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Search volumes from an internet search engine as a tool to evaluate the levels and drivers of South African public's interest in exceptional situations and accountability

Objem vyhľadávania v internetovom vyhľadávači ako nástroj na stanovenie úrovní a faktorov záujmu juhoafrickej verejnosti o výnimočné situácie a zodpovednosť

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Abstract:

The COVID19 pandemic unfolded in a complex environment and understanding the situation was a crucial part of the pandemic response in South Africa. This should have led to the interest of the South African public in accountability/corruption, crisis, emergency, and disaster during pandemic as an exceptional situation. A software tool, namely a Google-linked plugin, was used in this study to assess the relevant trends and to obtain an idea about the qualitative drivers in the increasing interest. The interest in 'crisis' during the 2004-2022, as well as during the COVID19 pandemic, can be considered low and also does not exhibit a clear relationship with time. The South African public's interest in 'emergency' as a keyword was driven by a combination of everyday concerns and the interest in the state of emergency. The level of relative interest in emergency could be considered low to medium, in comparison to other search terms South Africans searched for using Google. There seems to be an increasing interest in the 'disaster' search term increased on the relative scale after the onset of the coronavirus pandemic. However, significance of this term remained low relative to other search terms on Google in South Africa during the COVID19 pandemic. Decrease in the political

stability and the (perceived) rise of violence in South Africa increased the South Africa population's interest in accountability and corruption. However, the relevant index accounted for only 29.6 % of variability in the public interest in the accountability and corruption in South Africa. Interest in 'emergency' increased with decreasing political stability and the (perceived) rise of violence in South Africa. The same trend was observed for the regulatory quality of governance and government effectiveness indices. That conclusion is supported by the second power of the relevant Spearman correlation coefficients ranged from 51.73 to 77.9 %.

Keywords: *pandemic, COVID 19, internet search engine, corruption, emergency situation,*

Abstrakt:

Pandémia COVID19 sa rozvinula v zložitom prostredí a pochopenie situácie bolo kľúčovou súčasťou reakcie na pandémiu v Južnej Afrike. Malo to viesť k záujmu juhoafrickej verejnosti o zodpovednosť/korupciu, krízu, núdzové situácie a katastrofy počas pandémie ako výnimočnú situáciu. Softvérový nástroj, konkrétne plugin prepojený s Google, bol v tejto štúdii použitý na posúdenie relevantných trendov a na získanie predstavy o kvalitatívnych hybných silách v rastúcom záujme. Záujem o „krízu" počas rokov 2004 – 2022, ako aj počas pandémie COVID19, možno považovať za nízky a tiež nevykazuje jasný vzťah s časom. Záujem juhoafrickej verejnosti o kľúčové slovo „núdzový stav" bol spôsobený kombináciou každodenných obáv a záujmu o výnimočný stav. Úroveň relatívneho záujmu v prípade núdze možno považovať za nízku až strednú v porovnaní s inými hľadanými výrazmi, ktoré Juhoafričania hľadali pomocou Google. Zdá sa, že po vypuknutí pandémie koronavírusu vzrástol záujem o hľadaný výraz „katastrofa" v relatívnom meradle. Význam tohto výrazu však zostal počas pandémie COVID19 nízky v porovnaní s inými hľadanými výrazmi na Googli v Južnej Afrike. Pokles politickej stability a (vnímaný) nárast násilia v Južnej Afrike zvýšili záujem obyvateľov Južnej Afriky o zodpovednosť a korupciu. Príslušný index však predstavoval len 29,6 % variability verejného záujmu o zodpovednosť a korupciu v Južnej Afrike. Záujem o „núdzové situácie" sa zvýšil s klesajúcou politickou stabilitou a (vnímaným) nárastom násilia v Južnej Afrike. Rovnaký trend bol pozorovaný v prípade regulačnej kvality riadenia a indexov efektívnosti vlády. Tento záver podporuje druhá mocnina príslušných Spearmanových korelačných koeficientov v rozsahu od 51,73 do 77,9 %.

Kľúčové slová: *pandémia, COVID19, internetový vyhľadávať, korupcia, núdzová situácia,*

Introduction

Never enough knowledge about COVID19

The COVID19 pandemic has resulted in lockdowns and the limits on the mobility of human populations worldwide (Mbandlwa, 2022; Tandlich, 2022). Suddenly, the space in which a single human being and members of groups of people, such as families or polities, could move without restrictions was compressed (Lucchini et al., 2021). People became limited in terms of the visits to see other humans during the coronavirus pandemic (Lucchini et al., 2021). As a result of the coronavirus lockdowns, the restaurant bookings decreased substantially in the early stages of the coronavirus pandemic (Dube et al., 2020). Later during the lighter stages of the COVID19 cordone sanitaires, only the take-aways/take-out meals from restaurants could be purchased by people around the world (Scott and Ensaff, 2022). There was an increase in the cooking at home and the extended stays in one's home stimulated intra-family interactions (Scott and Ensaff, 2022). Decreases in household income and

furloughs (a form of partial paid leave from work) have occurred during the coronavirus pandemic and they had an impact on mental health of the workforce in South Africa (Posel et al., 2021), with impacts predicted to have global reach (Mbandlwa, 2022). The attendance and usage of fitness centres decreased during the COVID19 cordon sanitaires (Kaur et al., 2020). However, the dedicated gym-goers had adapted and started exercising at home, in spite of the initial decrease in physical activity and the over-reliance of social media while spending their time at home (Kaur et al., 2020). Such adaptation could be seen as examples of individual resilience under the new lockdown conditions, i.e. the gym-goers adopted new behaviours and to continue to perform everyday (recreational) activities in spite of disaster changes to everyday life (USDHHS, 2020). Some of the mobility restrictions were justified to contain the spread of the pandemic. However, transmission of SARS-CoV-2 was later shown to be limited in the fitness-centre environment (Helsingen et al., 2021), so other restrictions might have gone too far. Conducting studies throughout the COVID19 pandemic has contributed to gaining a more complete understanding about the holistic impacts of coronavirus on humanity. This then led to the lifting of the cordone sanitaires and adaptation to the after-effects of the pandemic by the human population globally.

A lot has been written about the COVID19 pandemic and its impact on humanity. Countless papers have been published to date on many aspects of the coronavirus pandemic (see Introduction in Chapman et al., 2023). Humanity as a whole has come together to deal with the pandemic, at least to some extent. Vaccines have been developed by major pharmaceutical companies and 'over-stockpiled' by the developed world at first. However, later those resources were shared with the developing world, e.g. through the COVAX facility (WHO, 2022). The knowledge and resources of the humanity are shared and used to the benefit of many of the citizens of countries across the world. Testing of the vaccine candidates in countries such as South Africa ultimately led to production of knowledge and vaccines to the benefits of the global population (Gray et al., 2021). Those vaccines were later shown to provide increased protection even against new Omicron variant of the coronavirus, by preventing the intensive-care-unit (ICU) admissions by 69-80 % (Gray et al., 2022). Sharing of resources and knowledge, e.g. through the organisations such as the WHO, has contributed to the humanity's understanding of the COVID19 pandemic and the exceptional circumstances under which it has been taking place. Various terms have been used to describe it, namely crisis, emergency and disaster. Examples of some of the uses of these terms for the coronavirus are summarised below.

Pitterle and Niermann (2021) looked at the contraction of economies across the globe as a result of the COVID19 pandemic, which was referred to by the authors as a *crisis*. Data summarised and analysed by the authors indicated that countries in the East Asia region reported the lowest death rates from the SARS-CoV-2 virus in 2020, with the regional maximum encountered in South Korea at '1.8 deaths per 100000 people' (Pitterle and Niermann, 2021). In spite of the likely under-reporting of the total number of COVID19 cases and deaths, African countries recorded only '4.9 deaths per 100000 people' due to lower flight traffic into the region and re-purposing of the existing HIV/AIDS/TB monitoring to screen people for the coronavirus (Pitterle and Niermann, 2021). The *Public emergency of international concern* was declared by

the WHO and analysis of the cases, for the coronavirus emergency, indicated that the connectedness of a country to the rest of the world had a significant impact on the COVID19 prevalence there (Assefa et al., 2022). *Disaster* was the term used to refer to the pandemic in South Africa (Tandlich, 2022). Whether the pandemic was a crisis/emergency/disaster, the knowledge produced by the scientists was, at least in its major aspects, adopted by the politicians and national leaders in dealing with the pandemic (see Article 1 for details). It was only through the sharing of information and the awareness about the details of each wave that the pandemic, as one of the many disasters in the 21st century, to be tackled and ultimately for a new steady-state to be established across the global human population (Tandlich, 2022). An individual and their ability to adapt, to create a new steady state of existence are interlinked to the resilience and preparedness of the society/socio-ecological system that a particular human lives in. It will thus be linked to the way that the country's disaster risk management system responded to exceptional situations, e.g. COVID19. The individual citizens or residents in South Africa would be looking at the information about the crisis, emergency, or disaster of COVID19. This will be taking place as the healthcare and DRM practitioners and politicians, who made decisions about the individual's mobility and other existence dimensions.

COVID19 in South Africa, challenges of government accountability and individual citizens

Article 1 showed that the National State of Disaster was a tool of legislative management of the COVID19 pandemic as a disaster in South Africa. The official classification of the pandemic as a disaster was done by the Head of the National Disaster Management Centre on 15th March 2020 (Tau, 2020). That classification was followed by the actual declaration of the National State of Disaster and release of the regulations that governed the lockdowns and related matters (Heywood, 2020). Practically, its implementation was met with mixed results. Heywood (2020) further reported that up to 230000 South Africans were arrested for violating the regulations in 2020. That figure increased to 400000 and protection of fundamental constitutional rights was not executed well across the board (Reichel, 2021). Up to 11 people died at the hands of military personnel, who were deployed to enforce the regulations (Heywood, 2020). There was a possible undercount of the total deaths from COVID19, i.e. instead of 50000 in 2021, it could have been as a high as 200000 (Reichel, 2021). The undercount was likely real, as the peaks in the weekly excess deaths (higher death numbers than would be expected for that time of year, based on historical trends in mortality data) in South Africa always corresponded well with the weeks of the COVID19 wave peaks, namely around 12th July 2020, 10th January 2021, 5th July 2021, and 13th December 2021 (SAMRC, 2023). The delay between the wave peaks and the excess death peaks was probably related to the duration of the death notification process in South Africa (see Figure 1 in Lehohla, 2012). There is also then a slight delay in the reporting of the deaths to the authorities, and the transfer/analyses/reporting of the excess death numbers by the South Medical Research Council (combined based on Lehohla, 2012 and Bradshaw et al., 2020). Anyway, the excess deaths, the officially reported COVID19 deaths and the unprecedented impacts, of the non-pharmaceutical public health measures on the lives of ordinary South Africans, created an immense uncertainty of the everyday existence of South African citizens and residents.

Uncertainty in the progression of the pandemic required strict lockdowns in the initial stages of the COVID19 pandemic (Pitterle and Niermann, 2021). However, problems started to appear and those were related to mismanagement of funds and resources over the extended duration of the National State of Disaster, which had been aimed/allocated to fighting the pandemic. In addition, several concurrent disasters occurred in South Africa during various stages of the coronavirus lockdowns (see Article 1 for details). This information was in the South African public domain and individual citizens would have been exposed to it. Citizens would have sought information about vaccines and the changes that have been taking place as a result of scientific discoveries and the related information about exceptional situations which could be termed 'crisis', 'emergencies', or 'disaster'…about COVID19. The National State of Disaster would have resulted in the heightened awareness of the South African public about the Disaster Management Act no. 57 of 2002, even though it had been applied to declare many National States of Disaster since 2002. For examples, there was a national state of disaster for drought declared in 2018 (COGTA, 2018). The COVID19 National State of Disaster was, however, unique due to the size of its impact on the lives of everyday and regular South African citizens and residents. The governance under The COVID19 National State of Disaster, as a mechanism to manage an exceptional situation, placed limitations on human rights which are only seen at a rate of once in a generation or even a century (Heywood, 2021). Swift action by government to fight the pandemic and its impacts on the South African population, i.e. ethical and humanistic management of resources became critical to protect public health in the country (Pitterle and Niermann, 2021). Sacrifices that the population of South Africa made during the COVID19 cordone sanitaires, was the backbone of that pandemic response. Such a sacrifice should have been matched with accountability in the management of the healthcare, financial and other resources to fight the pandemic. However, this was not always encountered in South Africa (see Article 1).

Suspected corruption and problematic spending of public funds during the pandemic was apparent and the accountability of the government to parliament and the public limited in practical terms. Parliament processes were not suspended (see Article 1), but its role was seen as weak for a period just prior to COVID19 (Corder, 2022). It had basically become a rubber-stamp authority for the executive branch of the South African government (Corder, 2022). Such rubber-stamping could have been seen in the processing of the report on massive spending of public money on the 'security upgrades' at the home of a former president of South Africa (Corder, 2022). That tendency of a weak parliamentary oversight was to be prevented early in the democratic dispensation of the South African post-1994 era by the broad application of the principles of accountability and oversight. One of the mechanisms was to be the proposed establishment of the 'Standing Committee on Constitutional Institutions' and the implementation of the other recommendations of the Corder report (Corder et al., 1999). The implementation, however, never materialised. The sitting President, who had presided over the COVID19 pandemic disaster risk management, was not even pressed by parliament for any disclosure when a large sum of money had been reported stolen from his farm (Sibanda, 2022). Some accountability was provided by the same President to the South African public through the 'family meetings' (Hunt, 2021). In those speeches, the President of South Africa gave account of concrete

actions the government took, and it also provided some details about the response/recovery phases of the disaster management cycle (Hunt, 2021). Thus there was some accountability, also supported by the ministerial briefings after the 'family meetings' (see Article 1). However, the government and the President also seemed to protect some of their close associates, who were suspected of wrong-doing. An example of this can the fact that a former presidential spokesperson, who had been found to have potentially and allegedly benefited from the irregular contracts on personal protective equipment awarded to her husband, was removed from her post but then to be promoted inside the government communication system (Daily Maverick, 2021).

The lack of accountability and alleged corrupt activities did not bypass the healthcare sector, which was at the centre of the COVID19 disaster risk management. The sitting National Minister of Health was found to have allegedly pushed for a government contract on health communication to be awarded to his former close associate (Ellis, 2021). That minister did try to prove their innocence later on (Tandwa, 2022), but the reputation of him and the National Department of Health was tarnished, leading to the minister's resignation. In addition, there was a catastrophic fire in one of the biggest hospital complexes in Africa in 2021 (Heywood, 2021). A storeroom, as the source of the fire, was consumed by flames and that fate engulfed major parts of the Charlotte Maxeke hospital at the end of that disaster (Motara et al., 2021). Proactive action by the hospital staff, e.g. by redirecting patients into other facilities following the fire, prevented deterioration of human wellbeing of the patients (Paget, 2021). Targeted public-private partnership resulted in the successful evacuation of 821 patients to other medical facilities in the Gauteng Province and there was no loss of life due to the fire (Motara et al., 2021). However, arson was suspected as the cause of the fire and the fire prevented completion of a stock audit at the hospital complex (Heywood, 2021). That could point a potential cover up of problematic procurement of certain consumables at the hospital. Prior to and during the fire, the fire-fighting infrastructure were vandalised and suffered from lack of upkeep, i.e. disaster response to fire on the day was severely compromised (Motara et al., 2021). Human negligence and the alleged criminal activities had created another crisis/emergency/disaster within the COVID19 pandemic. The South African public in the economic heart of the country was suffering not just from a virus, but concurrent and additional harm of compromised healthcare delivery. This is further supported by the work of Laher et al. (2023), who reported that 79 % of all trauma cases were penetrating wounds during the COVID19 pandemic in a hospital in South Africa.

The level of physical violence remained high in South Africa and there was also an increase in the gunshot wounds during COVID19 (Laher et al., 2023). Therefore, multiple disasters coalescing in impact during the coronavirus pandemic, placing the need for better business continuity measures in healthcare facilities at the forefront of disaster response (Paget, 2021). Proactive action by individuals on the ground, i.e. healthcare staff, showed personal and highly ethical conduct. They adapted to the compounded disasters and developed new behaviours, i.e. their individual resilience increased in the face of healthcare disaster. That increase and the adherence to ethical norms of their profession by said staff made them accountable to the public of South Africa. Therefore the accountability picture emerging so far is mixed for the

COVID19 government response in South Africa. This picture is largely based on opinions of healthcare professionals and activists. Information from newspapers, from grey and academic literature completed the accountability puzzle. These sources of data vary in the way the data, as the reporting/writing foundation, is collected, evaluated, and reported, or compiled into a scientific article. However, all of those reports present and evaluate the real-time experiences of social justice 'warriors' with long-term involvement in activism on education and healthcare (Oxford Law, 2019). By the same token, the newspaper reports and the grey-literature references give account of the first-hand experiences of the doctors practicing in the Charlotte Maxeke Hospital under a disaster (Motara et al., 2021; Paget, 2021). There is need for the assembly, capturing and evaluation/study of such real-time/near-real-time or real world data and accounts of the pandemic. That need is driven by a requirement of gaining as complete as possible understanding of the COVID19 landscape in South Africa. Newspapers, doctors' accounts of disasters and other literature mentioned constitute a form of the 'real-world evidence' of the coronavirus pandemic, which is defined in the 21st Century Cure Act of the United States Congress (USC, 2016, section 3022 b):

"(b) REAL WORLD EVIDENCE DEFINED - In this section, the term 'real world evidence' means data regarding the usage, or the potential benefits or risks, of a drug derived from sources other than randomized clinical trials".

The real-world evidence is to be understood here as an expanded definition to include the environment in which individuals live in and receive healthcare. Investigating such real-world evidence is necessary to obtain a holistic picture about the on the various aspects of the COVID19 pandemic and disaster medical response to it. The lockdowns and other restrictions limited the space, in which South Africans had been able to move, was limited and so their normal behaviour had to be modified and they had to adapt.

Further research, and probably never-ending investigations into the pandemic and its aftermath, are driven by the need to obtain 'real-world evidence' of the COVID19 as a 21st century disaster…a disaster which unfolds in the time when input of real people is essential to capture, study and understand multitude of aspects of the coronavirus pandemic as a complex disaster (based on the implications of the circulation model by Frutos et al., 2021). The real-world evidence provided above indicates that the government's disaster response to COVID19 was fraught with questionable decisions in terms of resource allocation and accountability. As a result, mechanisms of accountability should be in the spotlight during lockdowns in the country, as well as after their lifting. This should lead to the interest of the South African public in crisis, emergency, disaster and accountability/corruption. Similar trends should also be copied by the increased interest in terms that would describe the COVID19 as an exceptional situation. Such terms are crisis, emergency and disaster that have been published on in connection with COVID19 (Seddighi, 2020; Margherita and Heikkilä, 2021; Junk et al., 2022). In Article 2, I will seek to examine some of the 'real-world evidence' and the disaster risk management challenges, that are directly linked to the pre-COVID19 conditions in South Africa and the COVID19-related/post-COVID19 challenges arising in the country. More specifically, the 'real-world

evidence' will be narrowed down here to the interest of the South African public in crisis, emergency, and disaster situations, as well as accountability/corruption during the coronavirus pandemic. This is linked to the environment and context in which the COVID19 pandemic was managed and experienced by the South African population (see Article 1). The working hypothesis of this Article 2 is that there was an increase in the South African public's interest in crisis, emergency, disaster and accountability/corruption was stimulated and increased after the onset of the COVID19 pandemic. A software tool was used to assess the relevant trends and to obtain an idea about the qualitative drivers in the increasing interest. Quantitative drivers of the accountability and corruption interest was also investigated by indicators of the governance for South Africa.

Methodology

The novel challenges, that an individual will face and live under during the COVID19 lockdown conditions, will result in the need to obtain information about the changes in the immediate and disaster-impacted environment that an individual human being lives in. This will likely manifest in the increased use of tools, that are not impacted by the COVID19 lockdown, and that are available to an individual during the isolation of a lockdown. Such tools are online media and search engines where information can be found in real-time and shortly after major changes are announced about the nature and limitations of the human rights, and movement, during the coronavirus cordone sanitaire. Therefore the online search volumes terms related to the COVID19 pandemic, the lockdowns, and their impacts on the lives of South Africans were extracted from Google. This was done using the Keywordseverywhere.com plugin (see https://keywordseverywhere.com/ for details; website accessed on 6th September 2022). More specifically, the South Africans' interest in crisis, emergency, disaster, and accountability/corruption was followed. This was then amended by the analysis of the related search terms, as a potential indication about the qualitative drivers of the public's interest. The search volumes were extracted for the 2004-2022 time period on a monthly basis and for the 2017-2022 period on a weekly basis. South Africans with access to the internet and using Google could be expected to increase their interest in the above-mentioned search terms a monthly and weekly basis before and after the onset of the coronavirus.

To assess this, the monthly and weekly search volumes were subjected to statistical testing using the Mann-Kendall timeseries test and the Mann-Whitney test at 5 % level of significance (Past 3.0, see https://palaeo-electronica.org/2001_1/past/issue1_01.htm for details; website accessed on 6th September 2022). Past 3.0 was also used to assess any statistical differences in the public interest in the crisis, emergency, and disaster before and after the onset of the COVID19 pandemic. The analysis was then run for 'accountability' and 'corruption' as well. Relative interest in the search terms, when compared to other terms in South Africa, were evaluated using the Google trends were used (see trends.google.com; website accessed on 6th September 2022). Google Trends results are not an absolute scale, as are the search volumes extracted from Keywordseverywhere.com. However, Google trends could be looked, as a measure of the South African public's interest in a particular topic, relative to other topics that affect and would have been searched for by the public in South Africa. Therefore the g_i scores from Google Trends were

analysed for statistically significant difference from 25, 50 and 80…The testing was done using the same tests as above at 5 % level of significance (Past 3.0, see https://palaeo-electronica.org/2001_1/past/issue1_01.htm for details; website accessed on 6th September 2022). These values were set arbitrarily and were considered to form good thresholds for low, medium, and high level of relative interest by the South African public. Qualitative drivers were further investigated by the looking at the related and long-tail keywords from Google and in relation to the search terms already mentioned. Qualitative drivers of the public interest were also evaluated.

Finally, the results indicated that the South African public showed the highest relative interest in 'emergency' and the volumes for this search term spiked during the 2021 civil unrest in South Africa and during the week of the initial lockdown for COVID19 in South Africa (see Results/Discussion sections below). At the same time, accountability and corruption are at the centre of the public life in South Africa, e.g. the release of the Zondo Commission of Inquiry into state capture in 2022 (South African Presidency, 2022). Therefore the quantitative factors that could have influenced the South African public's interest in 'emergency' and 'accountability/corruption'. For this, the World Governance index was downloaded from the World Bank website (WB, 2022) and those were derived using the approach of Kaufmann et al. (2010). More specifically, the indices for *Voice and Accountability* (*VAI*), *Government Effectiveness* (*GEI*), *Political Stability Noviolence* (*PSNVI*) and *Rule of Law* (*ROLI*). The annual search volumes from Google were derived using the Keywordseverywhere.com plugin and the calculated as outlined by Burivalová et al. (2018). For accountability and corruption, the resulting volumes were summed up to get a variable entitled ACC_{combined}. The total yearly volumes for 'emergency' was designated as *YSVE*. Both variables were designated as dependent variable in the correlations with the following independent variables: *VAI*, *GEI*, *PSNVI* and *ROLI*. The correlation analysis was done using the Spearman correlation coefficient at 5 % level of significance (see https://www.socscistatistics.com/tests/spearman/default2.aspx for details; website accessed on 1st March 2023).

Results and Discussion

Internet search volumes in crisis, emergency and/or disaster before and during the COVID19 pandemic in South Africa

The search volumes for crisis in South Africa are shown in Figure 1 and the monthly and weekly search volumes were tested for a time trend, or a lack thereof, using the Mann-Kendall test at 5 % level of significance. There was no statistically significant trend with time in the monthly search volumes for crisis in South Africa between January 2004 and July 2022 (the *p*-value = 0.4531). There was, however, a decreasing trend in the weekly crisis search volumes in South Africa between 2017 and 2022, with the respective *p*-value equal to 0.0389. The search volume distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 4481, standard deviation 2010, median 4000 and mode 3600. The search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 1035, standard deviation 421, median 940 and mode 1100. The results of the Mann-Whitney test at 5 % level of

significance indicate that median of the monthly search volumes for 'crisis' decreased after the onset of the COVID19, i.e. after January 2020 (U = 1574; U' = 4418; n_1 = 192 and n_2 = 31; p-value = 0.0001). On the other hand, the median weekly volumes for the 2017-2022 period were not significantly different before and after the onset of the pandemic (U = 8396; U' = 5104; n_1 = 125 and n_2 = 108; p-value = 0.9473).

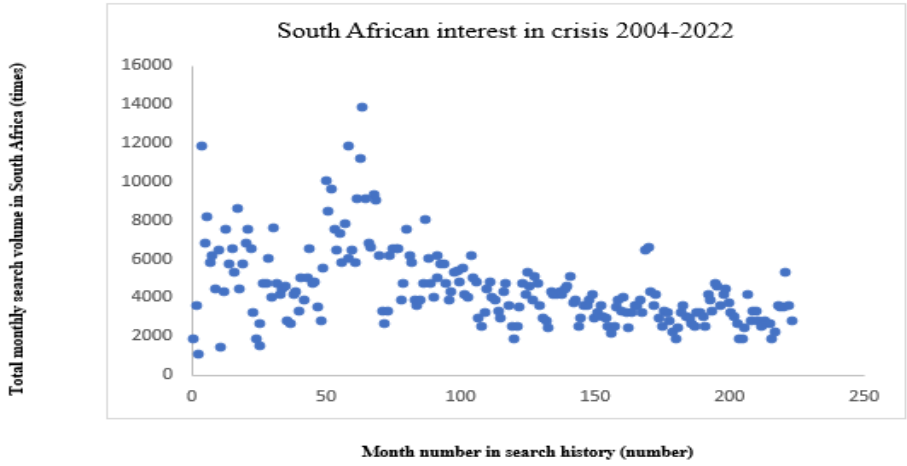
The decrease in the weekly volumes between 2017 and 2022 was also an indication that the South African public did not see everyday life before or during the COVID19 pandemic as a crisis. As the monthly search volumes decreased after the onset of coronavirus, results of the Keywordseverywhere.com plugin analyses for 'crisis' indicate that interest in this keyword was not significantly impacts by the onset of the COVID19 pandemic. Qualitative drivers of the interest in 'crisis' were determined to be as follows: *crisis plural*, *crisis synonym*, *causes of crisis*, *types of crisis*, and *energy crisis in South Africa*. As a result, it is reasonable to conclude that the interest in 'crisis' by the South African public was driven by a mixture of drivers and not directly-related to COVID19. Crisis was probably partly seen as a type of an exceptional situation and the South Africa public was interested in it based on everyday concerns of life in the country (loadshedding and energy crisis). Everyday concerns would be complemented by compounding factors and the interlinking of multiple disasters.

Relative significance of interest in 'crisis' in comparison to other search terms on Google in South Africa was evaluated using the Google trends data. The g_i value distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 29, standard deviation 15, median 26 and mode 20. The relative search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 4, standard deviation 1, median 3 and mode 3. The South African public showed a constant and time-independent relative interest in 'crisis' compared to other search terms on Google on a monthly basis between January 2004 and July 2022. That conclusion was based on the Mann-Kendall test results at 5 % level of significance (p-value = 0.2442). For the weekly volumes in the 2017-2022, the same conclusion could be drawn as the respective p-value = 0.1206. The results of the Mann-Whitney test at 5 % level of significance indicate that the monthly g_i median value for 'crisis' in the 2004-2022 period decreased after the onset of the COVID19, i.e. after January 2020 (U = 1669; U' = 4238; n_1 = 192 and n_2 = 31; p-value = 0.00005). On the other hand, the median g_i weekly values for the 2017-2022 period decreased after the onset of the pandemic (U = 5462; U' = 11413; n_1 = 125 and n_2 = 135; p-value = 0.0096). The Mann-Whitney test showed that the Google trends values, on a monthly and weekly basis, were not statistically significantly different from a g_i value of 25 (p-value = 0.3543), but it was lower than the values of 50 and 80 (p-value = 0.0001). The interest in 'crisis' during the 2004-2022, as well as during the COVID19 pandemic, can be considered low and also does not exhibit a clear relationship with time before and during the COVID19 pandemic.

The search volumes for 'emergency' in South Africa are shown in Figure 2 and the monthly and weekly search volumes were tested for a time trend, or a lack thereof, using the Mann-Kendall test at 5 % level of significance. There was a statistically

significantly increasing trend with time in the monthly search volumes for 'emergency' in South Africa, as the *p*-value was equal to < 0.0001. There was, however, no trend in the weekly search volumes for emergency between 2017 and 2022, as the respective *p*-value was equal to 0.2472. The search volume distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 4875, standard deviation 1094, median 4800 and mode 5200. The search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 2742, standard deviation 1228, median 2550 and mode 2850. Results of the Mann-Whitney test at 5 % level of significance indicate that the monthly search volumes for 'emergency' increased after the onset of the COVID19, i.e. after January 2020 ($U = 1291$; $U' = 4661$; $n_1 = 192$ and $n_2 = 31$; *p*-value = 0.00005). However, the weekly volumes for the 2017-2022 period were not significantly different before and after the onset of the pandemic (*p*-value = 0.1316). Qualitative drivers of the interest in 'emergency' were determined to be as follows: *emergency movie*, *emergency 2022*, *emergency synonym*, *state of emergency*, *emergency vet near me* and *emergency care assistant*. The onset of the coronavirus pandemic seemed to increase the monthly search volumes for 'emergency', just like with the 'crisis'. However, the overall picture is complicated for both keywords as a function of time, but the monthly increases after the onset of the pandemic might indicate that South Africans recognised that coronavirus changed their lives after living with it long-term. Therefore it is clear that South African public's interest in 'emergency' as a keyword was driven by a combination of everyday concerns and the interest in the state of emergency.

The g_i value distribution of the 2004-2022 monthly values for 'emergency' can be characterised by the following parameters: the arithmetic average 42, standard deviation 11, median 42 and mode 43. The relative search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 19, standard deviation 6, median 18 and mode 17. The Mann-Whitney test showed that the Google trends values were lower than 25, 50 and 80 for the weekly search volumes and during the COVID19 pandemic (*p*-value = 0.0001 in all cases).



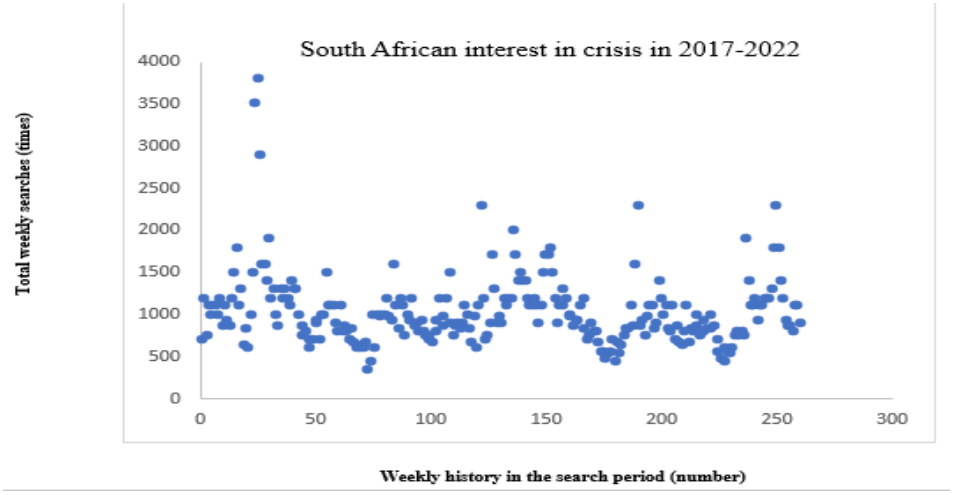


Figure 1. *The monthly volumes of Google searches for the keyword 'crisis' in South Africa from January 2004 until July 2022 (months in this time series were numbered from 1 in January 2004 until 223 for July 2022; a). The weekly volumes for the January 2017-July 2022 time series are shown as well (months in this time series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022; b).*

For the entire 2004-2022 period, the g_i values were statistically significantly higher than 25 (p-value = 0.0001), but it was lower than the values of 50 and 80 (p-value = 0.0001 in all cases). The relative significance peaked at 42 in the week from 22nd until 28th of March 2020, when the National State of Disaster was declared by President of South Africa. In addition, the g_i value reached 100 in the week from 11th until 17th July 2021, when the 2021 riots and violence took place in the KwaZulu-Natal and the Gauteng provinces. Therefore the 'emergency' term was important in the Google-related searches in South Africa before and during the COVID19 pandemic. It did spike during exceptional situations and disruption to the societal order, which were compounding the COVID19 impact. At the same time, the level of relative interest in emergency could be considered low to medium, in comparison to other terms South Africans searched for using Google.

The search volumes for 'disaster' in South Africa are shown in Figure 3. The monthly and weekly search volumes were tested for a time trend, or a lack thereof, using the Mann-Kendall test at 5 % level of significance. There was a statistically significant decreasing trend with time in the monthly search volumes for 'disaster' in South Africa, as the p-value was lower than 0.00001. There was, however, an increasing trend in the weekly crisis search volumes between 2017 and 2022, as the respective p-value was equal to 0.0052. The search volume distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 5937, standard deviation 4297, median 4800 and mode 3400. The search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 745, standard deviation 490, median 620 and mode 540. Results of the Mann-Whitney test at 5 % level of significance indicate

that the monthly search volumes did not change after the onset of the COVID19, i.e. after January 2020 (p-values were equal to 0.0614). For the weekly volumes in the 2017-2022 period, the search volumes increased with significantly after the onset of the pandemic (U = 4886; U' = 1989; n_1 = 125; n_2 = 135; p-value = 0.00005). Qualitative drivers of the interest in 'disaster' were determined to be as follows: *natural disaster*, *disaster management*, *types of disaster*, *state of disaster*, *national state of disaster* and *Chernobyl disaster*. The interest in 'disaster' by the South African public was driven by a mixture of drivers and not COVID19 only. The interest in 'disaster' after the beginning of COVID19 could have been the result of the frequent commentary and broadcasting of message about the National State of Disaster in the country.

The g_i values for disaster for 'disaster' were decreasing in significance in comparison to other search terms between January 2004 and July 2022, as the Mann-Kendall test at 5% level of significance showed had the respective p-value < 0.0001. A statistically and significantly increasing trend was observed in the weekly trends in the relative search volumes for 'disaster' between 2017 and 2022, with the Mann-Kendall test at 5% level of significance showed had the respective p-value = 0.0006. The g_i value distribution for the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 13, standard deviation 9, median 10 and mode 7. At the same time, the g_i value distribution for the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 21, standard deviation 14, median 16 and mode 16. The Mann-Whitney test showed that the Google trends values were lower than 25, 50 and 80 for the weekly search volumes and during the COVID19 pandemic (p-value = 0.00005 in all cases). For the 2004-2022 time period, the monthly g_i values were lower than the 25, 50 and 80 benchmarks (p-value = 0.0001 in all cases). There seems to be an increasing interest in the 'disaster' search term increased on the relative scale after the onset of the coronavirus pandemic. However, the South Africa public's interest in 'disaster' remained low in relative significance compared to other search terms on Google in South Africa during the COVID19 pandemic. The start of the coronavirus cordone sanitaire and the 2021 violence in provinces of Gauteng and KwaZulu-Natal were perceived as serious disturbances of normalcy by the South African public. The terms assigned to them are "emergency' or 'disaster'. State of Emergency and state of disaster are linked to these interest spikes and the way that the South Africa pubic perceived the respective exceptional situation.

2.3.2 Internet search volumes in accountability and corruption before and during the COVID19 pandemic in South Africa

The search volumes for 'accountability' in South Africa are shown in Figure 4. There was a statistical analysis done on the trends in the monthly and weekly search for this term and the Mann-Kendall test at 5 % level of significance was used. There was no statistically significant trend in the monthly search volumes for 'accountability' in South Africa between January 2004 and July 2022 (the p-value = 0.0902). There was, however, an increasing trend in the weekly search volumes for 'accountability' between 2017 and 2022, as the respective p-value was equal to 0.0175.

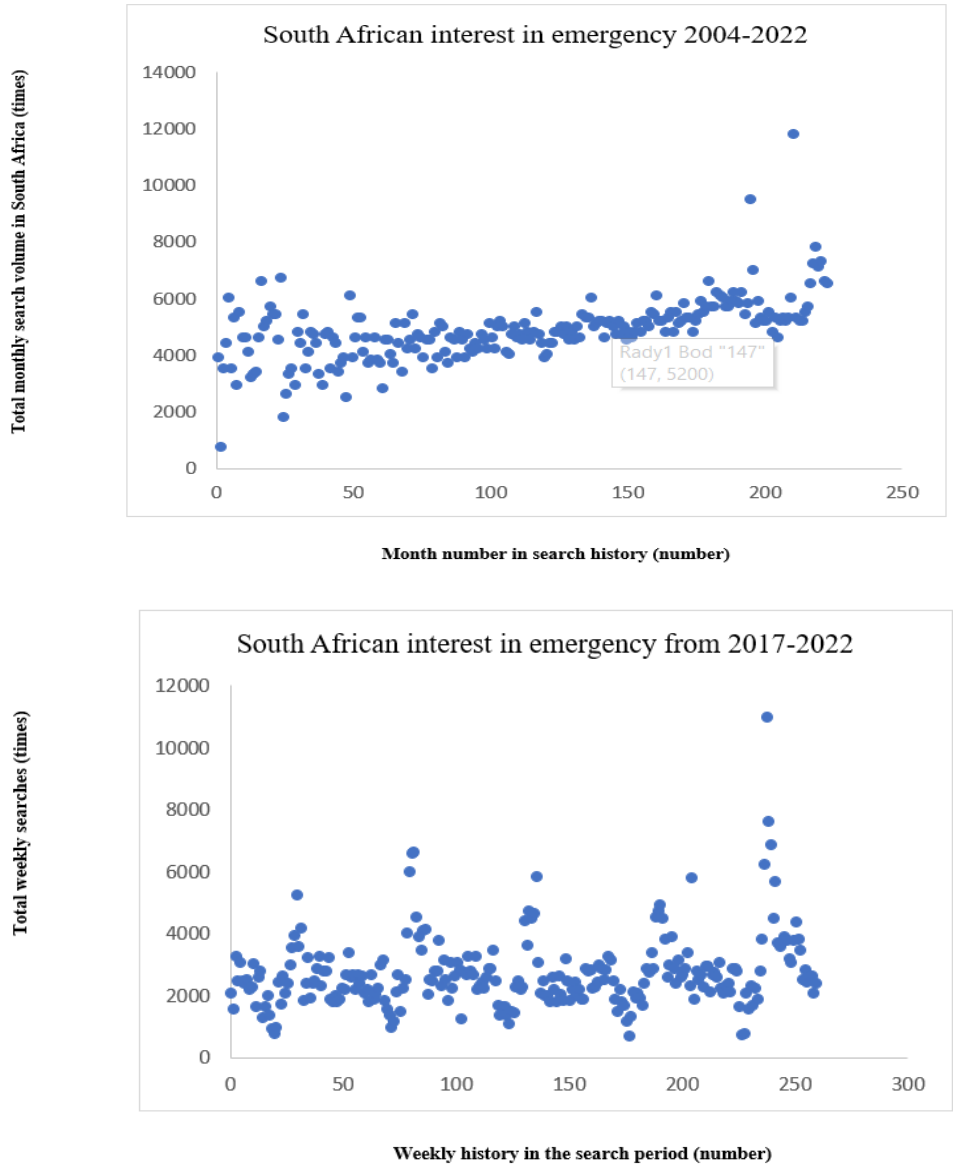
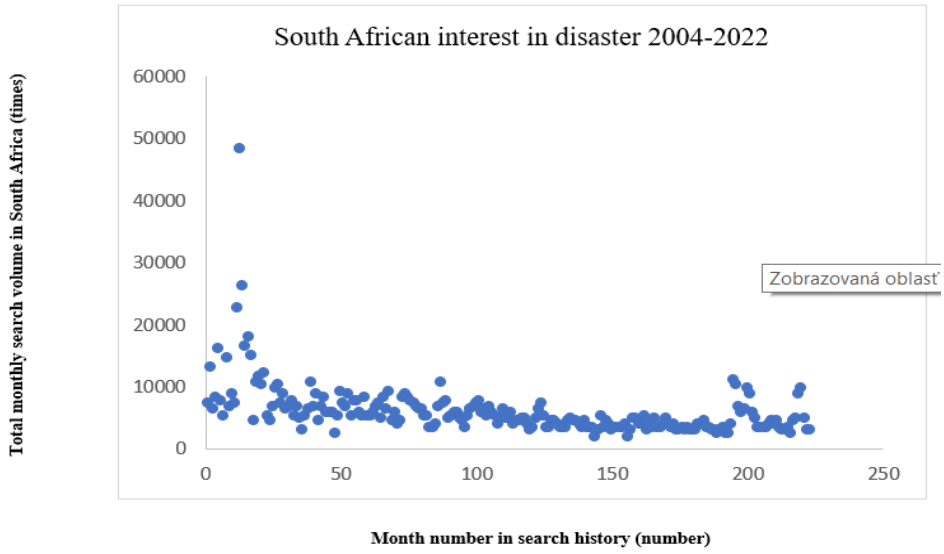


Figure 2. *The monthly volumes of Google searches for the keyword 'emergency' in South Africa from January 2004 until July 2022 (months in this time series were numbered from 1 in January 2004 until 223 for July 2022; a). The weekly volumes for the January 2017-July 2022 time series are shown as well (months in this time series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022; b).*

The search volume distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 5106, standard deviation 3539, median 4800 and mode 0. The search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 3962, standard deviation 2306, median 3600 and mode 3000. Testing using the Mann-Whitney test at 5 % level of significance showed the following results. The monthly search volumes for 'accountability' did not change after the onset of the COVID19, i.e. after January 2020 (p-value = 0.2313). Similar finding was obtained for the weekly volumes for the 2017-2022 period were not significantly different before and after the onset of the pandemic (p-value = 0.1083). Qualitative drivers of the interest in 'accountability' were determined to be as follows: *accountability vs. responsibility*, *accountability meaning*, *accountability synonym*, *accountability in management*, *accountability definition*, and *health accountability amendment act/bill* and *social/public accountability*.

Therefore it is clear that South African public's interest in 'accountability' as a keyword was driven by a combination of long-term, but also COVID19 related terms. They are, however, general in nature. The relative significance in the South African interest in 'accountability', as compared to other search topics on Google between January 2004 and July 2022, increased with time. That conclusion was supported by the increasing time trend in the g_i values for accountability (Mann-Kendall test at 5 % level of significance had a p-value of 0.0101).

a)



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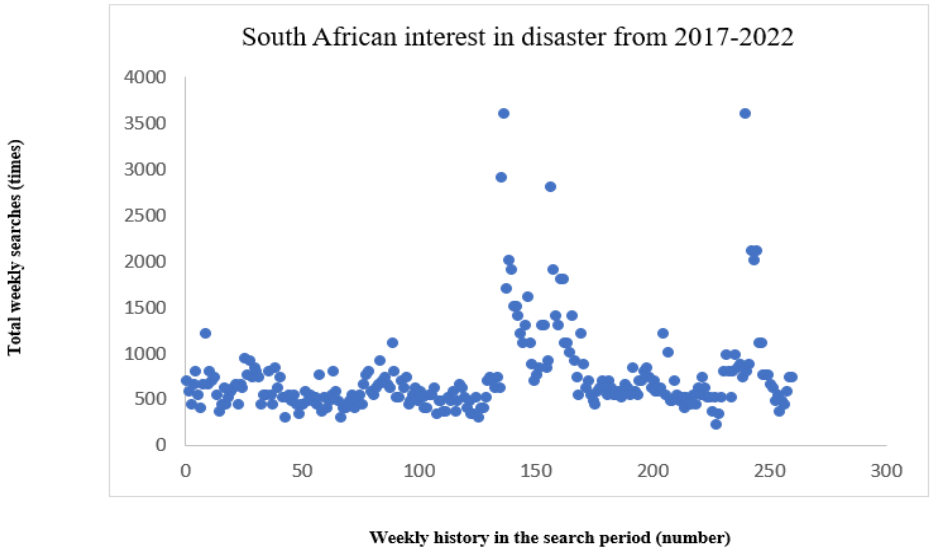


Figure 3. *The monthly volumes of Google searches for the keyword 'disaster' in South Africa from January 2004 until July 2022 (months in this time series were numbered from 1 in January 2004 until 223 for July 2022; a). The weekly volumes for the January 2017-July 2022 time series are shown as well (months in this time series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022; b).*

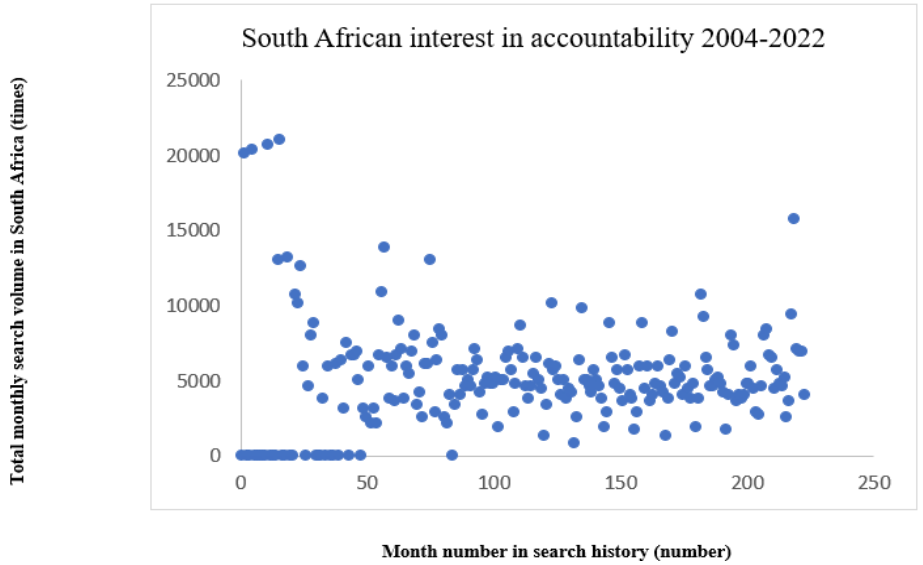
The statistical distribution of the respective *g* values was characterised by the following value: 11 for the arithmetic average, 9 for the standard deviation, and 10 for both the median of the mode value. The relative interest in 'accountability' did not increase on the weekly basis between 2017 and 2022, as the Mann-Kendall test at 5 % level of significance had a *p*-value of 0.0907. The statistical distribution of the respective and weekly values of *g* was characterised by the following value: 21 for the arithmetic average, 12 for the standard deviation, 19 for the median and 16 for the mode value. On both the monthly and weekly basis, the *g* values indicated low level of relative interest of the South African public in accountability, as the *g* value were lower than 25, 50 and 80 on the 5 % level of significance (*p*-value was lower than 0.0005 in all cases for the Mann-Whitney at 5 % level of significance). The interest in 'accountability' low among the South African population, when compared with other search terms on Google between 2004 and 2022. Alleged and sometimes proven corruption in the South African response to the COVID19 pandemic was well documented by various authors and also by the authors in the current article (see Article 1). South Africans have been exposed to it over various period since the second half of the 20th century. Therefore the term should be well-known to the public in the country, and it should also be the focus of the interest of South Africans on an ongoing

basis. This is especially true about the exceptional situations such as the COVID19 pandemic. To test this hypothesis, the monthly and weekly search volumes for 'corruption' from South Africa were extracted from Google using the Keywordseverywhere.com plugin. The data is shown in Figure 5 below. There was a marginally statistically significant decreasing trend with time in the monthly search volumes for 'corruption' in South Africa from January 2004 until July 2022, as the *p*-value was lower than 0.0413.

There was, however, an increasing trend in the weekly 'corruption' search volumes between 2017 and 2022, as the respective *p*-value was equal to 0.0051. The search volume distribution of the 2004-2022 monthly values can be characterised by the following parameters: the arithmetic average 4791, standard deviation 2826, median 4100 and mode 3650. The search volume distribution of the 2017-2022 weekly values can be characterised by the following parameters: the arithmetic average 5322, standard deviation 3255, median 4400 and mode 4200. Results of the Mann-Whitney test at 5 % level of significance indicate that the monthly search volumes did not change after the onset of the COVID19, i.e. after January 2020 (*p*-values were equal to 0.1043). For the weekly volumes in the 2017-2022 period, the search volumes increased with significantly after the onset of the pandemic (U = 6176; U' = 10699; n_1 = 125; n_2 = 135; *p*-value = 0.0002). Qualitative drivers of the interest in 'corruption' were determined to be as follows: *effects of corruption*, *causes of corruption*, *types of corruption*, *definition of corruption*, *examples of corruption* and *political corruption*. The interest in 'corruption' by the South African public was driven by a mixture of drivers and not COVID19 only. The weekly increase could have been the result of the frequent commentary and broadcasting of message about the National State of Disaster in the country.

Accountability and corruption are interlinked with the healthcare provision in South Africa, especially during the COVID19 pandemic. However, they as general terms do not seem to capture the imagination of the South African public. That conclusion is supported by the g_i value for corruption between 2004 and 2022, where there was no statistically significant trend with time in the relative interest compared to other Google search terms in South Africa (Mann-Kendall test at 5 % level of significance, *p*-value = 0.9921). The same observation was made for the 2017-2022 period, as the same test had a respective *p*-value of 0.6363. The Mann-Whitney test showed that no change in the *g* values occurred after the onset of the coronavirus pandemic on a monthly or weekly basis (*p*-value = 0.2611 and 0.1278). That *g* distribution was characterised for the 2004-2022 monthly values with the following parameters: the arithmetic average 28, standard deviation 18, median 24 and mode 28. That *g* distribution was characterised for the 2017-2022 weekly values with the following parameters: the arithmetic average 19, standard deviation 11, median 17 and mode 16. The *g* median value were not statistically significantly different from a score of 25 (*p*-value = 0.0849, but they were lower then 50 and 80 (*p*-value = 0.0005). Thus the interest in corruption was low among the South African population based on the Google search volumes on both time scale examined. Data so far indicate that the Google searches are only used by South Africans to search for particular events and that their long-term interest in crisis, disaster and accountability/corruption is low.

a)



b)

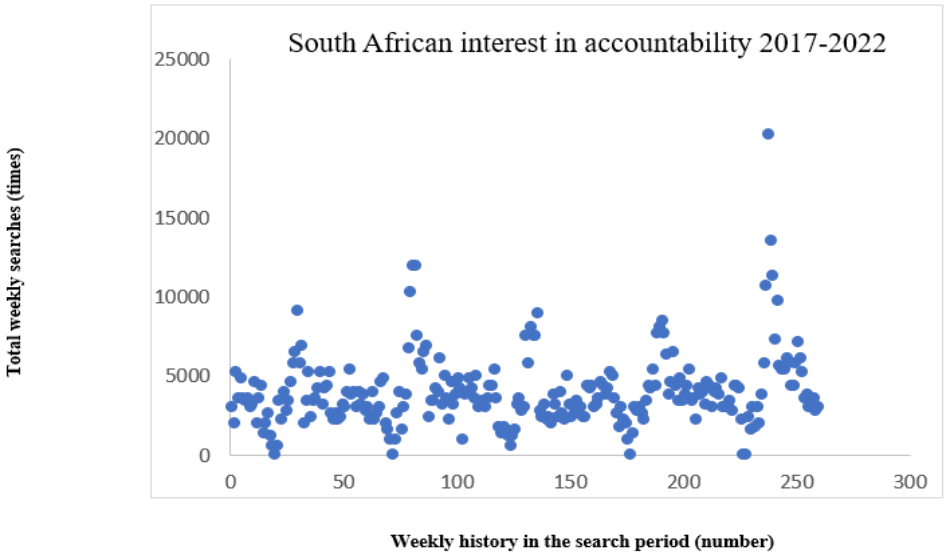


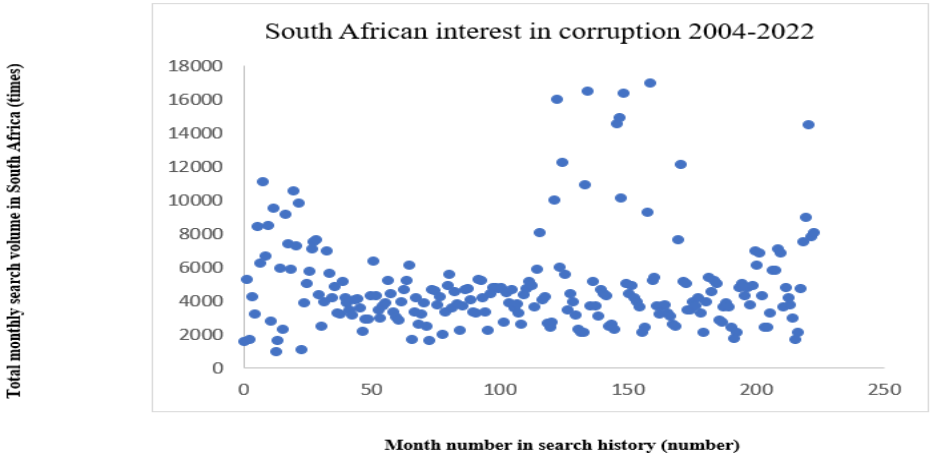
Figure 4. *The monthly volumes of Google searches for the keyword 'accountability' in South Africa from January 2004 until July 2022 (months in this time series were numbered from 1 in January 2004 until 223 for July 2022; a). The weekly volumes for the January 2017-July 2022 time series are shown as well (months*

in this time series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022; b).

Low- to medium level of interest is observed for emergency, and for particular instances of emergencies such the 2021 July unrest. Accountability and corruption was probably brought to the spotlight by a specific event. One such event occurred in August 2021, when a whistleblower from the Gauteng Provincial Department of Health was gunned down after flagging suspicious contracts for review (Cruywagen and Banda, 2022). The name of the whistleblower was Babita Deokaran, and her name was searched for to see if the peak monthly volume was observed in South Africa in August 2021. The same was expected in the week of 23rd August 2021. The Keywordseverywhere.com plugin search volumes from Google are shown in Figure 6. As it can be seen, the maximum weekly search volume was equal to 10000 and it occurred in week number, i.e. from 22nd until 28th August 2021. Therefore the weekly search volumes peaked at a particular event and the accountability/corruption was involved.

The correlation analyses between ACC_{Combined} and *YVSE* index was done against the governance indicators from the World Bank database. The data on the estimates of each indicator for South Africa in a given calendar year were chosen as the independent variables in the correlation analysis. Individual values were rounded off to four decimal places and the data are shown in Table 1. The World Bank governance indices range in value from -2.50 to 2.50. The closer an index value is to 2.50, the better the country is doing in terms of that dimension of governance (WB, 1996-present; Kaufmann et al., 2010).

a)



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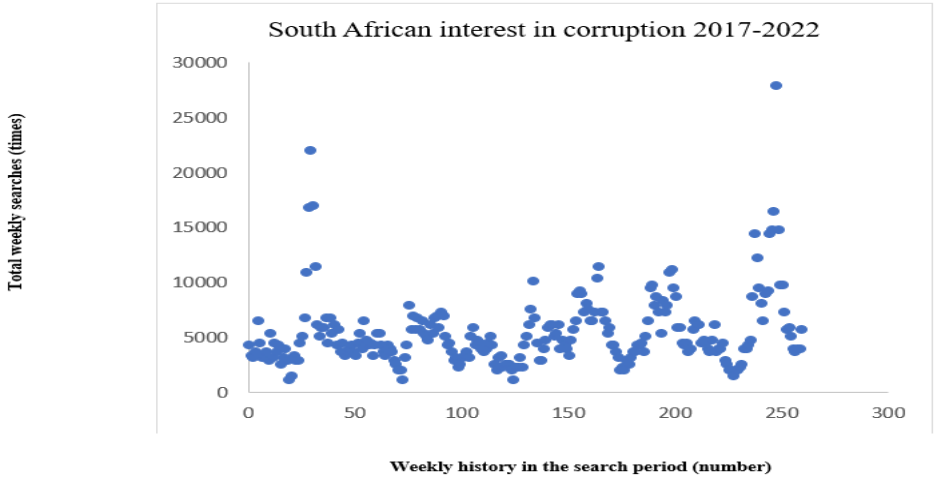

Figure 5. *The monthly volumes of Google searches for the keyword 'corruption' in South Africa from January 2004 until July 2022 (months in this time series were numbered from 1 in January 2004 until 223 for July 2022; a). The weekly volumes for the January 2017-July 2022 time series are shown as well (months in this time series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022; b).*

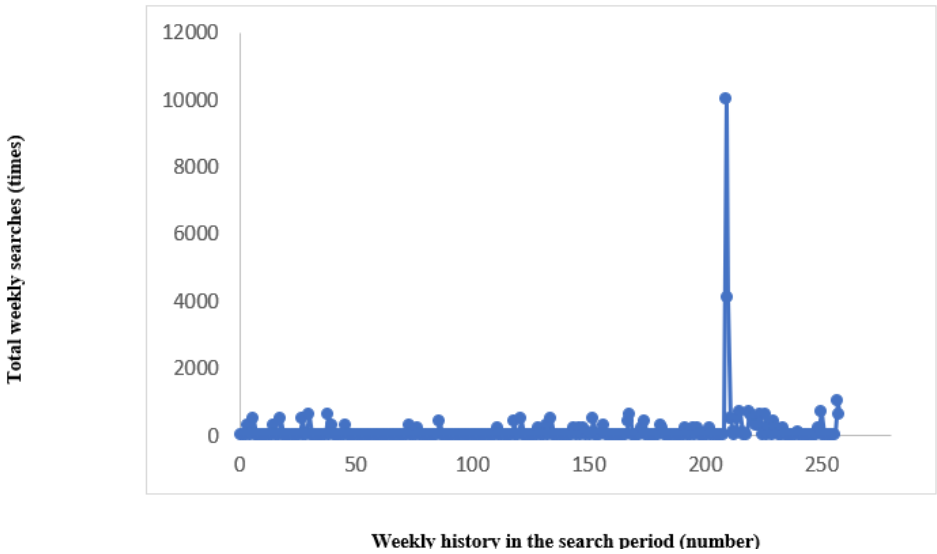

Figure 6. *The monthly volumes of Google searches for the keyword 'Babita Deokaran' in South Africa from January 2017 until July 2022 (weeks in this time*

series were numbered from 1 the first week in January 2017 until 260 in the last week for July 2022).

The closer to an index value is to -2.50, the worse the country is doing in terms of that dimension of governance (WB, 1996-present; Kaufmann et al., 2010). Results showed that South Africa was generally in the middle of the scale for the four indices that were used as independent variables (see Table 1). The $ACC_{Combined}$ values were directly proportional to *VAI*, but this correlation was not statistically significant at 5 % level of significance (Spearman correlation coefficient = 0.4448; *p*-value = 0.0644). Another two correlations were also not statistically significant at 5 % level of significance, but the $ACC_{Combined}$ was indirectly proportional in them to *GEI* (Spearman correlation coefficient = -0.1207; *p*-value = 0.6332), to *RQI* (Spearman correlation coefficient = -0.2838; *p*-value = 0.2538), to *COCI* (Spearman correlation coefficient = 0.0175; *p*-value = 0.9449) and to *ROLI* (Spearman correlation coefficient = -0.1847; *p*-value = 0.4630). However, there was a statistically significant and indirectly proportional correlation between the $ACC_{Combined}$ values and the *PSNVI* values for South Africa between 2004 and 2021 (Spearman correlation coefficient = -0.5439; *p*-value = 0.0196). Therefore, a decrease in the political stability and the (perceived) rise of violence in South Africa, i.e. declining political stability and safety in the country, increased the South Africa population's interest in accountability and corruption. The *PNSVI* variability explained only 29.6 % of variability in the public interest in the accountability and corruption in South Africa. As a result other factors like influenced the public's interest in the those search in the country.

The *YSVE* values was directly proportional to *VAI*, but this correlation was not statistically significant at 5 % level of significance (Spearman correlation coefficient = 0.4551; *p*-value = 0.0578). At the same time, the *YSVE* values was indirectly proportional to *COCI*, but this correlation was not statistically significant at 5 % level of significance (Spearman correlation coefficient = -0.4469; *p*-value = 0.0630). Similarly, the *YSVE* values was also indirectly proportional to *ROLI*, but this correlation was again not statistically significant at 5 % level of significance (Spearman correlation coefficient = -0.3829; *p*-value = 0.1163). Another set of correlations were also statistically significant at 5 % level of significance, but the $ACC_{Combined}$ was indirectly proportional in them to *GEI* (Spearman correlation coefficient = -0.7193; *p*-value = 0.0008), to *PSNVI* (Spearman correlation coefficient = -0.8824; *p*-value < 0.0001) and to *RQI* (Spearman correlation coefficient = -0.8597; *p*-value < 0.0001). In total, *GEI*, along with *PNSVI* and *RQI*, have explain almost all the variability in the *YSVE* values. That conclusion is supported by the second power of the Spearman correlation coefficients for *TSVE* correlations against *GEI*, along with *PNSVI* and *RQI*, which ranged from 51.73 to 77.9 %. Therefore, interest of the South African public in 'emergency' increased with decreasing the political stability and the (perceived) rise of violence in South Africa, a decrease in the regulatory quality of governance and a decrease in government effectiveness.

Evaluation of the study findings for the disaster risk management in South Africa

The current study and its results should be seen as scoping in nature. Scoping would a probing process of the accountability interest and the view of exceptional

situations by the South African population in the most general sense. Understanding such elements is necessary for the This is line with the suggested elements of the adaptive capacity of nonprofit organisations, who work for the greater good and so they need to responsive to the external environment and stakeholders they work with (Sussman, 2003). This can be seen as generally applying to all disaster risk management systems and emergency response/preparedness organisations at the government level as well. The findings from the current study indicate the on the relative scale, exceptional situations are most likely seen as emergencies.

Table 1. The annual search volumes on Google in South Africa and indices from the World Bank.

Calendar Year	$ACC_{combined}$[a]	YSVE[b]	GEF	VAI[d]	PSNVF	ROL[f]	COCE	ROLI[h]
2004	129750	49010	0.5616	0.7157	-0.1317	0.5150	0.3978	0.0045
2005	145850	59000	0.5697	0.6490	-0.1621	0.6925	0.4839	-0.0120
2006	95900	45800	0.3243	0.6516	0.0470	0.7151	0.3783	0.1813
2007	90800	46100	0.2875	0.5788	0.2153	0.7470	0.1977	0.0003
2008	110500	53500	0.3377	0.5756	0.0495	0.5957	0.1538	0.0054
2009	106400	51600	0.3132	0.5705	-0.1145	0.6570	0.1254	0.0724
2010	106800	52800	0.1928	0.6021	-0.0294	0.4492	0.0654	0.0977
2011	101200	51500	0.2190	0.5908	0.0240	0.4456	-0.0042	0.1297
2012	103200	55300	0.1712	0.5822	-0.0254	0.4464	-0.1842	0.0844
2013	109850	56500	0.3083	0.6007	-0.0463	0.3987	-0.1378	0.1355
2014	126440	55900	0.1649	0.6404	-0.1464	0.3805	-0.1249	0.1555
2015	118950	62000	0.1165	0.6486	-0.2130	0.2308	-0.0437	0.0369
2016	141700	58400	0.1329	0.6483	-0.1415	0.2243	0.0441	0.0638
2017	115400	63500	0.1001	0.6305	-0.2776	0.1301	-0.1015	-0.1360
2018	110600	65800	0.1326	0.6283	-0.2278	0.1529	-0.1121	-0.2020
2019	106600	71100	0.1625	0.6537	-0.2677	-0.0282	0.0201	-0.1232
2020	109200	70000	0.0968	0.7002	-0.2408	0.0230	-0.0108	-0.1799
2021	113000	70300	-0.0174	0.7885	-0.7066	0.0351	0.0221	01306

[a] The combined yearly search volumes for keywords of 'accountability' and 'corruption' as extracted from Google using the Keywordseverywhere.com plugin.
[b] The yearly search volumes for keywords of 'emergency' as extracted from Google using the Keywordseverywhere.com plugin.
[c] The governance index from the World Bank which assess the government effectiveness, as derived by Kaufmann et al. (2010).
[d] The governance index from the World Bank which assess the voice and accountability, as derived by Kaufmann et al. (2010).
[e] The governance index from the World Bank which assess the political stability and nonviolence, as derived by Kaufmann et al. (2010).
[f] The governance index from the World Bank which assess the control of corruption, as derived by Kaufmann et al. (2010).
[g] The governance index from the World Bank which assess the regulatory quality, as derived by Kaufmann et al. (2010).
[h] The governance index from the World Bank which assess the rule of law, as derived by Kaufmann et al. (2010).

At the same time, the South African public will increase their interest in emergencies and accountability/corruption in times of massive threat to the public and social order. The Google trends and the Spearman correlation coefficient online calculator are openware and can thus be used by the disaster risk management professionals in South Africa free of charge. In this way, periodical evaluation and drivers of the public interest in emergencies and related accountability can be examined. A short training session might be required, but this is a 15 minute affair which can be self-driven and done upon need by the disaster risk management professionals. The Keywordseverywhere.com plugin requires public procurement, and this could pose a practical problem in obtaining the tool as a result of the practical implementation of the public finance management legislation in South Africa (Fourie and Malan, 2020). In that case, a freeware version of the Google trends code in *R* can be used (Massicotte and Eddelbuettel, 2021). That tool has been shown to be a reliable predictor of incidents of domestic violence (Köksal et al., 2022), which is a problem in South Africa and has been also during COVID19 (Mahlangu et al., 2022). Training in the use of the *R* plugin would be required to the disaster risk managers as public officials, but this is not an insurmountable obstacle to implementation.

Results of this article indicate that South Africans seem to perceive exceptional situations as emergencies. They tend to be interested in particular emergencies and/or events related to accountability and corruption. On the long-term basis, the combination of specific and everyday concerns of South Africans seem to drive the interest in emergencies and exceptional situations. In terms of government disaster risk governance, accountability requires clear line of communication and engagement during the disaster management cycle (Amaratunga et al., 2019, section 6.3 and 6.4). Accountability during disasters have been shown to play a significant role in scrutiny of the government decisions by stakeholders in the disaster aftermath (Amaratunga et al., 2016). On the other hand, Suryaman (2019) defines two types of accountability in disaster management, namely negotiable and non-negotiable. The interest in the accountability, which peaked in specific cases of a murder of a whistleblower and in relation to corruption in the healthcare sector. At the same time, the emergency interest peaked when the violence erupted and the social order has been at risk of total collapse. Combination of these two observations indicate that non-negotiable accountability and an emergency situation would cause spike in such an interest. This is further supported by the correlation between the ACC_{Combined} and *YSVE*, as well as a statistically significant correlation between both of these dependent variable and *PNSVI*. At the same time, government effectiveness and regulation quality declining the interest in accountability and corruption increases. Such a correlation could point to the fact that decreasing the government efficiency and quality of regulation are likely to correlate with declining quality of the government services to citizens. The findings from the current could be used to inform the policy and to increase the buy-in from the local stakeholders. That had been shown to be a potential barrier to the successful implementation of disaster resilience after major disaster events, e.g. Hurricane Katrine (US GAO, 2015). Using tools such as the ones form this study can assist in the real-time monitoring of the drivers of public interest in exceptional social situations. Examination of the qualitative drivers of such interest can also be send targeted messages to the community which had been affected by a crisis/emergency/disaster. Accountability can be improved, and corruption levels can be decreased using such efforts.

Conclusions

Using tools such as the ones form this study can assist in the real-time monitoring of the drivers of public interest in exceptional social situations. Examination of the qualitative drivers of such interest can also be send targeted messages to the community which had been affected by a crisis/emergency/disaster. Accountability can be improved, and corruption levels can be decreased using such efforts.

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