, 31 March 2021.
- Richard Ballard (March 2021). *Densifying the city* book launch. Wits, 23 March 2021.
- Richard Ballard (March 2021). 'Development theory'. A guest lecture to third year Planning students, Wits, 16 March 2021.
- Graeme Götz (March 2021). 'Just sustainability: GCRO starting points and relevant theory'. Planning Workshop for the National Research Foundation Off-Grid Cities Project, 15 March 2021.
- Christina Culwick Fatti (March 2021). 'Off-grid cities: Contextualising just sustainability'. Planning Workshop for the National Research Foundation Off-Grid Cities Project, 15 March 2021.
- Christina Culwick Fatti (February 2021). 'How do we improve the availability of evidence of the impact of nature-based solutions on health?' Seed Session panellist at The Nature of Cities Festival Virtual Conference, 23 February 2021.
- Christina Culwick Fatti (February 2021). 'Gautrain data analysis'. Gautrain Management Agency and GCRO Data Analysis: Progress Update, online meeting, 22 February 2021.
- Alexandra Parker (February 2021). 'Overview of the GCRO and its data sources'. University of Johannesburg Department of Architecture 3rd year students, online meeting, 22 February 2021.
- Gillian Maree, Graeme Götz, Rob Moore, Alexandra Parker, Christina Culwick Fatti, Julia de Kadt, Christian Hamann and Sthembiso Mkhize (February 2021). 'Responding to COVID-19 in the GCR and status of QoL VI'. Gauteng Provincial Government Lekgotla, 16 February 2021.
- Rob Moore and Graeme Götz (December 2020). 'Overview of the Gauteng City-Region Observatory (GCRO)'. Gauteng Provincial Government and Regione Emilia Romagna, Italy, Bilateral on Big Data and Innovation, 11 December 2020.
- Christina Culwick Fatti and Samkelisiwe Khanyile (December 2020). 'Towards applying a green infrastructure approach in the Gauteng City Region'. AfriSam/South African Institute of Architect Awards 2019/20 Adjudication, 11 December 2020.
- Samkelisiwe Khanyile and Gillian Maree (November 2020). 'The value of GIS for an urban observatory: The case of the GCRO'. Department of Environment, Forestry and Fisheries GIS Day, 18 November 2020.
- Christina Culwick Fatti (November 2020). 'The recovery of the public transport sector post the COVID-19 pandemic: Climate change and sustainability – the role of public transport in realising a greener future'. Panellist at the Gautrain Public Transport Knowledge Seminar 2020, online webinar, 11 November 2020.
- Samkelisiwe Khanyile, Sandiswa Mapukata, Richard Ballard and S.J. Cooper-Knock (October 2020). 'Biometric evictions: Lockouts amongst students and other rental tenants'. GCRO Brown Bag Seminar, 28 October 2020.
- Rob Moore and Graeme Götz (October 2020). 'Achieving common purpose: Adaptive governance in the pandemic'. Gauteng Provincial Government Internal Reflection Workshop on the COVID-19 Response, 23 October 2020.
- Rob Moore and Graeme Götz (October 2020). 'Achieving common purpose: Adaptive governance in the pandemic'. Governing the Pandemic in Large Cities: From BRICS and Beyond Symposium, 22 October 2020.
- Graeme Götz and Gillian Maree (October 2020). 'Data governance and government through data in responding to COVID-19: Insights from the Gauteng City-Region'. Governing the Pandemic in Large Cities: From BRICS and Beyond Symposium, 22 October 2020.
- Graeme Götz (October 2020). 'Human settlement dynamics in Gauteng'. Gauteng Partnership Fund Board Strategic Breakaway, 20 October 2020.

- Christina Culwick Fatti (October 2020). 'Green infrastructure and stormwater management'. Water Technologies, Department of Water and Sanitation Stormwater Management Technical Team Meeting, 16 October 2020.
- Margot Rubin and Alexandra Parker (October 2020). 'The mobility of children and their carers in the Gauteng City-Region'. Children as Urban Citizens, online seminar, 12 October 2020.
- Rob Moore and Graeme Götz (October 2020). 'Achieving common purpose: Adaptive governance in the pandemic'. Gauteng Provincial Government, Case Study on COVID-19 Response: Researchers' Symposium, 8 October 2020.
- Mamokete Matjomane (October 2020). 'Overview of the GCRO'. City of Johannesburg Roundtable, online meeting, 1 October 2020.
- Graeme Götz and Gillian Maree (September 2020). 'Responding to COVID-19 in the GCR: Data insights'. Department of Social Development, 28 September 2020.
- Christina Culwick Fatti (September 2020). 'Green infrastructure'. Institute for Landscape Architecture in South Africa webinar, 16 September 2020.
- Gillian Maree (September 2020). 'Responding to COVID-19 in the GCR: Data insights – what we do and don't know'. Presentation to the GCR Webinar on the Role of Data During and Post COVID-19, 9 September 2020.
- Gillian Maree and Graeme Götz (on behalf of the GCRO COVID-19 team) (September 2019). 'Responding to COVID-19 in the GCR: Data insights – what we do and don't know'. Premier's Advisory Committee on COVID-19, 7 September 2020.
- Mamokete Matjomane (September 2020). 'Acting like the state: Leaders' participation in everyday management of street trade in Gauteng municipalities'. Southern Africa City Studies Conference, online, 4 September 2020.
- Margot Rubin and Alexandra Parker (September 2020). 'Intersections in gender roles, spatial location and transit provision', Southern Africa City Studies Conference, online, 4 September 2020.
- Gillian Maree, Christina Culwick, Julia de Kadt, Graeme Götz, Christian Hamann, Samy Katumba, Samkelisiwe Khanyile, Sandiswa Mapukata, Rob Moore, Darlington Mushongera, Yashena Naidoo, Alexandra Parker and Melinda Swift (September 2020). 'Using Quality of Life data to respond to the COVID pandemic in Gauteng'. Southern Africa City Studies Conference, online, 3 September 2020.
- Alexis Schäffler-Thomson and Graeme Götz (September 2020). 'Governing resource flows in the Gauteng City-Region'. Southern Africa City Studies Conference, online, 3 September 2020.
- Sthembiso Mkhize, Julia de Kadt and Alexandra Parker (September 2020). 'Understanding and enhancing the use of Quality of Life survey data in Gauteng, South Africa'. Southern Africa City Studies Conference, online, 3 September 2020.

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- Julia de Kadt and Graeme Götz (September 2020). 'The Gauteng City-Region Observatory's Quality of Life survey: Contextual factors impacting collection of household survey data'. Southern Africa City Studies Conference, online, 3 September 2020.
- Alexandra Parker (September 2020). 'Spouse in the house'. Southern Africa City Studies Conference, online, 3 September 2020.
- Christian Hamann (September 2020). 'Quality of life differences within and between townships in Gauteng, South Africa'. Southern Africa City Studies Conference, online, 3 September 2020.
- Gillian Maree (August 2020). 'Responding to the COVID-19 pandemic in the GCR'. Southern Africa City Studies Conference, Panel on COVID-19: Re-shaping Gauteng and its Governance, online, 31 August 2020.
- Mamokete Matjomane (August 2020). 'Interrogating the concept of "township economies" in the Gauteng context'. Southern Africa City Studies Conference, online, 31 August 2020.
- Christina Culwick Fatti (August 2020). 'Debates on the relationship between COVID-19 spread and density'. Southern Africa City Studies Conference, online, 31 August 2020.
- Rob Moore (August 2020). 'Adaptive governance in the pandemic: Intentions and effects'. Southern Africa City Studies Conference, online, 31 August 2020.
- Gillian Maree, Graeme Götz and Alexandra Parker (on behalf of the GCRO COVID-19 team) (August 2020). 'Responding to COVID-19 in the GCR: Data insights'. Government Technical Advisory Centre Strategic Conversations Seminar, 20 August 2020.
- Rob Moore, Gillian Maree, Richard Ballard and Jesse Harber (August 2020). 'The spatial impact of COVID-19 and the public transport response'. Presentation to the Gautrain Management Agency Strategic Board Lekgotla, 19 August 2020.
- Richard Ballard (August 2020). 'Spatial trends'. Gautrain Management Agency, 19 August 2020.
- Thembani Mkhize (August 2020). 'Conceptualising and contextualising city-regions: Insights from the Gauteng City-Region'. Demarcation Board Research and Knowledge Management Committee Meeting, 18 August 2020.
- Gillian Maree (on behalf of the GCRO COVID-19 team) (August 2019). 'Responding to COVID-19 in the GCR: Data insights'. Gauteng Provincial Command Centre Media Briefing, 13 August 2020.
- Gillian Maree and Graeme Götz (on behalf of the GCRO COVID-19 team) (August 2019). 'Responding to COVID-19 in the GCR: Data insights – what we do and don't know'. Gauteng Provincial Government Special Executive Council, 12 August 2020.
- Graeme Götz and Alexandra Parker (on behalf of the GCRO COVID-19 team) (August 2019). 'Responding to COVID-19 in the GCR: Data insights'. Gauteng COVID-19 Command Centre (War Room), 6 August 2020.
- Christian Hamann and Rob Moore (August 2020). 'Overview of the GCRO and urban dynamics of the GCR'. City of Tshwane Strategic Planning Session, online presentation, 4 August 2020.
- Rob Moore, Julia de Kadt and Alexandra Parker (August 2020). 'Responding to the COVID-19 pandemic in Gauteng'. Urban Observatories and COVID-19 Webinars, 3 and 6 August 2020.
- Alexandra Parker (August 2020). 'Spouse in the house: Household structures and roles, gender and quality of life in the Gauteng City-Region, South Africa'. Wits Institute for Social and Economic Research WISH Seminar, 3 August 2020.
- Gillian Maree, Graeme Götz and Alexandra Parker (July 2020). 'Responding to COVID-19 in the GCR: Data insights'. COVID-19 Modelling Webinar Series, 29 July 2020.
- Christian Hamann (July 2020). 'The GCRO Quality of Life Survey'. GCRO and City of Johannesburg Quality of Life Roundtable, online presentation, 22 July 2020.
- Graeme Götz and Gillian Maree (on behalf of the GCRO COVID-19 team) (July 2019). 'COVID-19: Insights from infection data in Gauteng'. Data Analysis and Modelling Workshop, convened by the Premier of Gauteng, 22 July 2020.
- Graeme Götz and Gillian Maree (on behalf of the GCRO COVID-19 team) (July 2019). 'COVID-19: Insights from infection data in

Gauteng', Gauteng COVID-19 Command Centre (War Room), 9 July 2020. Subsequently also presented separately to the following COVID-19 Command Centre workstreams and other meetings: Enforcement Workstream (13 July); Governance Continuity Workstream (14 July); Social Security Workstream (14 July); Local Government Workstream (14 July); Economic Development Workstream (16 July).

- Richard Ballard (July 2020). 'The meanings and effects of gated community borders in Johannesburg'. Borders and the Production of Ill-Being: A Global Conversation, Eberhard Karls Universität, Tübingen, Germany, 9 July 2020.
- Gillian Maree (July 2020). 'The spatial distribution of risks and vulnerabilities: The GCRO COVID-19 Gauteng map'. Presentation to the University of KwaZulu-Natal Centre for Civil Society Webinar, 1 July 2020.
- Mamokete Matjomane (July 2020). 'Interrogating the township economies concept in the Gauteng context'. GCRO Internal Review Workshop, online, 1 July 2020.
- Darlington Mushongera (2020). 'Analysis of well-being in Gauteng: A capabilities approach'. Human Development and Capability Association Conference, Auckland, New Zealand, online, 30 June 2020.
- Ngaka Mosiane (June 2020). 'The ecology of an egalitarian city'. GCRO Brown Bag Seminar, 24 June 2020.
- Gillian Maree (June 2020). 'Responding to the COVID-19 pandemic: GCRO research outputs'. Gauteng Together, 9 June 2020.
- Richard Ballard (June 2020). 'Spatial trends in Gauteng'. Gauteng Partnership Fund Board Induction Workshop, 4 June 2020.
- Richard Ballard, Graeme Götz, Samkelisiwe Khanyile and Alexandra Parker (April 2020). 'GCRO's Map of the Month series turns 100: Reflections on mapping Gauteng'. Faces of the City Seminar, online, 21 April 2020.
- Christian Hamann (May 2020). 'Overview of the GCRO and urban dynamics of the GCR'. University of Pretoria Leadership in Urban Transformation Course, pre-recorded online presentation, 19 April 2021.



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Media publications and appearances

Op-eds written by GCRO staff

- Alexandra Parker, Gillian Maree, Graeme Götz and Samkelisiwe Khanyile published an op-ed titled 'How COVID-19 puts women at more risk than men in Gauteng, South Africa' in *The Conversation Africa*, 21 December 2020. The piece attracted over 100 000 reads and significant media interest.
- Alexandra Parker and Julia de Kadt published an op-ed titled 'Close look at some South African households gives insights into COVID-19 vulnerability' in *The Conversation Africa*, 5 August 2020.
- Ngaka Mosiane, Mamokete Matjomane and Avhatakali Sithagu introduced to a wider audience the project 'Landscapes of peripheral and displaced urbanisms'. A short entry – 'Categorising South Africa's resilient urbanisms' – was published in the *URBANET* blog (of the German Society for International Cooperation, GIZ), 11 June 2020.
- Julia de Kadt published an op-ed on data during the COVID-19 pandemic titled 'COVID-19 highlights South Africa's need for local-level social data' in *The Conversation Africa*, 11 May 2020.
- Alexandra Parker and Julia de Kadt published an op-ed on Gauteng's elderly titled 'Our research shows why it's vital to protect older South Africans from coronavirus' in *The Conversation Africa*, 26 April 2020.

Media and social media about the GCRO's work

The GCRO has a team of five staff members who work to promote the GCRO on four social media platforms: Twitter, Facebook, Instagram and LinkedIn. Several key outputs have been picked up and shared on our social media platforms generating additional traffic and interest in our website.

- The GCRO's Quality of Life Survey project is cited in an article 'Fact check: MP claims 70% of informal economy in "hands of non-citizens"' by Keegan Leech, *Eye Witness News*, 18 March 2021.
- The GCRO's Quality of Life Survey project is cited in an article 'Fedusa calls for gender equity policy change in SA rather than celebration on Women's Day' by Alex Mitchley, *News24*, 8 March 2021.

- Gauteng Premier, David Makhura, mentioned the role of the GCRO during the COVID-19 pandemic in his Gauteng State of the Province Address, reproduced on *Politics Web*, 23 February 2021.
- The GCRO's Quality of Life Survey project was shortlisted for the 5th Guangzhou Award, detailed in an *Acrofan* article titled 'The 5th Guangzhou Award shortlist released in Guangzhou', 4 February 2021.
- The GCRO's research on the elderly and COVID-19 is cited in 'Nearly 85 000 older South Africans have probably died from COVID-19' by James Stent, *Daily Maverick*, 25 January 2021.
- The GCRO's involvement in the Gauteng COVID-19 dashboard with IBM is mentioned in 'Developing COVID-19 hotspot areas in east' by Noxolo Sibiya, *Pretoria Rekord*, 13 January 2021.
- Alexandra Parker, Gillian Maree, Graeme Götz and Samkelisiwe Khanyile published an op-ed 'How COVID-19 puts women at more risk than men in Gauteng, South Africa' in *The Conversation Africa*, 21 December 2020, which received over 100 000 reads. A number of media interviews followed: Alexandra Parker was interviewed on Newzroom Afrika on 25 December 2020, ENCA and SAFM on 5 January 2021, and on 702 and CapeTalk Radio on 21 January 2021. Graeme Götz was interviewed on PowerFM on 15 January 2021.
- GCRO Occasional Paper *Johannesburg and its epidemics: Can we learn from history?* was featured in 'Lessons from pandemics of the past', *Daily Maverick*, 10 December 2020.
- The GCRO Quality of Life Survey data is cited in 'It's time to hold the state to account for xenophobic laws', *Daily Maverick*, 4 December 2020.
- Mamokete Matjomane was cited in '"Invisible" township economies yield diamonds under lockdown pressure' by Melani Nathan, *BizNews*, 3 December 2020.
- Mamokete Matjomane was cited in 'Lockdowns freed township entrepreneurs to thrive' by Pauline Bax, *City Press*, 29 November 2020.
- Mamokete Matjomane was cited in a *Bloomberg News* article on COVID-19's impact on township economies, 27 November 2020.

- Mamokete Matjomane was briefly interviewed on Open News (Channel 120 on Open View) to comment on the Gauteng Township Economy Development Bill banning foreign nationals from opening businesses in townships, 6 October 2020.
- Mamokete Matjomane was cited on *News24* on the restriction of foreign nationals by the Gauteng Township Economy Development Bill to participate in designated sectors in township spaces, 5 October 2020.
- Christina Culwick Fatti was interviewed on Newzroom Afrika about mega housing developments, 5 October 2020.
- GCRO Provocation *Strengthening governance in the GCR through SDI: The case of address data* was featured in 'Single address dataset needed in COVID-19 fight', *IT-ONLINE*, 10 July 2020.
- Alexandra Parker was interviewed on eNCA in connection with the March 2020 Map of the Month, *Mapping vulnerability to COVID-19 in Gauteng*, 3 July 2020.
- The GCRO's collaborative work with the Gauteng Provincial Government, IBM and Wits on a live interactive COVID-19 dashboard is featured in an interview 'How IBM and Wits are enabling data-driven decisions to flatten the COVID-19 curve' by Jenna Delport, *IT News Africa*, 2 July 2020.
- The GCRO's research on households vulnerable to income disruption and income vulnerability in Gauteng in relation to COVID-19 was featured in 'As COVID-19 explodes in Gauteng, Dlamini Zuma must make Lockdown 2.0 decision' by Ferial Haffajee, *Daily Maverick*, 2 July 2020.
- The GCRO's visualisation on Gauteng's elderly was mentioned in 'Now we are all Swedes: COVID-19, eugenics and sacrificing the "older older"' by Steven Robins, *Daily Maverick*, 10 June 2020, and in 'Coronavirus SA: Household members a massive risk to each other' by Bibi-Aisha Wadvalla, *Health-e News*, 24 June 2020.
- The GCRO's research on green infrastructure was featured in 'AfriSam-SAIA Sustainable Design Awards recognise sustainability in all its forms', *Engineering News*, 11 June 2020.
- Christina Culwick Fatti was interviewed about the May 2020 edition of the Map of the Month, *De-densifying Gauteng*, on Kaya FM, 29 May 2020, and on Voice of Wits, 2 June 2020.
- The GCRO's analysis on income vulnerability in relation to COVID-19 was mentioned in 'Olivenhoutbosch's most vulnerable hit hard by Covid-19 lockdown' by Belinda Pheto, *Sunday Times*, 10 May 2020.
- The analysis on the elderly in Gauteng was featured in '"They can't survive if I die": Stalwart gogos fear for their families' by Graeme Hosken, *Sunday Times*, 10 May 2020.
- The GCRO's Gauteng Water Perspective was featured in the March/April 2020 edition

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of *The Water Wheel*, produced by the Water Research Commission.

- The GCRO's insight on 'Households vulnerable to income disruption' related to COVID-19 was featured in 'Income cuts pose serious threat to lockdown' by Sheree Bega, *Saturday Star*, 13 April 2020.

Teaching, supervision, external examining

- Samy Katumba is currently supervising an MSc GIS and Remote Sensing student at Wits.
- Samkelisiwe Khanyile is currently co-supervising two MSc GIS and Remote Sensing students at Wits.
- Gillian Maree is currently co-supervising an MSc student at Wits.
- Richard Ballard's PhD students at the University of KwaZulu-Natal, Danford Chibvongodze and Ndwakhulu Tshishonga, have submitted their dissertations for examination. Richard has also given input on the draft dissertations of his Wits PhD students (Darlington Mushongera and Mamokete Matjomane). He examined two PhDs (one from the University of the Western Cape and one from the University of Pretoria) and one Master's dissertation (from Royal Roads University in Canada).

- Mamokete Matjomane was an internal examiner for a Master's in Development Planning research report in the School of Architecture and Planning, Wits, in September 2020. The research report is titled 'For us, by us? Investigating how women leaders centre women in their development planning practice'.

Wider academic citizenship

- Richard Ballard and Samkelisiwe Khanyile were part of the planning committee for the 5th Southern Africa City Studies Conference, which was held online from 31 August to 4 September 2020.
- Christina Culwick Fatti reviewed a paper for the *Journal of Applied Geography* (July 2020) and a paper for *Urban Ecosystems* (January 2021).
- Mamokete Matjomane reviewed a paper for *Urban Forum* (February 2021).
- Julia de Kadt reviewed papers for *Development South Africa* (June 2020), *BMJ Global Health* (July 2020), *Transportation* (September 2020) and *Children's Geographies* (November 2020).
- Julia de Kadt served as a guest editor for a COVID-19-themed special issue of *Scientific African*.
- Richard Ballard is the President of the Society of South African Geographers for a two-year term, mid-2020 to mid-2022.

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