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The role of experts and evidence-informed policies in the management of the Covid-19 pandemic and vaccine rollout: Evidence from sixteen countries

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Abstract

The aim of the present report is to assess the extent to which different governments drew upon expert advice on managing the Covid-19 pandemic during the containment phase and during the rollout of vaccines.

Sixteen countries, from across the globe and with different economic capabilities and political/institutional settings, were selected based on their intrinsic features and handling of the pandemic. The underlying theme of our case-selection strategy was to provide a wide and diverse set of illustrative cases that allow for further comparative analysis. Information was systematically collated for each country, from a wide range of sources including official governmental, academic, and media sources.

In analysing the data, several key themes emerged and we used these as subheadings to structure the write up of each country. To further make sense of the data, we created an index and sorted the countries into those with low expert involvement, medium expert involvement, and high expert involvement.

We utilised the data we gathered in line with statistics on each country's Covid-19 cases, deaths, and vaccinations to draw important conclusions on successful pandemic-management strategies. Findings suggest that the countries who involved experts across all phases of the pandemic, fared better in minimising the spread and impact of the virus.

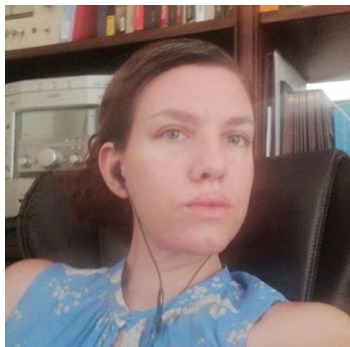
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1. Introduction

This report brings together some key findings of two projects: “A global mapping of the use of expertise and evidence-informed policies in the management of the Covid-19 pandemic”, and “A global mapping of vaccination policies and the role of experts”, funded by Research England Quality-related Research Strategic Priorities Fund and implemented by the Global Policy Institute, at Queen Mary University of London, in 2021 and 2022 respectively. The two projects created a database on how different governments across the globe employed expert input and evidence-informed policies to shape their response to the Covid-19 pandemic and to facilitate their vaccine rollout. The report discusses sixteen countries with different economic capabilities, different institutional barriers and different approaches to expert input and evidence-informed policymaking. To increase the generalisability of our cases (countries), we employed cases that can be treated as typical of distinct broader categories. The underlying theme of our case-selection strategy has been to provide a wide and diverse set of illustrative cases that encourage further single-case studies and comparative analysis.

The report first provides a mapping of the different types of institutions and structures involved in the management of the pandemic, the vaccine drive, and the relevant policies implemented in each country. More specifically, each ‘country profile’ gathers data on the institutions and bodies that provided expert knowledge to policymakers, the disciplines that informed policies, the decision-making bodies that were in position to apply evidence-informed policies, the role of experts in the government’s communication strategy, the role of regional/subnational level in the translation of expertise into measures, shifts in public trust in the government and experts during the pandemic, the institutions and bodies that provided expertise with respect to the approval of vaccines, incentives for vaccine uptake and/or penalties in cases of vaccine hesitancy, and the communication campaign to improve vaccine uptake. An attempt is then made to categorise data by means of an index which measures the involvement of experts in different stages of the pandemic; from its outbreak to the vaccine rollout. A matrix is then presented aggregating the above elements.

Our aim is to provide an in-depth picture on the topic and an accessible source of data for policymakers, to facilitate a discussion of best practices between governments, levels of governments and experts. By gathering evidence from a wide range of sources (i.e., official documents issued by the governments under examination, the discourse of political leaders and experts, other relevant databases, and well-regarded media and academic sources), our database offers a comprehensive overview of the different approaches to expert knowledge that governments adopted during the pandemic. Simultaneously, the database is expected to operate as an initial source of data for scholars that seek to conduct research on the politics of the pandemic and on its governance implications. Taken together, the database aims to facilitate the dialogue between academia and governments, and provides an additional tool for the implementation of evidence-informed policies during and beyond the pandemic.

2. Country profiles

Australia

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first Covid-19 case in Australia was announced on 25th January 2020. Despite an outbreak around Melbourne midyear and another in north-east New South Wales towards the end of the year, Australia has been widely cited as a 'success story' in terms of containing the pandemic as well as mitigating its economic implications. With a population of around 25 million, Australia has experienced lower infection and death rates than many comparable OECD countries. Indeed, Australia developed an effective contact tracing system, increased its hospital capacity, and conducted millions of tests - taking testing to the 'next level' (Graves and Bott, 2021). Therefore, the success of the country cannot solely be attributed to its island features and remoteness, but also to a mixture of effective actions, policies, and leadership practices.

In late-February 2020 the PM activated the 'Australian Health Sector Emergency Response Plan for Novel Coronavirus' and Covid-related units were set up within different government departments (e.g., Department of Infrastructure, Transport, Regional Development and Communications; Department of Foreign Affairs and Trade; Treasury; Department of the Prime Minister and Cabinet) in anticipation of the pandemic (Parliament of Australia, 2020). Within weeks, Australia closed its borders to non-citizens and non-residents (20th March), and restricted domestic travel by prohibiting all movement from one state where positive cases had been reported to the rest of the country (Knowlton, 2022). A two-week hotel quarantine (under police supervision) was imposed to all Australian nationals and residents returning from abroad. Social distancing measures also went into effect on 20th March and some states (i.e., New South Wales and Victoria) imposed local lockdowns and closed all non-essential businesses. Stricter nationwide measures were adopted on 23rd March. In early May 2020, some restrictions were eased as a result of decreases in the number of daily cases. A few outbreaks have occurred since, most notably the outbreak in Victoria during the summer period of 2020 which resulted in a 111-day hard lockdown, and the outbreak in Sydney's northern beach suburbs in December of 2020, where restrictions were reinstated and handled locally (Zhuang and Cave, 2020).

Three elements have played a key role in Australia's successful response to the pandemic: i) evidence-informed government action, ii) effective collaboration between the public and private sectors, and iii) trust-building with citizens (due in part to the strong working relationship created between state and federal government agencies and representatives). Firstly, the Australian Government quickly mobilised a team of respected health experts, who, following the Chief Medical Officer's lead, advised extensively on decisions at both state and federal levels. Expert knowledge came from pre-existing government bodies and agencies as well as novel groups and committees which were set up to assist with the Covid-19 response. The Ministry for Health also launched the COVIDSafe app, which made the contact tracing process easier. Because citizens were required to scan their QR-codes when entering any business or other premises, state and territory health authorities were able to manage and sometimes avoid local outbreaks. Secondly, the government established the National COVID-19 Coordination Commission (NCCC) - an open mechanism to enable collaboration - which brought the private and public sectors together. This ensured that there was an avenue for business input, and a swift governmental response to issues raised by businesses from the very beginning of the pandemic. Moreover, many private organisations proactively reached out to state and federal governments to help them respond and even set aside competitive pressures to work together for the common good. For example, Australia's biggest supermarkets (Woolworths, Coles, and Aldi) shared best practices and adopted common in-store cleaning and physical distancing measures (Child et al., 2020). Lastly, Australian citizens largely complied with the measures in place, indeed, building trust with citizens has been a crucial consideration in government action and communication regarding the pandemic.

Australia has now entered a 'learn how to live with Covid-19' phase of recovery where the focus is on managing localized outbreaks and revitalizing the economy. Three economic packages (accounting for

12.4% of the country's GDP), have provided support to Australian households and businesses, and a wage subsidy - the JobKeeper programme - was extended to 28th March 2021 given the duration of the pandemic and ensuing concerns about its long-term economic implications (Goldner and Letzkus, 2021).

Institutions and bodies providing expert knowledge to policymakers

The Federal government mobilised several bodies and expert committees to assist with the Covid-19 response. Some of them existed prior to the pandemic while others were set up for that specific purpose. These bodies advised on decisions at both state and federal levels. They held meetings on a daily or weekly basis and developed real-time frameworks and guidelines for how Australia should respond.

The Australian Health Protection Principal Committee (AHPPC)

The AHPPC is the key decision-making committee for health emergencies. It is comprised of all state and territory Chief Health Officers and is chaired by the Australian Chief Medical Officer. It has an ongoing role to advise the Australian Health Ministers' Advisory Council (AHMAC) on national priorities and mitigation measures relating to infectious diseases, the environment, as well as natural and human made disasters. To ensure the development and adoption of national health policies and standards, it collaborates with states and territories. During the Covid-19 pandemic, its role was enhanced, and it became the main technical and policymaking body that provided information and advice to the government (Bonyhady and Duke, 2020). Moreover, different agencies such as the Australian Institute of Health and Welfare (AIHW), the Australian Bureau of Statistics (ABS), and the National Health and Medical Research Council (NHMRC) -all of which have collected data and drafted guidelines for medical professionals - have coordinated their work under the AHPPC (Goldner and Letzkus, 2021). Its members met almost daily to review the latest available research and make plans to stop the spread of the virus.

The Communicable Diseases Network Australia (CDNA)

The CDNA is a joint initiative of the National Health and Medical Research Council and Australian Health Ministers' Advisory Council (AHMAC), comprising of Australia's leading communicable disease experts and policy advisors. Its role is to design and support a public health response in the event of a pandemic, such as Covid-19. The CDNA works closely with Australia's states and territories as well as with other countries to prevent and manage communicable diseases. During the Covid-19 pandemic the CDNA has provided advice to the AHPPC and developed national guidelines for areas including: i) the risk from travellers returning from abroad, ii) how to confirm cases and trace/manage contacts, iii) the criteria for releasing a positive case from isolation, iv) how to manage outbreaks in detention settings, v) how to manage outbreaks in residential care facilities. The CDNA has also provided health advice for health professionals and aged workers, the hotel and tourism industry, airlines, and schools (Australian Government, n.d.a).

The Public Health Laboratory Network (PHLN)

The PHLN is a national group of expert pathologists and medical laboratory scientists in public health microbiology. Its membership comprises of representatives from each state and territory as well as experts from the World Health Organisation Collaborating Centre for Reference and Research on Influenza, the Australian Federal Police, and the Australian Centre for Disease Preparedness. The PHLN has played a crucial role during the pandemic by providing guidelines for: i) the best ways to collect samples to be tested for Covid-19, ii) the best tests to diagnose Covid-19, iii) the limits of the Covid-19 tests that have been used, iv) novel ways of detecting Covid-19 including using saliva as a specimen. The PHLN has also advised the AHPPC on national laboratory capacity (Australian Government, n.d.b).

The National COVID-19 Coordination Commission (NCCC), the National COVID-19 Commission Advisory Board (NCCAB) & the National Coordination Mechanism (NCM)

The NCCC was established on 25th March 2020 as an advisory body within the Department of the PM and Cabinet. Comprising of leaders from the profit and non-profit sectors, it has provided advice to the government (National Cabinet, National Security Committee of Cabinet, and Expenditure Review Committee of Cabinet) on actions to anticipate and mitigate the economic and social effects of the pandemic. It was renamed to the 'National Covid-19 Commission Advisory Board' (NCCAB) in late-July 2020 following the shift in focus towards creating jobs and stimulating the economy (Goldner and Letzkus, 2021). The NCCC/NCCAB has also worked closely with the Chief Medical Officer and the Chief Health Officers of states and territories and has been regularly advised by the AHPPC for its recommendations to be in line with health experts' advice.

The National Coordination Mechanism (NCM), which has been reporting to the NCCC/NCCAB, has worked with other federal departments and state and territory governments to coordinate a nationwide response to issues outside the direct health management of Covid-19, e.g., education, public safety and policing, banking, transport, food, and agriculture. Based within the Department of Home Affairs, the NCM -through the NCCAB- has also facilitated the channelling of expertise from business and economic communities into the government (Goldner and Letzkus, 2021).

The Infection Control Expert Group (ICEG)

The role of the ICEG was to advise the AHPPC on infection prevention and control in health care, aged care, and the community. It includes practising doctors, nurses, and researchers with extensive experience in their respective fields. During the Covid-19 pandemic the ICEG provided advice to both health professionals (e.g., how to protect themselves and prevent the spread of the virus from patient to worker), and the community (e.g., how to use masks, follow cleaning routines, maintain physical distance from others) (Australian Government, n.d.c).

The Australian Technical Advisory Group on Immunisation (ATAGI) & the ATAGI COVID-19 Working Group

The ATAGI has advised the Federal government's Department of Health on the medical administration of vaccines available in Australia, including those available through the National Immunisation Programme (NIP). Moreover, it provides expert knowledge to research organisations on current immunisation research and consults with different stakeholders for the implementation of immunisation policies, procedures, and vaccine safety. The ATAGI Covid-19 Working Group, set up to respond to the pandemic, has provided technical advice to the government and Minister of Health on i) vaccine utilisation and prioritisation, ii) vaccine distribution and programme implementation, and iii) vaccine safety, evaluation, monitoring, and confidence (Australian Government, n.d.d).

COVID-19 Vaccines and Treatments for Australia – Science and Industry Technical Advisory Group

This group has advised the federal government on issues pertaining to the safety and effectiveness of potential Covid-19 vaccines, tests, and treatments; the options for purchasing and/or manufacturing Covid-19 vaccines and treatments; and the available distribution and logistics options associated with Covid-19 vaccines (Australian Government, n.d.e).

Culturally and Linguistically Diverse Communities COVID-19 Health Advisory Group

This group comprises of leaders from culturally, ethnically, and linguistically diverse communities and their representative organisations, health experts, and medical and public health practitioners. It has provided the government advice on the experience of these groups and communities in relation to the Covid-19 pandemic as well as recommendations for improving health outcomes (Australian Government, n.d.f).

COVID-19 Sports and Health Advisory Committee (C19SHAC)

This group has assisted the AHPPC in sport related issues during the transition to a COVID-safe Australia. It comprises of experts from across the sector and aims at providing support and guidance to sport and recreation organisations on the safe resumption of activities (Australian Government, n.d.g).

COVID-19 Arts and Health Advisory Committee (AHAC)

The AHAC has advised the government and the AHPPC on how to reactivate the cultural and creative sectors in a COVID-safe way. Its membership comprises of both health experts and industry representatives (Australian Government, n.d.h).

Advisory Committee for the COVID-19 Response for People with Disability

This group has provided expert advice to the Chief Medical Officer on the health care needs of people with disability, their families, and the disability service sector. This advice resulted in the development of

the Management and Operational Plan for Covid-19 for People with Disability. Its membership has included people with lived experience, health professionals, representatives from the disability and research sectors, and government officials (Australian Government, n.d.i).

The Aboriginal and Torres Strait Islander Advisory Group on COVID-19

This group has provided culturally appropriate advice to the Department of Health about Covid-19 and developed and helped implement the Emergency Response Plan for Aboriginal and Torres Strait Islander Australians and communities, across remote, regional, and urban areas (Australian Government, n.d.j).

Disciplines informing policies

Expert advice mainly came from clinicians and other health professionals (e.g., epidemiologists, pathologists, vaccinologists), and also from economists, microbiologists, laboratory scientists and social scientists.

Policymaking bodies receiving expertise

The response to the pandemic has been driven by state governments under the coordination of the Federal government. To ensure a coordinated Covid-19 response across the country, the PM announced the establishment of a 'National Cabinet' on 13th March 2020 comprising of himself and the premiers and chief ministers of the Australian states and territories. Decisions were made by the Cabinet, which met weekly, and other committees based on expert advice received by the AHPPC, the NCCC, the CDNA and the PHLN. State Premiers, following recommendations by their chief health officers, were then responsible for implementing response activities and reporting back to the Cabinet (Goldner and Letzkus, 2021).

The Federal government has taken the lead on the financial/economic front (e.g., the JobSeeker programme). In particular, the Treasury Department in collaboration with the National Cabinet and the Department of the PM and Cabinet has been responsible for the economic response to the pandemic. Moreover, the National COVID-19 Coordination Commission (NCCC) has provided advice on actions to mitigate the economic and social effects of the pandemic, and was later renamed to National COVID-19 Commission Advisory Board (NCCAB). The NCCAB has played an eminent role in boosting job creation and stimulating the economy.

Place of experts in the government's communication strategy

The Department of Health provided daily updates (every day by 9pm) on their website with the current situation, latest case numbers and related information. Regular press conferences were held by the PM, the State Premiers and chief health and medical officers. Among the more public and 'trusted' figures were the Chief Medical Officer Professor Paul Kelly and Professors Mary-Louise McLaws, Raina MacIntyre, and Sharon Lewin (experts in epidemiology and infectious diseases), who educated the public through hundreds of press conferences and interviews with media.

Role of regional/subnational level in the translation of expertise into measures

An element that played a key role in Australia's success in flattening the Covid-19 curve was the strong and efficient working relationship that was built between state and federal government agencies and representatives early on. This was made possible through the establishment of the National Cabinet and the bringing together of the PM and the heads of government of each state and territory. This forum enabled the development of a unified national response while it allowed the different states and territories to retain certain autonomy and decision-making powers. The different parties could also learn from one another as the meetings of the National Cabinet were backed by a technical committee of federal and state government public health experts. Independent reports, such as the 'National Contact Tracing Review', which described the characteristics of an optimal system of testing, contact tracing and outbreak management, were available to all leaders to consult and decide independently which practices to adopt. These reports were also made available to the general public, which in turn helped build public trust in government action. It goes without saying, however, that the different states/territories' governments have not always taken the same approach. Indeed, different measures were adopted, for instance, with regards to school closures and interstate border travel restrictions.

Impact of evidence-informed policies on public trust

Australia has managed to slow the spread of the virus because its citizens adhered to the strict measures and rules imposed by their government. The collective response that came from the state and federal

governments, the public and private sectors, and old and new decision-making bodies has been crucial in that regard. The fact that expert advice was put at the forefront of this effort, and that data and information were transparently shared helped build trust between policymakers, experts, and the general public. In fact, the 2020 Scanlon Foundation's report on social cohesion suggests that 85% of 3,000 respondents supported the Federal government's response to the pandemic while support for some state governments' responses exceeded 90% (Henriques-Gomes, 2020). Apart from trust in the government, another survey shows that Australians also exhibit high levels of confidence in scientists and experts (77% of the respondents); according to the same survey, 69% express satisfaction with former PM Scott Morrison's handling of the pandemic and 73% believe that he listened to experts (Evans, 2020). It could thus be argued that Australians "expect their governments to continue to listen to the experts, as reflected in the high regard that Australians have for evidence-based decision-making observed in the survey" (Evans, 2020).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Vaccination against Covid-19 in Australia began on 22nd February 2021; the previous day, former PM Scott Morrison, Chief Medical Officer Professor Paul Kelly, and Chief Nurse Professor Alison McMillan, together with a few frontline health workers and residents of a nursing home, received their jabs in a heavily televised 'ceremony' to demonstrate the vaccines' safety (BBC News, 2021a). The vaccine is available to the entire population, including to children aged 5-11 years following the relevant approval by the Therapeutic Goods Administration (TGA) in December 2021 (Australian Government, 2021a). Five vaccines have been approved in the country: Comirnaty (Pfizer/BioNTech), Spikevax (Moderna), Vaxzevria (Oxford/AstraZeneca), Nuvaxovid (Novavax), and Covid-19 Vaccine (Janssen/ Johnson & Johnson) while another 19 vaccines are in clinical trials (Covid19 Vaccine Tracker: Australia, 2022).

Australia's vaccination drive has been criticized for starting late and for its initial slow pace. According to former PM Scott Morrison, the EU's blocking of the shipment of some 3 million AstraZeneca doses in early 2021 – an accusation that the EU has denied (Karp, 2021) - has been a key factor (Edwards, 2021). Another factor was that pharmacists did not join GPs as distribution points, until June 2021 (Molloy, 2021). Although the Australian Government managed to gradually accelerate its vaccine rollout, and eventually reach one of the highest vaccination rates worldwide, the "confusion, miscommunication, delays and significant supply shortfalls" (Molloy, 2021) characterizing the Morrison Government's handling of the programme in the first months of 2021, might have played a role in Anthony Albanese's victory over Scott Morrison in the May 2022 Australian federal election.

The majority of Australia's unvaccinated population are hesitant individuals - notably pregnant women, people with bad past reactions to vaccines, and people with underlying health issues who are afraid of possible side effects of the vaccine. However, whilst anti-vaxxers represent only a small percentage of the unvaccinated, they have been quite loud (Yerushalmy, 2022; Westcott and Bloomberg, 2022). In fact, anti-vaccination protests have been common since the onset of the vaccination drive with demonstrators blocking roads, targeting businesses, and calling for an end to Covid-19 restrictions (BBC News, 2021b; Day and Carlson, 2021). Australia's anti-vax movement has brought together advocates of the 'sovereign citizen' movement, who refuse to adhere to pandemic-related government rules (Westcott and Bloomberg, 2022); pro-Trump QAnon conspiracy theorists, who claim that the government and Democratic politicians are Satan-worshippers who traffic children (Westcott and Bloomberg, 2022); Putin's admirers, who have been "praising Russia's invasion of Ukraine as an attack on the 'deep state'" (Butler and Martin, 2022); conspiracy theorists who believe vaccines contain tracking devices and microchips; and members of far right and anti-government groups, who have been spreading fake news through Facebook and Telegram. In addition, the United Australian Party has also contributed to the spread of misinformation, for instance with regards to the controversial drug Ivermectin (an antiparasitic drug used to treat some tropical diseases) (Day and Carlson, 2021). Institutional and media distrust have also played their part especially among Black and Indigenous communities owing notably to "centuries of colonial medical and legislative violence" (Day and Carlson, 2021).

Rules on vaccination

Rules for vaccines approval

Vaccines administered in Australia have been approved by the Therapeutic Goods Administration (TGA) - the medicine and therapeutic regulatory agency of the Australian Government Department of Health. The TGA is responsible for setting the quality, supply, and advertising of therapeutic goods, including prescription medicines, medical devices, blood, and blood products (Australian Government n.d.k).

Vaccination policies

Vaccination is voluntary except for residential aged care workers who since 17th September 2021 have to be fully vaccinated (Australian Government, 2022). Moreover, some states and territories have imposed strict restrictions to the unvaccinated. For instance, Queensland has banned unvaccinated individuals from visiting aged care, hospitals, prisons, hospitality venues, indoor entertainment venues, and outdoor entertainment activities (Colasimone, 2021). On the other side of the spectrum, a number of incentives were provided to encourage people to get vaccinated. While Labour leader Anthony Albanese proposed, in August 2021, a one-off cash payment of \$300 to every person who gets jabbed, the Morrison Government went for freedom incentives, notably exemptions from restrictions and mandates (Klapdor, 2021). GPs were even offered a lump sum of \$1000 if they vaccinated 50 aged care and disability workers and another \$20 for every healthcare worker thereafter (Hayes, 2021). A number of venues and companies have also offered discounts, freebies and bonuses ranging from free dinners and beers, to hotel stays, and pairs of jeans. Moreover, Qantas airlines has launched a 'mega prize draw' offering ten people a year's worth of flights, free accommodation, and free fuel (Borys, 2021). Lastly, the Million Dollar Vax Alliance (a group of philanthropists and businesses), has offered a million-dollar prize and 3,100 vouchers each worth \$1,000 as vaccination incentives (SkyNews, 2021).

Bodies involved in vaccine rollout

Similar to the overall management of the pandemic, the Australian Government employed experts and followed their advice during the vaccination drive. More specifically, the Australian Technical Advisory Group on Immunisation (ATAGI) - which is part of the Australian Government's Department of Health and is in constant dialogue with state and territory governments - has been providing advice to the Minister of Health and the Pharmaceutical Benefits Advisory Committee (PBAC) on the National Immunisation Programme, including on the medical administration of vaccines and evidence regarding the effectiveness of existing and new vaccines (Australian Government, n.d.i). ATAGI also consults with the National Immunisation Committee (NIC) on the content of the Australian Immunisation Handbook as well as with the Communicable Diseases Network Australia (CDNA), the Australian Drug Evaluation Committee (ADEC) and the Adverse Drug Reactions Advisory Committee (ADRAC) on the implementation of vaccination policies and vaccine safety (Nolan, 2010). During the Covid-19 pandemic, ATAGI has recommended, among others, the use of the AstraZeneca vaccine for people over 50 - a recommendation that was revoked after two deaths, which resulted in a new recommendation for the vaccine in question to be administered to those over 60 (Hitch, 2021); the vaccination of the 12-15 age group with the Pfizer vaccine (Australian Government, 2021b); and that all individuals aged 18 years and over should receive booster doses. ATAGI comprises of 15 voting members, appointed by the Minister of Health for a four-year term, and six ex-officio members including the Director of the Therapeutic Goods Administration (TGA), the Director of the National Centre for Immunisation Research and Surveillance and representatives from the Communicable Diseases Network Australia (CDNA) and the National Immunisation Committee (NIC).

According to the Covid-19 vaccine national rollout strategy, priority was initially given to quarantine and border workers, frontline healthcare workers, and aged care and disability care staff and residents (phase 1a). The next phase involved those aged 70 years and over, other healthcare workers and other high-risk workers (e.g., police, defense and fire), Aboriginal and Torres Strait Islanders over 55, and individuals with underlying medical conditions (phase 1b). Phase 2a included individuals aged 50 years and over and Aboriginal and Torres Strait Islanders 18-54. Phase 2b then involved the entire adult population (Australia's Covid-19 Vaccine National Rollout Strategy, n.d.).

Communication Strategy

The Australian Government's Covid-19 vaccination communication campaign, which involved an investment of more than \$90 million, has been structured in phases with different messages and ads rolling out across TV, radio, billboards, and social media at different points throughout the pandemic (Australian Government, 2021c). During summer 2021, for instance, following the recommendation of public health experts and criticism by the opposition, a revamped campaign, promoting the message 'arm yourself' and showing ordinary citizens displaying band aids on their arms after getting jabbed, was launched (Haydar, 2021). The next phase, known as the 'Spread Freedom' campaign was launched in

October 2021 and promoted messages such as ‘we’re almost there Australia’ and ‘For our past, for our future, for all of us. Get vaccinated for Covid-19’. This time public figures, such as model Samantha Harris, musician Baker Boy, chef Nornie Bero and street artist Tori-Jay Mordey were also ‘recruited’ to boost vaccination uptake. Finally, the head of the Commonwealth’s vaccine task force, Lieutenant General John Frewen, responsible for accelerating the vaccine uptake and planning the communication campaign, “has taken on an increasingly public role as the face, and uniform, of the vaccine rollout itself” (Remeikis and Hurst, 2021).

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Brazil

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first case of Covid-19 in Brazil was identified on 27th January 2020. This led the government to issue an alert level 2 – imminent danger – warning (INGSA, 2020a). In view of the incoming pandemic, the Ministry of Health announced that it will allocate an additional 1,000 beds in hospitals for possible Covid-19 cases. On the 3rd February 2020, following a rise of confirmed cases, the government declared the Covid-19 epidemic a Public Health Emergency of National Concern. The latter status allowed for the establishment of the Public Health Emergency Operations Center as a national mechanism for the coordinated management of emergency response (Croda and Garcia, 2020). Subsequently, on 20th March 2020 Brazil declared a public health emergency (Andreoni, 2021). Two days later Brazil's Ministry of Health declared the recognition of community transmission of Covid-19 throughout the national territory. In practical terms, the declaration was an instruction from the Ministry of Health to all administrative entities to ban gatherings and implement social distancing measures (Outbreak News Today, 2020). Finally, in mid-March 2020 the government asked the congress to approve a 'State of Public Calamity' status, which allowed flexibility in meeting the fiscal targets established for 2020 (Itaú BBA, 2020).

A couple of months later, on 12th March 2020, the Federal District of Brazilia decided to close down schools, later all public and private schools in the country were closed by 17th March 2020. Despite the fact that certain regional governments and the President himself expressed their support for the opening of schools in April, easing of restrictions was prohibited by a number of regional courts (Lemos, 2020). At the same time, Brazil introduced a number of border restrictions with the aim of mitigating the spread of the virus. Initially, international travelers and people with symptoms were required to isolate (INGSA, 2020b), while on 23rd March 2020 it was decided to ban entry completely for passengers coming from numerous countries including EU countries, Japan, Australia, Iran, and most Latin American countries (INGSA, 2020c). From 30th March 2020 and for the next few months, the ban was extended to all international passengers (INGSA, 2020d; INGSA, 2020e).

Brazil's subsequent response to the first wave of the Covid-19 pandemic varied between its regions. Most regions and municipalities declared a state of emergency in mid-March 2020 and took measures that would last until the end of April 2020 in most cases (INGSA, 2020f). In particular, Sao Paulo imposed a statewide quarantine, while it also closed all non-essential services, including restaurants, bars, shopping centres, and schools. At the same time, residents were urged to stay at home. The region of Minas Gerais ordered the closure of non-essential businesses, a ban on gatherings of 30 or more people, and the cancellation of public events. Rio de Janeiro put in place orders requiring non-essential businesses to close, and residents to stay at home. It also limited the capacity of public transport services to ensure social distancing. Bahia cancelled most intercity transport and implemented restrictions to travelers coming from Rio de Janeiro and Sao Paulo. In addition, the regional government closed most essential businesses and schools. The Federal District also took similar measures. Finally, the regions of Rio Grande do Sul closed non-essential businesses, schools, and banned gatherings of 30 or more people, while it also imposed specific regulation for public transport. The regions of Parana and Pernambuco both ordered the closure of non-essential businesses and the cessation of in-person teaching in schools and universities (World Aware, 2020).

In May 2020, Brazil became the hardest hit country by Covid-19 in Latin America. Nevertheless, regional governments (in cooperation with the Federal government), decided to ease restrictions in June 2020 without seeing any evidence that the infection rate was slowing. In early June 2020, Rio de Janeiro and Sao Paulo (the biggest and most affected region) both decided to allow non-essential businesses and venues to reopen. The provinces that went on to relax restrictions kept in place mask-wearing and social-distancing requirements (Abdalla, 2020; Bostock, 2020). Subsequently, most non-essential businesses remained open during August 2020 (BBC, 2020).

The mortality rate in Brazil seemed to slow down in August and early September 2020 (Fonseca, 2020) but intensified again in November through December 2020. Nevertheless, the regional governments and the Federal government appeared hesitant to re-establish restrictive measures (Andreoni, 2021). Further

complications arose when the vaccine rollout faced supply problems (Pooler, 2021), as the country reported a record number of daily confirmed cases in early March 2021, partially due to the Covid-19 variant found in Brazil (Milz, 2021). Consequently, Brazil's healthcare system has reportedly reached its limits (McCoy, 2021).

Overall, Brazil's response to the pandemic was highly politicised with the Federal government occasionally being in open opposition to expert advice and to regional governors. While regional governments chose to broadly follow the advice of experts and, thus, impose substantial restrictions, the Federal government undermined this message by urging people to push for a prompt lifting of lockdown measures. On top of that, Brazil's President Jair Bolsonaro politicised the post of Health Minister by dismissing two Ministers that were not willing to embrace his views on pandemic management. Bolsonaro subsequently gave the post to an army officer with no experience in health policy. Bolsonaro also created parallel crisis-management structures, contributing to regime complexity and exacerbating the already problematic coordination between the federal and the regional level of government.

Bolsonaro's perceived mismanagement of the pandemic resulted in a legislative inquiry committee of the Brazilian Senate to draft a report accusing Bolsonaro of impeachable conduct and committing crimes against humanity. The latter allegation was based on the claim that the Brazilian government sought to achieve herd immunity via contamination rather than via mass vaccination (Meyer and Bustamante, 2021). Public opinion surveys have demonstrated that the politicization of health policies and the Bolsonaro's choice to dismiss the advice of experts, has led to a reduction of public trust in state decisions. In addition, the President's and the government's approval rate have dropped, whilst both local and state governments that followed expert advice gained in approval, and scientists and medical experts saw gains vis-a-vis their level of public trust.

Institutions and bodies providing expert knowledge to policymakers

The Fiocruz Oswald Cruz Foundation

One of the main sources of expertise in Brazil was the Fiocruz Oswald Cruz Foundation. The foundation is affiliated with the Federal Ministry of Health, and its mandate includes the production and dissemination of knowledge and technologies aiming to strengthen Brazil's Unified Health System. To better serve this goal Fiocruz has institutional presence in all Brazilian regions as well as internationally. In this respect it is in close cooperation with the WHO and the Pan American Health Organisation (Fiocruz, n.d.).

During the Covid-19 pandemic Fiocruz operated as the reference institution for testing on the novel coronavirus. Capitalising on its long experience with respiratory illnesses, the institute worked closely with the Ministry of Health to coordinate Brazil's response to the pandemic by ensuring timely and reliable diagnostics. In addition, several bodies operating under the Foundation were involved with the country's response to the pandemic. In particular, the Oswaldo Cruz Institute's Laboratory for Respiratory Viruses and Measles (IOC/Fiocruz) contributed to the country's response. Furthermore, Fiocruz has two national reference institutes to assist patients: the National Institute of Women, Children and Adolescents' Health Fernandes Figueira (IFF/Fiocruz) and the National Institute of Infectious Diseases Evandro Chagas (INI/Fiocruz) (The Global Health Network, n.d.).

The Institute Evandro Chagas

The Institute Evandro Chagas has also provided expertise vis-à-vis research and testing. It is linked to the Ministry of Health and operates in the areas of biomedical research; conducting research on biological sciences, and environmental and tropical diseases. Subsequently, its personnel includes highly qualified biomedical and health scientists. Since the beginning of the pandemic the Evandro Chagas Institute has acted as a reference institution for detecting Covid-19 cases. It subsequently cooperated with regional and state governments to advise them on protection measures, while it also provided research-related feedback to other research institutions (Instituto Evandro Chagas, 2020).

Disciplines informing policies

Brazil hosts several highly specialised institutions that conduct biomedical research. In addition, some of them have developed extensive knowledge on respiratory illnesses, thus making them very relevant to the handling of Covid-19. These medical expert bodies have been consulted during the Federal government's decision-making process, as well as economists and finance experts. Yet, while the Federal

government was less willing to draw from this array of medical expertise, the regional governments did, thus informing their policies with the latest developments in medical research.

Policymaking bodies receiving expertise

With respect to the Federal government, the Federal Ministry of Health was placed at the forefront of the government's response to the pandemic. On 30th January 2020, the Federal government published Decree No. 10.211 reactivating the Inter-ministerial Executive Group on Public Health Emergency of National and International Importance. The mandate of this group was to propose protective measures on public health emergencies at the national and international levels, as well as local criteria for monitoring emergency situations. The reactivation of this group meant that the Ministry of Health obtained the authority to coordinate representatives of the following bodies: Civil House, Ministry of Justice and Public Security, Ministry of Defense, Ministry of Agriculture, Livestock and Supply, Ministry of Development, Institutional Security Office, and the National Surveillance Agency (INGSA, 2020g).

At the same time the Ministry of Health established an Emergency Operations Centre to coordinate the emergency response at the national level (INGSA, 2020h). Three bodies comprised this centre: the Fiocruz Foundation, the Brazilian Health Regulatory Agency, and the Pan American Health Organisation (Szylovec et al., 2021). The Centre was mainly responsible for providing information to the public on government guidelines, and to liaise with regional health officials. It also made proposals to the Ministry of Health for the activation of health teams, the acquisition of goods, and the contracting of services necessary for the pandemic (INGSA, 2020h). Finally, the centre provided training to health professionals, and clinical practice guidelines (Szylovec et al., 2021). The Centre subsequently developed the "National Contingency Plan for Human Infection with the new Covid-19 Coronavirus," which established three levels of emergency: alert, imminent danger, and public health emergency. Each level of alert entailed a different mode of operation vis-a-vis the division of labour between public institutions (Szylovec et al., 2021).

In addition to the work conducted by the Emergency Operation Centre, the Ministry of Health published recommendations on non-pharmaceutical intervention measures to be adopted by regional governments. These recommendations included measures promoting personal and public hygiene, self-isolation advice, the use of masks, and social distancing. Of course, as noted earlier, states were not obliged to take up these proposals, yet most of them did. The Ministry of Health was also involved with mobilising the country's healthcare professionals and purchasing the necessary protective equipment for them (Szylovec et al., 2021).

Despite the efforts of the Ministry of Health and of regional governments to follow experts' advice, the country's President, Jair Bolsonaro, took a different approach. First, Bolsonaro established a crisis committee against Covid-19 in parallel with all of the above structures, further complicating the Federal government's response. This committee was chaired by the President's chief of staff, an army official, and was mandated to coordinate government policy and to provide advice to the President. Its membership included all cabinet members, the governor of the Central Bank, the governors of all public banks, the Emergencies Operations Centre, and the Brazilian Health Regulatory Agency (Berti, 2020).

In addition to exacerbating institutional complexity, Bolsonaro embraced a rhetoric that underplayed the seriousness of the virus while pushing for the lifting of lockdown measures. The President suggested that avoiding an economic downturn was more important than mitigating the spread of the virus, and called on his supporters to defy restrictive measures and push local officials to reverse them (Barberia and Gomez, 2020). At the same time, the President appeared to support unfounded medical claims such as promoting the use of hydroxychloroquine (a medication used to treat malaria) to treat the virus. Bolsonaro also doubted the effectiveness of social distancing measures, and the Covid-19 vaccine.

Place of experts in the government's communication strategy

The Institute Evandro Chagas created a special website to answer the public's questions regarding the pandemic and the work of experts, however its message has been diluted by the Bolsonaro's pandemic narrative. Specifically, President Bolsonaro has publicly characterised Covid-19 as a flu, and he has distanced himself from experts (Barberia and Gomez, 2020). Indeed, this reflects his wider approach to the issue. Since his election Bolsonaro has cut research funding, substituted managers of research

institutes with political appointees, and publicly intimidated scientists (Nunes et al., 2020). Moreover, In June 2020/2021? the Federal government removed data on the Covid-19 epidemic from the public view. The Health Ministry removed the data and also stopped providing a total count of confirmed cases or a total death toll (Mano, 2020). Overall, it is quite clear that Brazil's government undermined experts during the Covid-19 pandemic opting to promote a message focused on economic recovery.

Role of regional/subnational level in the translation of expertise into measures

In Brazil the tax-based unified health system operates in a decentralised manner allowing municipalities and states to implement their own health policies with the support of the Federal government. While some level of coordination is expected between the regions and the Federal government, the former took the lead with respect to the management of the Covid-19 pandemic (Szylovek et al., 2021). Subsequently, state governments broadly followed expert advice and worked to increase intensive care units, transfer cases to areas with lower demand for health services, and even employed the private health system to treat Covid-19 patients (Barberia and Gomez, 2020). Yet, it is important to note that the reason that regional governments took the lead was not just the existing institutional arrangement but also the lack of a coordinated response at the federal level.

Impact of evidence-informed policies on public trust

Available surveys seem to suggest that the country's poor performance, the politicization of health policy and the President's choice to dismiss experts has led to a reduction of public trust in state decisions (Mohmand et al., 2020). In turn the President's and the government's approval rate has dropped. Yet it appears that local and state governments that followed expert advice gained in approval (Boadle, 2020). Scientists and medical experts have also enjoyed a boost in their public trust. In a survey conducted in early March 2020, scientists, doctors, WHO officials, and healthcare authorities were top of the list as the most trusted sources of information vis-à-vis the coronavirus. On the other hand, journalists, political leaders, and government officials ranked very low in the list (Mendoza, 2020).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Brazil registered its first Covid-19 case on 26th February 2020 (Bernadeau-Serra et al., 2021) and it administered its first emergency vaccine (CoronaVac) on 17th January 2021 to a nurse in Sao Paulo (Biernath, 2022). The same day marked the approval of both the aforementioned CoronaVac (Sinovac) and AstraZeneca Oxford (Vaxzevria) vaccines by the National Health Surveillance Agency (ANVISA). Later, five more vaccines were made available: Cormirnaty (Pfizer/BioNTech); SputnikV (Gamaleya); Covid-19 Vaccine (Janssen/Johnson & Johnson), Covidshield/AstraZeneca formulation (Serum Institute of India), and Covilo (Sinopharm) while another 12 are in clinical trials (Covid19 Vaccine Tracker: Brazil, 2022).

Brazil's anti-vaccine and vaccine hesitancy movement plays a very particular role, given that it has a significant impact on government policy. President Bolsonaro has expressed scepticism throughout, downplayed the seriousness of the virus (Bernadeu-Serra et al., 2021), and voiced his distrust of vaccines originating from Russia, and China in particular (Bernadeu-Serra et al., 2021; Gramacho and Turgeon, 2021). As a result, Brazilians showed higher levels of scepticism and hesitancy when told the vaccine would originate from China and Russia (Gramacho and Turgeon, 2021). Supporters of the President are more likely to be hesitant about vaccination, as is exemplified by the predominant support of the alternative treatment- hydroxychloroquine, despite it being largely acknowledged as ineffective against Covid-19 (Barberia and Gomez, 2020). Additionally, social media platforms such as WhatsApp, were used to tout 'alternative' treatments and propagate misinformation (Soares et al., 2020). Although this has had an effect, leading to a lower vaccination rate compared to neighbouring countries, scepticism and vaccine hesitancy remain relatively low at 10% (Gramacho and Turgeon, 2021).

Rules on vaccination

Rules for vaccines approval

Brazil is divided into states, and each state defined its own vaccine regulations and rollout process. The Federal government required all vaccines purchased by the states be approved by the National Health Surveillance Agency (ANVISA)- which is responsible for approving and supervising products of all types (food, medication, vaccines) - before they are made available to the public (CNN, 2020).

Vaccination policies

Due to the model of governance in the country, there were no national rules that all citizens were required to follow. When it came to vaccination, implementation of mandates was largely left to the states and employers. Some states demanded proof of vaccination, with Sao Paulo requiring it in state schools (Araujo et al., 2022). This system has abided by the laws that emphasize state rights and patient right of choice, but has also made the management of the pandemic more difficult, given that not all states had the same access to resources necessary to acquire and rollout vaccines (Gazel, 2022; G1, 2022). Indeed, Southern states, like Sao Paulo, have much higher vaccination rates than Northern states with high indigenous populations, like Amazonians. However, as of September 2022, the President of the Superior Labour Court, Maria Cristina Peduzzi, announced that employers can fire employees that refuse to get vaccinated, provided they have no reasonable excuse not to (Shepard, 2022), stating that public health supersedes the right to not get vaccinated in this case.

Generally, most states started making vaccines available for priority groups (healthcare staff, indigenous peoples, people over 75 years of age) and later made them available to the general population. Like many other countries, the latest group able to be vaccinated were children 5 and over (G1, 2022). States are now vaccinating with the 4th dose.

Bodies involved in vaccine rollout

The rollout of the vaccine in Brazil has been plagued by administrative failure, which makes the analysis of the role of experts very complex, especially when accounting for the model of governance. Bernadeu-Serra et al. (2021) explain that the three spheres of governance are federal, state, and municipal. The Ministry of Health has been in charge of the coordination between these three spheres and of the National Plan for the Implementation of the Vaccine against COVID-19 (PNI), which was put together with the help of the Department for the Immunization of Transmittable Diseases (DEIDT) and the Secretariat for Health Surveillance (SVS) (Ministry of Health, n.d). Additionally, the Ministry was responsible for acquiring vaccines and the materials needed in order to vaccinate. The Ministry of Health has also been responsible for requesting doses of the vaccine (Soares, 2020). Furthermore, on a wider international scale, the COVAX facility, operated by the World Health Organisation in order to boost vaccine access, had a role by being responsible for delivering doses of vaccine to the country (Agencia Brasil, n.d.).

Although much of the coordination in the rollout was left to states and municipalities, the federal level was necessary for the successful management of the pandemic; yet there were many flaws at this level. The initial scepticism displayed by the administration and the lack of urgency towards vaccination had a big impact on vaccine availability. Indeed, syringes and needles were not available to roll out in a nationwide campaign (Bernadeu-Serra et al., 2021). This alongside the now uncovered corruption scandal regarding the vaccine rollout has added further evidence on the negative role that the Bolsonaro administration has had on the vaccine rollout (Taylor, 2021). Within these circumstances, it is crucial to highlight that each state was responsible for organising and distributing vaccines as well as needles and syringes. Lastly, municipalities were responsible for executing vaccination and managing their municipal stock.

The federal agency, ANVISA, has been the biggest player on a wider level, being responsible for testing and approving all vaccines before allowing states to rollout (Bernadeu-Serra et al., 2021). Additionally, it has been advising each municipality and state on how to best preserve the vaccines in order to ensure quality (Anvisa, 2021). Through the 'Crisis Committee for the Supervision and Monitoring of the Impact of COVID-19', a federal committee set up to deal with the crisis more appropriately in 2020 and which included ANVISA participation, priority groups were established with regards to vaccination (Planalto Brazilian Government, 2020) and direct advisory to the presidency was provided. Thus, the work of ANVISA to test and approve vaccines became even more important in combating scepticism and misinformation from the high office of the country.

Communication Strategy

Due to widespread misinformation, it was crucial to create an effective campaign for positive education about vaccines to encourage citizens to take them. ANVISA played an active role in coordinating education campaigns by setting up virtual lectures and sessions, making audiovisual resources available online and

setting up a Q&A section solely for common vaccine related questions (ANVISA, 2020). The Ministry of Health was also involved in encouragement campaigns, using the *Ze Gotinha* (Droplet Joe, a character made to make vaccination more appealing to children) through TV and online ads in an effort to remind the population of the importance of taking two doses of the vaccine (Federal Government, 2021). Additionally, the National Council of Health in conjunction with the National Council of Health Secretaries (Conass), the National Council of Municipal Secretaries (Conasems) and the Pan-American Organisation of Health (Opas) worked on a campaign aiming to educate citizens on the importance of taking three doses of the vaccine (CNS, 2022). Alongside these efforts, which took place on a national level, municipalities and states also invested in their local campaigns. In the municipality of Natal, in the state of Rio Grande do Norte, the council invested over 5M Brazilian Reals in the education campaign (Prefeitura de Natal, 2022). This reflects a potential challenge as richer states were able to invest in such campaigns while poorer states, with fewer resources to spare and a more complex Covid-19 situation, could not afford to do the same.

To further boost confidence in the vaccine, Pfizer hired famous presenter Tiago Leifer to be a part of the campaign “Vacina: Tomar para Retomar”. This included advertisements through television, radio, websites, and social media and made educational resources easy to access through the company’s website (Farias, 2021). Digital influencers also got involved, educating about vaccination and encouraging their audiences, especially younger people, to get vaccinated. This included using memes, videos and even giveaways (Arrudas, 2021). Moreover, singers Maiza and Luiza Sonza shared pictures of themselves getting vaccinated and reminded the population of the importance of doing so through their social media platforms that have millions of followers (Berrogain, 2021). Many celebrities have positioned themselves against the conspiracy theories and scepticism expressed by the President, including actors Marcelo Serrado and Tais Araujo (Redacao, 2021). For example, Mariana Ximenes, a famous Brazilian actress, posted a picture of herself getting vaccinated using the caption “for Paulo Gustavo, and the over 500 thousand people that died because they couldn’t get vaccinated” (Gomes, 2021).

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Bulgaria

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

Bulgaria registered its first Covid-19 case on 8th March 2020, with the government announcing that two men from a northern city and two women from a central city had tested positive (Crisis24, 2020). Tracing and monitoring of those who had been in contact with the first identified cases was conducted, and the initial patient was treated (RFE/RF, 2020). Only five days later the number of cases had increased to 23. This prompted a unanimous vote to declare a state of emergency for a month (Tsolova and Evans, 2020), which resulted in the enforcement of travel restrictions and the closing of educational establishments. During this time the police could intervene if isolation and other restrictions were not respected (Tsolova and Evans, 2020). The pandemic found the country plagued by a series of other challenges, notably an ageing population, a transitional economy, a growing number of chronic illnesses and a weak healthcare infrastructure (Džakula et al., 2022), all of which made its handling even harder. Preparations and response to the pandemic was further complicated by a lack of coordination between the national and regional/local administrations, and citizens lacking health insurance (15% of the population) (Džakula et al., 2022).

Early actions included: the establishment of supply chains for personal protection equipment (PPE) and other medical resources to prevent the spread of the virus, the allocation of sufficient healthcare workers for patients with chronic conditions (Dzakula et al., 2022), and restrictive measures such as a strict lockdown, restriction of public gatherings, recommendations to work from home, and mask mandates in public places (Dzakula et al., 2022; Euronews, 2020). These measures, in conjunction with an overall central government-based response (Dzakula et al., 2022), meant that by the summer of 2020 the number of cases and deaths remained relatively low, which in turn resulted in some of the restrictions being lifted (Dzakula et al., 2022). A spike in covid cases in autumn 2020 forced the government to introduce a new lockdown in hopes of controlling the rapid rise of cases and deaths, especially in the face of understaffed hospitals and the looming Christmas season (Tsolova, 2020). These measures were met with protests citing the lack of preparation and reform of the education and healthcare systems which made compliance difficult for the populace (Tsolova, 2020).

Ahead of the national elections, in March 2021, the country announced another lockdown and a spike in cases and deaths (RFE/RL, 2021). It is of note that Bulgaria had access to vaccines at this point but presented the lowest vaccination rate in the EU (RFE/RL, 2021) which made the situation more pronounced. With the emergence of new variants, the government introduced a 'green certificate' (i.e., proof of vaccination, prior infection, or negative test) which was required for many activities and access to facilities. This was implemented to avoid another lockdown (Pieterse, 2022). Despite the increase in the number of cases due to the emergence of the Omicron variant in 2022, no further lockdowns were imposed. Finally, in April 2022 the state of emergency was lifted. The domestic measures set up during the state of emergency were lifted as well (Crisis24, 2022). The following month brought an end to travel restrictions (Schengenvisa, 2022).

Although the pandemic has had a major impact economically, socially, and even demographically in the country (Rangachev et al., 2022); and the response seems to have been plagued by low investment, poor coordination and distribution of resources between the national and sub-national levels, and lack of public trust (Dzakula et al., 2022) there have been some improvements recently.

Institutions and bodies providing expert knowledge to policymakers

National Operational Headquarters (NOH)

The National Operational Headquarters was created in February 2020 by Boyko Borissov, the former Prime Minister (BGNES, 2021) and consisted of representatives of the Ministry of Health, the Ministry of Internal Affairs, the Ministry of Foreign Affairs, the National Centre for Infectious and Parasitic Diseases, the Military Medical Academy (Dzakula et al., 2022) and other experts (FRA, 2020). Its main purpose was to help coordinate the response and come up with countermeasures against Covid-19 (FRA, 2020). The

NOH has also provided advice to the government regarding these same measures. For example, it provided advice to the Ministry of Health on the creation and establishment of a Health order that was published on 16th March 2020 (Bulgaria Air, 2020). The body also made relevant amendments to the Health Act (Dzakula et al., 2022; FRA, 2020) and was involved in the creation of the State of Emergency Measures Act (Dzakula et al., 2022). Lastly, the NOH was responsible for providing daily briefs which addressed the number of cases, any new measures that were adopted, and information about the level of preparedness of the healthcare system (FRA, 2020). The body was disbanded on 15th April 2021 (BGNES, 2021).

Medical Expert Council

This ad hoc body comprised of medical experts, was established on 23rd March 2020 (BTV Novite, 2020) by the PM's request, to address important medical questions (BNR, 2020) and prepare guidelines for diagnostics of Covid-19 patients (Dzakula et al., 2022). It was short-lived, lasting only for two weeks because board members disagreed with decisions made by the government and the National Operational Headquarters, which invariably affected public trust and citizens' compliance (Dzakula et al., 2022).

Other experts

Although their disciplines or areas of expertise are unclear, other experts were also consulted for the management of the pandemic (Dzakula et al., 2022).

Disciplines informing policies

Expert advice in the National Operational Headquarters mainly came from microbiologists, virologists, epidemiologists, and immunologists as well as public health researchers (EATRIS, n.d.). In the Medical Expert Council, there were also experts in lung diseases (BNR, 2020), and several other medical experts (Dafinova, 2020) including infectious disease specialists, neurologists, pediatricians, pulmonologists, psychiatrists, as well as lawyers and journalists (BTV Novite, 2020).

Policymaking bodies receiving expertise

The Ministries of Health, Foreign Affairs, and Internal Affairs made mandates and decisions based on advice and guidance given by the National Operational Headquarters. The PM also made decisions based on information and expertise coming from the National Operational Headquarters (Bulgaria Air, 2020). Final decisions were taken by the government.

Place of experts in the government's communication strategy

Most of the communication seems to have been undertaken by the PM with the guidance of the National Operational Headquarters (national crisis staff), through announcements (BNR, 2020). Additionally, the National Operational Headquarters carried out daily briefings updating the population on any developments and new measures taken (FRA, 2020). The Medical Expert Council also released relevant information (Rone and Hristov, 2020).

Although the centrally led response in the beginning of the pandemic seemed to be helping with the cohesion and coordination of the communication campaign (Dzakula et al., 2022), public trust diminished due to contradictory positions and conflicting information presented by the two expert bodies (Rone and Hristov, 2022).

Role of regional/subnational level in the translation of expertise into measures

The central government was responsible for the overall management of the pandemic, whilst regions and municipalities had to implement the measures taken centrally. Initially, lower governmental levels complied with the imposed measures and restrictions, however, the centralised planning led to disorganisation and confusion which made enforcement on the ground more difficult (Dzakula et al., 2022). This lack of coordination between different levels of government eroded public trust, and while the regional governments were blamed for the poor coordination and response as the pandemic developed (Dzakula et al., 2022).

Impact of evidence-informed policies on public trust

Levels of public trust were initially high in the country (Dzakula et al., 2022) mostly due to what was at first a cohesive and well-structured response. However, the economic and demographic effects of successive lockdowns and the contradictory information that was disseminated by the two relevant expert bodies (Rone and Hristov, 2022) led to an erosion of trust in experts, a generalized anti-confinement sentiment

(CNN, 2022), and lower compliance to restrictions, which impacted the country's fight against Covid-19 (Dzakula et al., 2022).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Vaccination against Covid-19 in Bulgaria started on 27th December 2020 with the first jabs being administered to the then Health Minister, Kostadin Angelov; the head of the National Operational Headquarters, Prof. Vencislav Mutafchiyski; and Bishop Tikhon Tiveriopolski - whose vaccination was meant to reflect the Bulgarian Orthodox Church's support for the vaccination campaign (BIRN, 2020). The vaccine is available to the entire population, including for children aged 5-11 years (ECDC, 2022). Five vaccines have been approved in the country: Comirnaty (Pfizer/BioNTech), Spikevax (Moderna), Vaxzevria (Oxford/AstraZeneca), Covid-19 Vaccine (Janssen/ Johnson & Johnson) and Nuvaxovid (Novavax) (Covid19 Vaccine Tracker: Bulgaria, 2022). However, many citizens refuse to get vaccinated.

Bulgaria has the lowest vaccination rate in the EU for several reasons. Firstly, there were logistical issues, management missteps, and distribution delays at the onset of the vaccine rollout (Gomez, 2021; Dzhambazova, 2021). Secondly, political instability has led to three parliamentary elections taking place in just eight months (O'Leary, 2021; Petkova, 2021). Thirdly, authorities failed to launch a comprehensive communication campaign and there is a lack of institutional reaction against the spread of misinformation (Lavchiev and Heil, 2021; Neagu and Nikolov, 2021). Lastly, there continues to be generalized mistrust in institutions, authorities and official information (France24, 2021).

Bulgaria has a strong anti-vax movement stemming from conspiracy theories, superstition, and distrust in the government and institutions (Rankin, 2022; O'Leary, 2021). According to a November 2020 poll, 52% perceive Covid-19 as an artificially created virus; 40% consider that pharmaceutical companies invented it to make profits; 33% think that it is not worse than the flu; and 16% believe that vaccines against Covid-19 insert magnetic microchips able to control people (Petkova, 2021). Such theories have circulated widely on social media during the vaccination rollout (France24, 2021; O'Leary, 2021), and protests by anti-vaxers, against restrictive measures and health passes, have been constant (Gomez, 2021; Detev, 2022). The anti-vax movement has also been associated with the far-right nationalist party Vazrazhdane (Revival), which entered into parliament with an anti-vaccination programme in the November 2021 elections. Despite its leader - Kostadin Kostadinov - referring to the vaccine as 'experimental liquid', it has since been revealed that a third of the party's delegates have been vaccinated (Detev, 2022; Gomez, 2022). Lastly, another major challenge has been the forgery of fake vaccine certificates; it has been reported that doctors charge people who wish to get 'proof of vaccination' without actually getting vaccinated between 170 and 300 US dollars (Petkova, 2021; Gomez, 2022).

Rules on vaccination

Rules for vaccines approval

Similar to the other EU countries, vaccines administered in Bulgaria have been approved by the European Medicines Agency (EMA).

Vaccination policies

Vaccination is not mandatory in Bulgaria, not even for specific age groups or professions (ECDC, 2022). This is problematic because vaccine hesitancy is also dominant among health professionals. Indeed, data from the Bulgarian Doctors' Union reveals that about 30% of doctors have not been vaccinated (Petkova, 2021). In fact, there is entrenched scepticism toward vaccination in the country including towards vaccinating children, which can be traced to the long-standing mistrust in authorities under communist rule (Kantchev, 2021). With regards to restrictions, a 'green passport' was launched in October 2021 permitting access to most public spaces only to the vaccinated, those with a negative test, or those recovered from Covid-19 (Detev, 2022). Some incentives to encourage vaccination have also been offered. The new government announced in December 2021 that all pensioners who received the vaccination, for the first time and with a booster shot, would receive an allowance of 75 leva or 38 euros (Detev, 2022; Kathimerini, 2021). The vaccination campaign launched by the Ministry of Health also included a raffle for a smartwatch (Petkova, 2021). A large supermarket chain has also attempted to encourage people to get vaccinated by giving them vouchers worth 20 leva or 10 euros (Kantchev, 2021).

Bodies involved in vaccine rollout

Responsibility for the implementation of the national vaccine deployment plan, adopted in December 2020, belongs to the National Vaccination Headquarters (NVH) (FRA, 2021). The NVH is chaired by the General Director of the Bulgarian Red Cross and comprises Bulgaria's Chief State Health Inspector; the Deputy Secretary General of the Ministry of Interior; the head of the Center for Military Epidemiology and Hygiene of the Military Medical Academy; the Executive Director of the Bulgarian Drug Agency; the head of the Directorate of Hospital Medical Care of the National Health Insurance Fund; the Deputy Chairman of the Board of Directors of the Bulgarian Medical Association; the Director of Bul Bio-NCIPD EOOD (a state-owned company specializing in the manufacture of vaccines, immunostimulators and bioproducts); the head of the Department of Surveillance and Prevention of Infectious Diseases at the Ministry of Health; the head of the Department of Medical Activities at the Ministry of Health; the Director of the Sofia Regional Health Inspectorate; the Chief Coordinator of the Expert Council on 'Clinical Immunology'; a state expert from the Ministry of Health; and a renowned epidemiologist from the National Centre of Infectious and Parasitic Diseases (FRA, 2021; Bulgarian Government, n.d.). This body was created in addition to the National Operational Headquarters (NOH), established in February 2020, and the Medical Expert Council (MEC), introduced a month later, to shape the country's response strategy and to provide guidelines to health professionals (Rone and Hristov, 2020).

The vaccination plan, which was revised three times since its adoption, defined how vaccines were to be administered, and the priority groups. Priority was initially given to health professionals, front-line workers (e.g., teachers), and residents of nursing homes (Dzhambazova, 2021). The fact that people over 65 and people with chronic illness were not included in this group was severely criticized (Petkova, 2021). In fact, the Open Society Foundation filed a formal complaint to the Council of Europe's European committee of social rights, accusing the Bulgarian government for negligence and for putting the lives of thousands at risk (Rankin, 2022). Another criticism has focused on the fact that authorities have been slow to involve general practitioners in the vaccine drive (Petkova, 2021; Dzhambazova, 2021).

Although experts have been involved in the vaccine rollout, their involvement has been controversial. Indeed, evidence suggests some doctors have discouraged their patients from getting vaccinated (Neagu and Nikolov, 2021), and have been vocal in expressing their doubts in the media. For instance, infectious disease expert Dr Atanas Mangarov, who has millions of TikTok, Instagram, and YouTube followers, has been an advocate for herd immunity, has claimed that wearing a mask is unnecessary, that herbal treats can be more efficient than the vaccine, and that those infected develop immunity that protects them against reinfection (France24, 2021). Furthermore, some members of the Medical Expert Council have provided guidelines which were in direct contradiction with those issued by international expert bodies, for instance these members have advised against vaccination of pregnant women (Neagu and Nikolov, 2021).

Communication Strategy

On the communication front, authorities have failed to launch a comprehensive information campaign (Petkova, 2021; Mcgrath, 2021) or, at least, put a halt to conspiracy theories and the spread of fake news (Rankin, 2022; Neagu and Nikolov, 2021). It has even been argued that the Health Ministry's campaign "has been chaotic, confusing, and that the information given created much more fear than trust in the vaccine" (Lavchiev and Heil, 2021). Moreover, the political elite has not presented a united front - with some party leaders and members using an anti-vaccine rhetoric out of fear of losing electorate support (Neagu and Nikolov, 2021; Petkova, 2021). Lastly, social media platforms have allowed the presence and spread of covid-19 and vaccine related information that lacks any scientific credibility (Mcgrath, 2021; France24, 2021; Kantchev, 2021). Russian internet trolls are also believed to have played a role in spreading fake news.

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Germany

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first confirmed Covid-19 case in Germany was reported in Bavaria on 28th January 2020. Yet a major outbreak did not occur until March. On 16th March 2020, the German government and the state governments (the Länders) issued common guidelines to limit the spread of the virus. These guidelines primarily aimed to limit social contact. Subsequently, bars, theatres and other entertainment venues, were closed, while club meetings and similar events were banned. The ban was also extended to meetings of all faith communities. Restaurants and similar service-providers were to maintain distance between customers and close by 6 pm. Simultaneously, several services like food retail outlets, weekly markets, pharmacies, banks, hairdressers and wholesale stores had to follow hygiene protocols and avoid queues. Moreover, healthcare facilities had to comply with increased hygiene requirements, while visits were limited. The decision to close schools remained at the discretion of states.

Over the following few days Germany gradually restricted the entry of travelers in its territory, starting with citizens from non-EU countries (17th March 2020), refugees, and asylum-seekers. The initial ban would last for 30 days and would exempt German nationals. Nationals of EU states were also allowed to enter the country for the purpose of transit (INGSA, 2020k). Yet special restrictions and restricted access applied to persons travelling from Italy, Spain, Austria, France, Luxembourg, Denmark and Switzerland (INGSA, 2020k).

The Federal government tightened restrictions on 22nd March 2020, limiting the free movement of people. People were allowed to leave their home on specific grounds such as commuting to work, grocery shopping, attending medical appointments, participation in meetings and to exercise in fresh air. Citizens were allowed to be outside, but only with people from their household bubble, or one other person from outside their household. The new guidelines explicitly banned parties. The Police were responsible for enforcing the above measures, and non-compliance entailed fines (INGSA, 2020l). In addition to the restriction of free movement, special protocols, regarding restricted visits, were established for nursing facilities (INGSA, 2020m).

On 15th April 2020, the government extended the above measures until 3rd May 2020 (INGSA, 2020a), it renewed its calls to citizens to avoid unnecessary travel (INGSA, 2020b) and banned all mass events until 31st August 2020 (INGSA, 2020c). Furthermore, all citizens were encouraged to wear non-medical masks when outside (INGSA, 2020d). The government also launched a number of additional strategies to better track the pandemic's spread. Specifically, the government encouraged citizens to use tracing-apps on a voluntary basis (INGSA, 2020e), and established a patient treatment evaluation database to keep tabs on which treatments were most effective (INGSA, 2020f). Furthermore, the Federal government asked all German companies to implement a hygiene plan based on an adapted risk assessment, with the aim of minimizing the contagion risk. At the same time working-from-home was encouraged (INGSA, 2020g).

The government's deconfinement strategy would start unfolding from the 3rd May 2020, with schools reopening for certain groups of students (INGSA, 2020h) and hairdressers also reopening under strict protocols (INGSA, 2020i). Finally, construction work was scheduled to reopen on 2nd June 2020 (INGSA, 2020j).

On 28th October 2020, amid the pandemic's second wave, Germany reintroduced certain restrictions. These included the shutdown of bars, restaurants and theatres. Schools remained open and shops were allowed to operate with strict limits on access (Rinke and Kar Gupta, 2020). Restrictions were extended over the Christmas period with schools and non-essential shops closing, stay-at-home orders in place, and private gatherings limited to a maximum of 5 people from two households. Some states also went further by implementing night-time curfews (Hill, 2020). When the pandemic did not dissipate over the Christmas period, Germany further extended its lockdown measures until the end of January 2021, with slight exceptions for the re-opening of schools.

Overall, Germany has been praised internationally for its successful response to the pandemic. It placed experts and medical scientists at the forefront of its pandemic response. Indeed, the Robert Koch Institute (RKI), along with its regional bodies, informed the decisions of the state governments and the guidelines of the Federal government. It is worth pointing out that in addition to the extensive use of expert advice, the German Federal and state governments managed to maintain a high level of cooperation which made their response to the pandemic more efficient. Conclusively, it appears that Germany's relatively good performance can be attributed to its prudent use of medical expertise along with a well-functioning system of coordination between levels of government.

Institutions and bodies providing expert knowledge to policymakers

Robert Koch Institute (RKI)

The RKI is the independent government agency responsible for monitoring and combating infectious and non-infectious diseases. It is operating under the auspices of the Health Ministry (Hallam, 2020). The Institute is tasked with nationwide health monitoring, whilst collecting and interpreting epidemiological data. Prior to the pandemic, the RKI staff were primarily scientists conducting research in infectious disease epidemiology, supporting the federal states in outbreak investigations. Since 9/11, the Institute has been charged with identifying unusual biological events with highly pathogenic agents that might be used for bioterrorism (Robert Koch Institute, n.d.a).

During the pandemic, the RKI was mainly responsible for monitoring the situation, compiling and evaluating all available data and providing risk estimations for the general population. It was also tasked to provide instructions to health professionals and to conduct its own research on Covid-19 (Robert Koch Institute, n.d.b). Subsequently, it published a daily situation report on Covid-19 that included information on the epidemiological situation, a risk assessment, recommendations and measures, the global epidemiological situation, and global recommendations and measures (Robert Koch Institute, n.d.c). In addition, the RKI operates a dashboard with notified Covid cases by state and district (Robert Koch Institute, n.d.d). The latter dashboard came under criticism for failing to report on the full extent of the pandemic because of delayed updates. This delay is attributable to the fact that the RKI gathers its data from its regional branches, thus suffering from a substantial lag between receiving and reporting data. Instead, databases like the Johns Hopkins University Coronavirus Resource Centre are viewed as a more accurate source of information (Hallam, 2020).

The Paul-Ehrlich-Institut (PEI)- Federal Institute for Vaccines and Biomedicines

The Federal Institute for Vaccines and Biomedicines is a permanent senior federal authority reporting to the Federal Ministry of Health. It is responsible for the research, assessment, and marketing authorization of biomedicines for human use and immunological veterinary medicinal products. Its remit also includes the authorization of clinical trials and the recording and evaluation of potential adverse effects. PEI helped with the development of a Covid-19 vaccine by providing scientific advice to pharmaceutical companies, inspecting the vaccine development process, approving clinical trials, collecting data on adverse reactions, and authorizing the mass production of the vaccine.

Disciplines informing policies

As outlined above, the RKI is mainly focused on conducting research on infectious and non-infectious diseases because most of its staff are infectious disease epidemiologists. Subsequently, following the RKI's input, Germany mainly drew from the field of medicine and epidemiology to inform its response to the pandemic.

Policymaking bodies receiving expertise

A number of bodies were in operation at the federal level to deal with the pandemic. The main decision-making body was the cabinet, which was supplemented by weekly meetings of the so-called 'Corona Cabinet'. The latter was chaired by the Chancellor, and it included in its weekly closed format, the Federal Ministers of Finance, Interior, Foreign Affairs, Defence, Health and the Head of the Federal Chancellery. Once per week, a bigger 'Corona Cabinet' would meet with the additional participation of ministers who were relevant to the ongoing discussion (OECD, 2020).

Below the Cabinet level, the Joint Crisis Task Force operated under the auspices of the Ministry of Interior and the Ministry of Health. The task force was comprised of representatives of the Federal Foreign Office, the Ministry of Defence, the Ministry for Economic Affairs and Energy, the Ministry of Finance, the Ministry of Transport and Digital Infrastructure, the Ministry of Food and Agriculture, the Press and Information Office of the Federal government, and the German Federal Chancellery. Its task was to put the decisions of the Federal cabinet into practice, to receive and respond to Länders' requests, and to provide the numbers for the Covid-19 situation reports. Finally, experts from the Ministry of Finance, Foreign Affairs, and liaison officers from private companies came together to create the special procurement team for medical equipment (OECD International Database on STI Policies, n.d.a).

Place of experts in the government's communication strategy

The RKI undertook the responsibility of informing the public on the development of the pandemic and the recommended protection measures. With that end in mind, its head, Lothar Wieler - a veterinarian and microbiologist by training - held daily briefings (Hallam, 2020). Moreover, the RKI published daily situation reports on Covid-19, to inform the public and policymakers about the epidemiological situation. In these reports the RKI recommended new measures to combat the virus (OECD International Database on STI Policies, n.d.b). Lastly, along with the Federal Centre for Health Education and the Federal Ministry of Health, the RKI operated a website with information on Covid-19 and hygiene recommendations for the general public (OECD International Database on STI Policies, n.d.c).

The Federal government focused its efforts mainly on battling disinformation. To achieve this, the government published information on how to identify fake news (OECD International Database on STI Policies, n.d.d). The relevant webpage explained among other things how official statistics are calculated, how Covid-19 tests work and what information the government is basing its decision on. It also gave guidance on how to critically reflect on information before spreading it, links to official government information sources and fact checking websites (INGSA, 2020n). In addition, the Federal Ministry of Education and Research, operated a webpage with the sole aim of disseminating accurate information through social media channels in order to counteract false information (OECD International Database on STI Policies, n.d.e).

Role of regional/subnational level in the translation of expertise into measures

Despite the initiatives and actions of the Federal government, the main burden of pandemic management fell to the state governments. In Germany, the legal framework that was used to establish protective measures against the pandemic (the Infection Protection Act) allowed only the regional governments to issue directives; the Federal government was allowed to make mere recommendations. In order to achieve better coordination between the regional and the federal level a large number of coordinating bodies were in operation, i.e. the conference of Minister-Presidents, the conference of health ministers, and the joint situation centre of the Federal government and the Länder. The RKI was responsible to provide state governments with information and recommendations, which it did mainly via its regional offices (Klafki and Kießling, 2020).

Impact of evidence-informed policies on public trust

While the RKI received criticism for its late reaction to the virus, its delayed reporting of data, and the exhibition of conflicting messages early in the pandemic, this did not negatively affect the public's trust in it. Instead, the proportion of Germans who said that they completely trust science and research shot up to 36% in mid-April 2020 - a number substantially higher than in earlier years (Matthews, 2020). Another 37% said that they were "likely" to trust science and research. Even more interestingly, eight in ten respondents said that political decisions should be based on scientific evidence. Moreover, Germans appeared to tolerate and accept scientific disagreement, which can also explain why the conflicting messages exhibited by the RKI did not cause damage to the institution's reputation. Doctors and medical personnel were most trusted when it comes to coronavirus information, with scientists in second place. Respondents trusted politicians more than friends and family, while journalists were least trusted. Nevertheless, people were relatively evenly split over whether scientists should "interfere" in the politics of coronavirus. Nearly seven out of ten said that it was 'helpful' for 'controversies' to emerge between scientists because this will lead to better research results (Matthews, 2020). A more recent survey conducted between March and June 2021 has further reinforced these results showing that Germans

overwhelmingly trust and support the medical community with the handling of the pandemic. In particular, the majority of respondents (71%) declared a higher level of trust when government policies come directly from experts rather than just the government. At the same time, 60% of respondents declared a high or fair amount of trust towards experts (YouGov, 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Germany began its vaccination rollout in late December 2020. The vaccine is currently available to the universal population including to children above 5 years old (Ritchie et al., 2020). Following the approval of the European Medicines Agency, five vaccines against Covid-19 are currently available in Germany, namely Comirnaty (Pfizer/BioNTech); Spikevax (Moderna); Vaxzevria (AstraZeneca), Covid-19 Vaccine (Janssen) and Nuvaxovid (Novavax) (Covid19 Vaccine Tracker: Germany, 2022).

An anti-lockdown and anti-vaccine movement is active in Germany. The movement initially opposed the government's restrictive measures, such as mask mandates, yet it quickly evolved to an anti-vaccination movement. It includes a diverse group of people from conspiracy theorists to radical-left and radical-right activists. The German anti-vaccine movement is focusing its activities on clinic doctors and politicians, addressing abuse and death threats against them (Knight, 2021). Death threats have even been addressed to the country's head of infectious diseases. Worryingly, the German police reported a related plot to kill Saxony's governor, Michael Kretschmer (Neuman, 2021). Social media platforms are central to the propagation of vaccine misinformation, e.g., linking vaccine uptake with lower fertility (Bonhomme, 2021) and to the promotion of violence against medical personnel (Knight, 2021). The anti-vaccine movement has received further support as the debate on a potential vaccine mandate is intensifying in Germany. Numerous protests against a vaccine mandate have been organized on a rolling basis with the support of the far-right Alternative for Germany party (AfD) (Mailliet and Spicer, 2022).

Rules on vaccination

Rules for vaccines approval

Vaccine approval lies under the authority of the European Medicines Agency. Nevertheless, with advice from the RKI, the Paul-Ehrlich-Institut (i.e., the Federal Institute for Vaccines and Biomedicines), is providing specific advice on the criteria and requirements for complete vaccination protection (Paul-Ehrlich-Institut, n.d.a). Additionally, as the authority responsible for monitoring the safety of vaccines and biomedicines, the PEI is monitoring and registering side-effects that might have been caused by Covid-19 vaccines (Paul-Ehrlich-Institut, n.d.b). As such, in March 2021, experts from the PEI took the decision to temporarily cease the administration of the AstraZeneca Covid-19 vaccine due to the emergence of serious thrombotic events (Paul-Ehrlich-Institut, 2021a). Following further assessment, and in accordance with the guidance of the European Medicines Agency, the PEI decided to reauthorize the use of this vaccine soon thereafter (Paul-Ehrlich-Institut, 2021b).

Vaccination policies

In December 2021, the German parliament passed a law, making vaccination against Covid-19 mandatory for all personnel working in care and healthcare facilities (Schumacher, 2022). However, Germany has not yet made the vaccine mandatory for its population. At the time of writing this report (6th February 2021) the German parliament is debating measures that would make the vaccine mandatory for the whole population, or for people over a certain age, and for vulnerable groups. In addition, the German Federal government has denied paying compensation for lost pay to unvaccinated citizens that need to quarantine (Agence France-Presse, 2021). German states have established certain positive incentives to encourage vaccination, including offerings of free food (Thebault et al., 2021), while companies encourage their employees to vaccinate by establishing cash and gift rewards.

Bodies involved in vaccine rollout

Numerous expert bodies were involved with the vaccine rollout; indeed, Germany embedded experts in every step of this process: from the approval of vaccines to whether they should be mandatory.

Regarding the administration of vaccines, three expert bodies developed the regulation on how vaccines should be prioritized: the Standing Committee on Vaccination (STIKO), the German Ethics Council, and the German National Academy of Sciences Leopoldina. STIKO was central in this effort as it is a permanent expert body responsible for providing recommendations on the administration of vaccines. It

is comprised of 18 medical experts representing different fields of medicine. These experts are appointed by the Federal Ministry of Health and operate under the auspices of the RKI. STIKO's advice is not legally binding but forms the basis of the federal states' vaccination guidance (Robert Koch Institut, 2016). The German Ethics Council is a permanent independent body of 26 interdisciplinary experts. The Council is appointed by the German president and is responsible for addressing questions about ethics, society, science, medicine and law, with a particular emphasis on questions about bioethics (The German Ethics Council, n.d.). Finally, Leopoldina was appointed in 2008 as the German National Academy of Science. As such its main tasks are to represent the German scientific community internationally, and to provide policymakers with science-based advice. Leopoldina has provided the Federal government with input on a diverse set of pandemic-related issues, from vaccines to Covid's economic consequences (Leopoldina, n.d.).

The above three bodies developed a position paper that regulated access to the vaccine. Using medical data and statistical analyses, the paper identified people at heightened risk of fatal disease progression, healthcare staff with greater risk of transmission and exposure to the virus, and people in key positions for central state functioning. STIKO followed up this paper with a report explaining the rationale behind the classification, while suggesting a more detailed hierarchy of six priority groups. While the government's subsequent regulation slightly differed from STIKO's detailed hierarchy, it maintained its core advice on vaccine prioritization (i.e., from the aged and the most vulnerable, to lower age groups). States were subsequently responsible to administer the vaccine in dedicated vaccination centers, while they also had to organize mobile vaccination teams to deliver the vaccine in nursing and hospital facilities. As more vaccines became available, general practitioners and surgeries undertook their administration (Lorenz-Dant, 2020). Despite the detailed regulation, the vaccine rollout faced problems in its early phases due to a shortage of vaccines, an inefficient system for vaccine appointments (Lorenz-Dant and Ettelt, 2021), and poor intragovernmental coordination (Oltermann, 2021).

The German government also sought the advice of experts on whether vaccination against Covid-19 should be mandatory and for what population groups. The German Ethics Council weighed in on this question by proposing a vaccine mandate for all vaccine-eligible adults living in Germany. It also supported a job-related mandatory vaccination policy in areas where particularly vulnerable people are being cared for (Deutsche Welle, 2021).

Communication Strategy

The Federal government is responsible for the communication campaign vis-à-vis vaccines. A steering committee comprising of the Federal Government, the Health ministry, the RKI, and PEI, decides on the content of the campaign. The steering committee decided to employ humorous adverts and well-known actors to reach younger audiences, rather than putting medical experts at the fore. Nevertheless, it also employed occupational and local physicians, and community leaders to boost the campaign, and promote the vaccine in hesitant groups, for example Germany's Arabic-speaking population (German government, 2021; Ivory Meyer, 2021).

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Greece

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first Covid-19 case in Greece was confirmed on 26th February 2020. Following the devastating impact of the pandemic in neighbouring Italy, the Greek government was prepared and established a preventive strategy early on to tackle the pandemic. In fact, a National Experts Committee on Public Health was created at the beginning of February, and some measures were adopted as early as late February 2020 (e.g., cancellation of carnival festivities, big events, and school trips; suspension of visiting hours to nursing homes and open care centres). On 10th March 2020, more universal measures were enacted starting with the closure of all educational establishments and, in the next couple of days, of theatres, cinemas, gyms, shopping centres, cafes, restaurants, bars, museums, and archaeological sites (Ladi et al., 2021). A total lockdown was announced on 22nd March 2020 which entailed a ban on all non-essential travel and movement with prescribed exemptions. The opening-up phase started on 4th May 2020 and was gradual it started with the lifting of restrictions on the movement of citizens, and was completed on 1st July 2020, with the resumption of international flights without any quarantine rules and only sample testing taking place (Ladi et al., 2021).

Between the identification of the first Covid-19 case and the lifting of lockdown measures, Greece managed to limit the spread of the virus, and minimise the number of deaths. This positive outcome came as a surprise to some politicians and commentators, and the country was praised internationally for its exemplary management of the crisis (Hatzigeorgiou and Raj, 2020). However, the generalised easing of restrictive measures during the summer months meant that the second wave from September to December 2020 was unavoidable. While restrictions were reinstated and public health remained a priority, saving the already contracted Greek economy was also high on the agenda during this period. A third wave (which started in March 2021) saw the number of cases increase daily and the pressure to the national health system reached a peak. As a result, focus was torn between flattening the curve and restarting the economy (Mitsotakis, 2020a). All things considered however, Greece has performed better than many EU and non-EU countries. A key reason for this success lies in the fact that government action has largely relied on expert advice.

Institutions and bodies providing expert knowledge to policymakers

The National Experts Committee on Public Health

This committee was put into place at the beginning of February 2020 after suggestion from the Ministry of Health and the PM's agreement. Its membership comprised of around 30 health scientists, including medical doctors and epidemiologists, practitioners, and academics. The committee has informed and guided government policy, while also handling and filtering the flow of data and information from the relevant international bureaucrats and experts, mainly the WHO and the European Centre for Disease Prevention and Control (ECDC). Government action, including the imposition and easing of restrictions at any given time, has been largely guided by the committee's recommendations.

The Intervention Mechanism and the COVID-19 Observatory

The Intervention Mechanism was put into place to monitor the implications of easing restrictive measures in the first wave. Chaired by the PM and with the participation of key actors from the first wave management, this body was primarily composed of close economic and political advisors to the PM, with the addition of some health experts. The Covid-19 Observatory, chaired by M. Argyrou, the Head of Council of Economic Experts, has produced weekly reports on the implementation and results of lockdown easing which has informed the Intervention Mechanism.

Disciplines informing policies

The government chose to prioritise medical data and scientific advice from experts in the field. Economists only took a more active role in the decision-making process after the first wave was successfully handled.

Policymaking bodies receiving expertise

The coordination of all governmental actions against the pandemic was given to the General Secretariat of Civil Protection and Crisis Management and its head Nikos Chardalias was promoted to Deputy Minister on 15th March 2020. The smooth cooperation fostered between Nikos Chardalias, and Professor of Pathology and Infectious Disease, Sotiris Tsiodras (spokesperson of the Ministry of Health for Covid-19), was met with high engagement and support from the PM Konstantinos Mitsotakis. The Ministry of Finance and the government's economic advisors had a limited role during the first wave of the pandemic and their actions focused on suggesting measures that would remedy the economic decline caused by the confinement (Ladi et al., 2021).

Place of experts in the government's communication strategy

An important element of the successful crisis-management was the clear communication strategy led by the PM. The message delivered by the PM and the government focused on the pandemic as an emergency, with saving human lives as the top priority. The economy was the next most important issue to deal with, but only after keeping the curve of the infection low (Mitsotakis 2020b). A press conference led by Professor Tsiodras was held every evening at 6pm, and immediately became very popular. Tsiodras started by reporting on the spread of the virus globally and nationally, before explaining up-to-date scientific evidence and advances. Professor Tsiodras was followed by Nikos Chardalias, Deputy Minister of Civil Protection and Crisis Management, who announced any new measures. The integration of science and ensuing measures/guidelines communicated in these press conferences enabled a clear link between evidence and policy to emerge. This was compounded by frequent updates on the covid19.gov.gr portal (Ladi et al., 2021). Fake news was discussed on almost a daily basis and tackled by means of providing accurate and credible information. Practical solutions such as methods of disinfection, and the use of face masks were also offered. The 'Stay Home' (*Menoume Spiti*) and later on 'Stay Safe' (*Menoume Asfaleis*) campaigns appeared regularly on television, in electronic and print media, and on the radio.

An emotive, personal style of communication was used by all officials involved, including the PM who appeared live on TV five times between March and May 2020. Simultaneously, daily briefings were based on transparency with efforts made to present all existing evidence including what was known and what was still unknown. To further reinforce this sense of transparency, journalists were allowed to freely pose questions to attain a more thorough overview of the government's containment strategy. In addition to the daily briefings, parliament remained open and active, and all sessions were publicly broadcast.

Overall, the appointment of Tsiodras as the government spokesperson and the adoption of a transparent communication strategy could be viewed as a concerted governmental effort to lend credibility and authority to the pandemic policies, i.e., reinforce public support for the government's problem-solving capacity (Boswell, 2009). This approach also aimed to increase citizen compliance with the government's crisis-related measures, as they would perceive them as the most efficacious and reliable solutions. In effect, by appointing a respected scientist to lead the communication and operations effort, and by adopting a transparent *modus operandi*, the government demonstrated that its crisis-management policies served the goal of public health. Moreover, the government's choice to limit the role of politicians during this period should be attributed to the above rationale of putting experts at the forefront of the communication effort. In particular, only the PM and the Deputy Minister of Civil Protection and Crisis Management appeared to have a prominent role while other relevant officials, including the Minister of Health, appeared to be less involved (Ladi et al., 2021).

Role of regional/subnational level in the translation of expertise into measures

Greece is a centralised country with only a few powers devolved to regional administration, and with local governments that are largely reliant on central government funding. The Greek NHS is a highly centralised system, similar to most administrative structures in the country. Physical and human resources are distributed unevenly, with Athens and Thessaloniki receiving the lion's share of resources.

The timely and efficient coordination between the central government and regional/local governments was also crucial in terms of successful crisis-management. Indeed, authorities announced 'states of emergency' for specific villages (e.g., Damaskinia and Dragassia in Kozani, and Echinus in Xanthi), and municipalities and prefectures (e.g., Kastoria, Kozani, Xanthi, Larissa, Iliia) at different timepoints since the outbreak of the pandemic. Emergency coronavirus measures or even total lockdowns were imposed on these areas depending on the number of confirmed cases and/or deaths. Two factors played an important role in the efficient coordination between different government levels. Firstly, the Greek NHS received significant investment to its regional hospitals. For example, health units were strengthened through the

provision of equipment, and the recruitment of staff. Secondly, specialised medical teams (managed by the National Public Health Organisation), helped to implement local measures of prevention and control. Charged with the responsibility of taking samples, creating virus isolation areas, and assisting in the contact tracing process, these teams were pivotal in containing virus outbreaks in high-risk localities such as migrant camps and Roma settlements (InfoMigrants, 2020). It appears that General Secretariat of Civil Protection and Crisis Management took the lead to delegate tasks to regional and local level authorities, which contributed significantly to building consensus between different government levels and managing the crisis more effectively.

Impact of evidence-informed policies on public trust

The predominance of expert advice during the first wave of the Covid-19 health crisis in Greece was not only positively associated with the government's crisis-management performance, but also brought about another indirect and quite significant effect. According to initial surveys, the general public reacted positively to the government's evidence-informed response to the pandemic, and levels of trust in the government and public institutions increased (Prorata, 2020). The survey conducted by the Institute for Communication and Literacy in Health and Media (HIT) and healthpharma.gr reveals that 65% of Greeks believed that the government was on top of the Covid-19 health crisis with only 15.5% expressing the opposite viewpoint (HIT, 2020). According to the same survey, more than half of the respondents (59.5%) fully trusted pandemic information issued by the Ministry of Health and the government. These results are surprising given that citizen's trust in the government and public institutions had diminished over the course of historic economic instability in the country (Drakos et al., 2016). It appears that during the first wave of the pandemic, the governmental decision to base policy strategy on expert advice helped to legitimise the pandemic policies and measures, and increase citizens' compliance with them. According to more recent surveys, 75.3% of the respondents believe that the use of experts' input generally leads to better policy decisions, with only 3.9% expressing the opposite viewpoint (YouGov, 2021). However, trust in the government has decreased slightly as the duration of the pandemic increases (Dianeosis, 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Greece began its vaccination rollout in late-December 2020 with the first vaccine being administered to an ICU nurse on December 27 (Kathimerini, 2020a). The President of the Republic, the Prime Minister and the President of the Parliament were vaccinated on the same day. The organisation of the vaccine rollout, including the booking and management of appointments to get vaccinated, was conducted via the government's portal gov.gr. The vaccine is available to the entire population, including to the age group 5-11 starting from December 10th 2021 (Bibi, 2021). Six vaccines against Covid-19 are currently available in Greece: Comirnaty (Pfizer/BioNTech); Spikevax (Moderna); Vaxzevria (AstraZeneca); Covid-19 Vaccine (Janssen); Nuvaxovid (Novavax) and VLA2001 (Valneva) (Covid19 Vaccine Tracker: Greece, 2022).

The anti-vaccine movement in Greece is quite strong and stems from a mixture of scepticism over the safety of the vaccines, conspiracy theories, and broader questioning of authority and science (Brezar, 2021). Anti-vaxxers have been quite vocal and have protested on various occasions, for instance protesting against the government's decision to suspend unvaccinated health workers (Brezar, 2021). Conspiracy theories and opposition to vaccination seem to be popular both among far-right and far-left extremists. Moreover, a group known as 'Greek indigenous natives' has been spreading fake news online calling for disobedience and non-implementation of the coronavirus measures (Fasoulaki, 2021). The group have even published a 'price list' on their website encouraging people to file reports, and lawsuits, claiming damages of thousands or even millions of euros in case they are penalized for non-compliance with restrictive measures (Makrogamvrakis, 2021). Claims by some radicals within the clergy have further increased reservations towards vaccination and the pandemic more broadly. It is worth noting that it is estimated that more than 100,000 citizens have attempted to purchase fake vaccination certificates or have tried to bribe doctors, offering up to 400 euros, to be jabbed with bacteriostatic water (sterile water that contains 0.9% benzyl alcohol and is used to dissolve medications) (Lambropoulos, 2021).

Rules on vaccination

Rules for vaccines approval

Vaccines administered in Greece are approved by the European Medicines Agency (EMA) and the National Organisation for Medicines (EOF), established in 1983 as a public law entity of the Ministry of Health.

Vaccination policies

In December 2021 the PM announced that vaccination would become mandatory for people over 60 and that those who failed to book an appointment for the first dose by January 16th 2022, would be charged a fine of 100 euros per month (Law 4865/2021). Collected money would then be directed towards strengthening the Greek NHS (Ethnos, 2021a). Vaccination had already been made mandatory, back in July 2021, for healthcare workers (including doctors, nurses, paramedics, and administrative staff), in care homes for the elderly, and in private and public health care facilities (Law 4820/2021). Personnel of care homes for the elderly was required to get vaccinated by August 16th 2021 whereas personnel of health care facilities by September 1st 2021 (Ethnos, 2021b). It was announced that failure to comply with these rules would result in suspension from work and loss of social security during the unpaid leave period (Kissel, 2021). This measure was met with protests from hundreds of healthcare workers (Kathimerini, 2021b) and severe criticism by the government opposition. Despite the repercussions for vaccine refusal, around 10,000 unvaccinated health personnel were suspended from work. This resulted in severe staff shortages and a reconsideration to allow the unvaccinated to return to work (Euractiv, 2021). A new deadline of March 31st 2022 was set for the 4,000 health workers who remained unvaccinated, to receive a first dose or the government would have to consider firing them (Euractiv, 2021).

Other severe restrictions have been imposed on the unvaccinated population. Anyone without a certificate of vaccination (or a recent recovery from Covid-19) had to pay for and display a negative PCR or rapid test to enter most indoor spaces, e.g., banks, public services, shops, restaurants, and entertainment venues (Kathimerini, 2021b). With regards to incentives to encourage vaccination, young people aged 15-25 were offered phone data and a 150-euro 'Freedom Pass', the latter of which could be used on plane and ferry tickets, hotel bookings, theatre cinema, and museum tickets, and archaeological sites (Liliopoulou, 2021; Kathimerini, 2021c). Financial incentives were also given to pharmacists and doctors, specifically subsidies for vaccination appointments and in-home vaccinations.

Bodies involved in vaccine rollout

Similar to the overall management of the pandemic, the Greek government relied heavily on experts for the vaccine rollout. A National Vaccination Committee, established in October 2020, has been providing guidelines and recommendations regarding different aspects of the vaccination programme. For example, guidelines on the groups to be prioritized, changing priorities depending on the number of available doses, possible side effects of the vaccines, and safety concerns with regards to vaccination to children aged 5-11 (Ministry of Health, n.d.a; Bibi, 2021). The committee is composed of 17 medical professionals including Professor of Pathology and Infectious Disease, Sotiris Tsiodras, who was also appointed as head of the National Experts Committee on Public Health and spokesperson of the Ministry of Health for Covid-19 during the first waves of the pandemic.

Advice coming from the committee has informed the national vaccine deployment plan and the initial division of the population to receive the vaccine into nine subcategories according to age, occupancy, and health status/ underlying medical conditions (Govgr, 2021). The priority groups have not changed significantly since the launch of the vaccination plan (FRA, 2021). Moreover, the committee has provided guidance on setting up vaccination centres on remote islands, and on the overall organisation and implementation of the island vaccination plan. Another point worth noting is that in contrast to other countries that decided to temporarily restrict the use of the Oxford/ AstraZeneca vaccine when a possible link was found between the vaccine and rare blood clotting issues, the committee recommended that the vaccine should cease to be administered only to people under the age of 60 (Ethnos, 2021c).

Communication Strategy

A National Vaccination Campaign was launched by the Greek government on December 22nd 2020 to promote the vaccination rollout. The aim was to get the entire population over the age of 18 vaccinated. In support of the campaign, the 'Freedom Operation', a scheme outlining the vaccination phases, distribution of vaccines and other relevant information, was published on January 11th 2021 (FRA, 2021). YouTube and TV channels were used to promote short videos highlighting the importance of getting vaccinated against Covid-19, and weekly updates were provided on national television. These updates included any national and international developments, and the implementation of the vaccination plan (FRA, 2021), and were communicated by the President of the National Vaccination Committee and the

General Secretary of Primary Health. More recently, a number of TV ads were launched with medical doctors explaining why specific groups, for instance people above 60 and pregnant women, should not hesitate to get the vaccine. Finally, the National Vaccination Committee has actively participated in the campaign by providing answers to most commonly asked questions thus aiming to encourage people to get vaccinated (Ministry of Health, n.d.b).

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India

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

India's first Covid-19 case was confirmed on 30th January 2020 in the southwestern coastal state of Kerala (Chathukulam and Tharamangalam, 2021). To combat the pandemic, new regulations were implemented across the country to track and trace carriers of the disease, and to screen passengers arriving from international destinations across major airports and seaports. In addition to these new measures, a public awareness campaign was launched to communicate accurate information on Covid-19 symptoms to citizens.

The central government declared Covid-19 a notified national disaster on 14th March 2020 and invoked the Disaster Management Act 2005 (Government of India, 2005) to provide financial assistance from the State Disaster Response Fund (SRDF) to the central and regional governments to implement policies and interventions. The government also invoked the colonial era Epidemic Diseases Act (1897) on 21st March 2020 in the absence of substantial legislation to deal specifically with health disasters at national level (Naniseti, 2020). Broadly, this act gave the government the power to carry out search operations for suspected carriers of the virus, quarantine those infected in state facilities, and penalize those found breaking quarantine. An amendment was added in April 2020 to penalize acts of violence against frontline workers and healthcare professionals as well as damage to medical infrastructure such as clinics or equipment (Goyal, 2020).

A priority area of government intervention was effective testing and tracing of persons carrying the disease and mapping potential hotspots. To this end, there was a concerted effort to use data to track potential carriers, monitor their movements, and eventually trace them to their locations to ensure self-isolation (Mukharya, 2020). In states like Kerala, a centralized control room was set up to coordinate the track and tracing processes, as well as triangulate information from different data sources to pinpoint users' exact location. The success of the 'Kerala model' (WHO, 2020) was replicated by different regional governments in April-May 2020.

On 22nd March 2020, PM Narendra Modi announced a nationwide lockdown following the closure of government and private offices, schools, cultural centres, and the suspension of domestic and international travel a week earlier (Press Information Bureau of India, 2020a). Working from home was encouraged across all sectors. There was even a relaxation in the tax returns deadline, which was extended till 30th June 2020 for individuals and businesses. The central government as well as the regional governments of Kerala and Uttar Pradesh announced relief packages including loan schemes, direct cash transfers, increase in food subsidies, and a Supreme Court directive was issued to protect 'mid-day meals' given to children in government schools despite their closure (Rautray, 2020). However, the 'stringent' lockdown that was imposed with little warning or time for preparation, unfolded simultaneously as the country was grappling with rising infection rates. This was a major issue taking into consideration the extent of India's informal economy. As a result, thousands of workers lost their jobs overnight which meant they were not able to pay rents or afford basic rations. This lack of foresight in formulating relief measures in anticipation of the lifting of the lockdown measures was severely criticised. Indeed, such poor policy had significant consequences for the basic needs and rights of Indian citizens.

On 5th April 2020, the Union Health Ministry issued a containment plan as part of the lockdown to quarantine infected persons (and clusters) both socially and geographically to stem the spread of the virus (Union Ministry for Health and Welfare, 2020). Clusters were identified in 211 districts across the states of Maharashtra, Rajasthan and Uttar Pradesh amongst others. The strategy was to encourage people to stay at home, stagger work hours and market openings, and reassess re-opening risks after a period of 28 days. The lockdown was thus extended in phases till early June 2020 when 'unlock' phases began (Deol, 2020).

The deconfinement or 'unlock' phases were planned across three stages from the beginning of June 2020 (De, 2020). On 8th June 2020, unlock phase '1.0' began with the opening of places of religious worship, bars and restaurants, shopping malls, as well as inter and intra-state transport services. In phase '2.0', educational institutions were to be fully opened after due consultation with regional administrative and health authorities. In phase '3.0', international air travel was to resume and large gatherings for social, religious, or political reasons were to be permitted. The guidelines for deconfinement were released by the Union Ministry for Home Affairs, and the secretary for the department Ajay Bhalla communicated the new announcements to the press (Ministry of Home Affairs, 2020). Despite the easing of restrictions, the use of face-covers and social distancing in all public places continued to be mandatory. States also encouraged the usage of 'Aarogya Setu', a track-and-trace app, and remote working arrangements, although no official restrictions were enforced on these fronts.

Before the phase-wise deconfinement began, the stringent lockdown period had been extended thrice from 22nd March to 15th April, to 4th May, to 19th May and finally till 31st May 2020. At the outset of the pandemic, the number of Covid-19-related deaths was feared to be much higher than it actually was mainly because of India's poor health infrastructure and low spending on public health (Biswas, 2020). It is worth noting that in the 2021-2022 budget, public health spending was doubled to \$30 billion (Inamdar, 2021).

There were proactive steps taken by the government at the onset of the pandemic to increase awareness of the virus through a public information campaign. Several economic reforms that aimed to reduce the financial burden faced by taxpayers and digital/platform economies such as 'tele-medicine', were also encouraged. However, several government policy decisions also came under scrutiny because of their lack of foresight, and there was criticism against the government for inadequate consultation with experts regarding key decisions (e.g., full closure of public transport routes that caused an exodus of poor migrants from many Indian cities). What has been more distressing, though, is the increase in the number of deaths from starvation, especially of children, following the prolonged health crisis and ensuing strict lockdowns (Relief web, 2021)

A cohort of associations representing medical practitioners - the All-India Public Health Association, Indian Association of Preventive and Social Medicine, and Indian Association of Epidemiologists - forwarded a petition to PM Narendra Modi on 1st June 2020 criticising the 'draconian lockdown' imposed without a proper grasp of disease transmission dynamics, and a lack of consultation with expert field epidemiologists. Notably, Dr. D.C.S. Reddy who headed the special group on epidemiology and surveillance was one of the signatories of this petition which contended that Covid-19 management in India relied far more on bureaucratic than technical expertise (Saikia, 2020).

In March 2020, PM Narendra Modi announced a special Care, Assistance and Relief in Emergency Situations or 'PM-Cares' fund and made an appeal to private sponsors and citizens to donate to this fund (Office of the PM, 2020). The existence of another fund called the PM National Relief Fund (NRF) since 1948 prompted repeated criticism from political opposition on the need to create another fund for public donations. Neither the central government nor the PM Office made any disclosures regarding the transfer of the donations to the NRF nor the management of the fund despite petitions by information rights activists (Mohamed, 2020).

Institutions and bodies providing expert knowledge to policymakers

Indian Council of Medical Research (ICMR)

ICMR, the apex body in India under the Union Ministry of Health and Family Welfare for the formulation, coordination, and promotion of biomedical research, set up a National Task Force (Press Information Bureau of India, 2020b) and a Rapid Response Team for Covid-19 on 8th April 2020 to deal with the pandemic (Jagannath, 2020). The ICMR is led by the Secretary-Director General Prof. Balaram Bhargava, a cardiologist and science administrator. ICMR is constituted of scientific advisory groups, experts from biomedicine, pharmacology, serology, epidemiology, as well as top bureaucrats from different ministries. ICMR's five research groups have provided expertise to the National Task Force, led by Dr. V.K. Paul, a pediatrician and public health expert, and member of the National Institute for Transforming India (NITI AAYOG), and communicated essential information through government channels about the evolving Covid-19 situation. ICMR also published a Covid-19 issue with the Indian Journal of Medical Research (IJMR) (Bhatia and Abraham, 2020) related specifically to the management of the situation in India.

ICMR's research groups are dedicated to: i) clinical research, ii) research on diagnostics and biomarkers, iii) epidemiology and surveillance, iv) operation research, and v) vaccines/drug research and development.

- Clinical Research Group: This group has been headed by the All-India Institute for Medical Sciences (AIIMS) Director, Dr. Randeep Guleria, and its immediate priority has been to establish an India Covid-19 clinical research collaborative network. The membership of this group includes physicians, scientists, science administrators, and virologists.
- Diagnostics and Biomarkers Group: This group has been headed by Dr. D.A Gadkari, who is a former director of the National Institute of Virology in Pune. The priority for this group has been to periodically advise on the Covid-19 testing strategy. The membership of this group includes physicians, scientists, and science administrators.
- Epidemiology and Surveillance Group: This group has been headed by Dr. D.C.S. Reddy, a community medicine expert. Its priority has been to decide on lockdown or partial lockdown measures. The membership of this group includes physicians, scientists, and science administrators.
- Operations Research Group: Dr. N.K. Arora and Dr. Gagandeep Kang headed the operations of the research group on vaccines. The membership of this group includes physicians, scientists, serologists, and science administrators.

Economic Task Force

The PM set up a special Economic Task Force to deal specifically with the financial effects of the lockdown. Headed by the Finance Minister, Nirmala Sitharaman, in close collaboration with PM Modi, this task force included economists, policymakers, advisors, and top-level bureaucrats from the Finance Ministry (Press Information Bureau of India, 2020a). The Economic Task Force announced along with other measures targeted at easing credit access, a stimulus package of \$266 billion titled 'Atmanirbhar Bharat' (Self-reliant India) to be spent across five sectors/phases to incentivise Medium and Small Manufacturing Enterprises (MSME) and rural and urban employment guarantee schemes.

Disciplines informing policies

Epidemiologists, medical experts, physicians, virologists, serologists and other health professionals have contributed to the shaping of India's response to the pandemic. Economists have also been involved via the Economic Task Force.

Policymaking bodies receiving expertise

On 21st March 2020, the PM established 11 'empowered groups' (later reduced to six) to provide quick responses to different aspects of the crisis (Das Gupta and Dhingra, 2020; Ghosh, 2020):

- EG1 has dealt with medical infrastructure and the Covid-19 management plan. This group also comprised the National Expert Group on Vaccine Administration, which oversaw all aspects of the domestic vaccination programme including development, storage, finances, and administration of a vaccine. This group has been led by the Minister of Health and Family Welfare.
- EG2 has been responsible for ensuring the supply of medical equipment and augmenting human resources.
- EG3 has been responsible for ensuring coordination with the private sector, NGOs and multilateral global organisations towards response-related efforts.
- EG4 has been responsible for overseeing economic welfare measures.
- EG5 has been responsible for overseeing public awareness, data management, and information related activities.
- EG6 has been responsible for ensuring supply chains and logistics.

Another group was set up specifically for public grievances and taking suggestions from stakeholders. The groups oversaw the planning and implementation of decisions, provided expert knowledge on their respective areas, and coordinated efforts between the center and the states. The groups reported to the NITI AAYOG, the apex policymaking and implementation body under the Government of India headed by the PM. Each of the empowered groups has one representative from the PM Office and the cabinet secretariat.

The NITI AAYOG was formed by a Union Cabinet resolution in 2015 to replace the erstwhile Planning Commission of India with a governing council comprising of the Chief Ministers of all States and lieutenant

governors of the centrally administered Union Territories. The main aim of NITI AAYOG is to promote federalism and bring together India's regions on issues of national interest by designing, monitoring, and evaluating policy and programme frameworks, and working as the premier think-tank and knowledge hub in the country. It is headed by a CEO, at the time Amitabh Kant, who previously worked as Union Industry Secretary and was a member of the elite Indian Administration Services (IAS).

It is worth noting that prominent scientists from the rapid response groups alleged that at times, medical expertise was given secondary importance to bureaucratic and political agendas. This suggests that while medical expertise was consulted, decision-making was firmly at the control of the political and administrative powers.

Place of experts in the government's communication strategy

From the announcement of the first lockdown, there were no daily media briefings. Instead, there were media briefings four days a week. However, experts from the ICMR were noticeably missing and key technical, medical, and scientific questions remained unanswered. Government officials, senior party members, ministers or representatives from the Ministry of Health and Family Welfare, or the Ministry of Home Affairs, conducted these meetings, and debated the implementation of measures at the central and state levels. Moreover, the PM communicated important information such as lockdown extensions, unlock guidelines, and fiscal measures via televised Prime Ministerial addresses. This suggests that the PM was the primary figurehead/authority through which all communications were channeled.

The experience of battling epidemics and infectious diseases in the recent past (such as Nipah virus outbreak in 2018) was cited by several administrators as providing vital lessons in crisis management (WHO, 2020). The government placed an emphasis on disseminating reliable information on Covid-19 to citizens, including launching a public information campaign to educate people about the symptoms and causes of the virus, sharing information on basic protection measures, and providing a dedicated government helpline.

Role of regional/subnational level in the translation of expertise into measures

The division of political power, resources, and labour between the central government and the state governments, as well as the separation of the judiciary, administrative, and executive organs of the state, allowed states or regional administrations to exercise autonomy in pandemic management (Britannica Encyclopaedia, n.d.).

Impact of evidence-informed policies on public trust

There is no official survey on the impact of evidence-based policies on public trust, nor on trust in government/public institutions regarding the management of the pandemic more broadly. Hence, different evidence on public attitudes can be traced to research conducted by different policy institutes, expert bodies, and civil society organisations. For instance, a survey conducted by the Centre for Policy Research points to a rise in public trust in the government among top-level administrators from the Indian Administration Service, in addition to a decline in public trust vis-a-vis the will/capacity of the political and executive branches to communicate with the public (Mekhala et al., 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Vaccination against Covid-19 in India started on 16th January 2021 with the first jab being administered to a hospital cleaning worker at All-India Institute of Medical Sciences (AIIMS), one of India's 3,006 vaccination centres. The Director of AIIMS, Randeep Guleria, together with a close advisor to PM Narendra Modi, Vinod Kumar Paul, were vaccinated on the same day in the presence of former Union Minister for Health & Family Welfare, Dr Harsh Vardhan. Although the entire adult population, including children aged 12-17 years (The Times of India, 2022), are eligible for vaccination, people need to pay to get vaccinated. Initially, only two vaccines were being administered: the Oxford/AstraZeneca, manufactured locally by the Serum Institute of India under the local trade name Covishield, and Covaxin, developed by Bharat Biotech, the Indian Council of Medical Research and the National Institute of Virology. Another nine vaccines were later approved and used including Covovax (Serum Institute of India); Corbevax (Biological E Limited); ZyCoV-D (Zydus Cadila); Spikevax (Moderna); Gemcovac-19 (Gennova Biopharmaceuticals Limited); Sputnik Light (Gamaleya); Sputnik V (Gamaleya); Covid-19

Vaccine (Janssen/Johnson & Johnson); and Vaxzervia (Oxford/AstraZeneca); another 16 are in clinical trials (Covid19 Vaccine Tracker: India, 2022).

Priority was initially given to an estimated 30 million healthcare and front-line workers, in particular police and armed forces personnel, municipal workers, and disaster management volunteers; the second phase included people over 60 and people over 45 with chronic illness; the third phase included all people over 45; lastly, from 1st May 2021 everyone over 18 has been eligible for vaccinated, this was later followed by vaccinations for children aged 12-17 (Dasgupta, 2021).

India's Covid-19 vaccination drive has been one of the largest and most ambitious in the world. This drive appeared promising at its onset because the country emerged as a Covid-19 vaccine development and manufacturing hub (Pandey et al., 2021). However, vaccine rollout has been slower than expected and beset with several challenges. Firstly, India faced large supply shortages (from as early as May 2021; Arya, 2021) due to the emergency approvals limit of two vaccines, and failure to place advance purchase orders for enough doses (Ramakumar, 2021). Secondly, "unregulated pricing" has meant citizens are expected to pay amounts they simply cannot afford (Inamdar and Alluri, 2021; Ramakumar, 2021). Lastly, there has been inequitable distribution across states, regions and communities, as well as between rural and urban populations, and between men and women (Arya, 2021; Dasgupta, 2021; Pandey et al., 2021; Buckshee, 2021; Krishnan, 2022).

Although the levels of public acceptance regarding the vaccine in the country have been high overall, an anti-vaxxer community has emerged, comprising of conspiracy theorists. Using popular social media platforms like WhatsApp, Facebook, YouTube, and Telegram, these communities have been creating and sharing content on the dangers of getting vaccinated. Alarming, many of these accounts display sophisticated content using scientific jargon, making it difficult for individuals to discern real scientific evidence from bogus evidence (John, 2021). Some accounts have focused on vaccine safety and potential health detriments, such as how vaccination could lead to infertility, and even death (Ganapathy, 2021; Buckshee, 2021). A few have gone as far as suggesting that mRNA vaccines could alter human DNA or that "the coronavirus and vaccine humdrum is actually a plan to establish a 'global world order' and enslave human populations" (John, 2021). Aside from the anti-vax movement, which has fueled vaccine hesitancy, especially in the early months of the vaccination drive, some people initially adopted a 'watch and wait approach' (Pandey et al., 2021), while others became complacent after getting the first dose or having contracted the virus (Hrishikesh, 2021).

Rules on vaccination

Rules for vaccines approval

Vaccines administered in India have been approved by the Drugs Controller General of India (DCGI), who heads the Central Drugs Standard Control Organisation (CDSCO) and is responsible for creating the standards for manufacturing, importing, and distributing drugs in India. The CDSCO falls within the competence of the Ministry of Health and Family Welfare, and since August 2019 the role of DCGI has been assumed by Dr. V.G. Somani (CDSCO, n.d.). Public health management in the country is decentralized, meaning that the state governments are responsible for the distribution of the vaccines.

Vaccination policies

Following the Supreme Court's decision that "no one can be forced to get vaccinated...[and that]...restrictions imposed on individuals through vaccine mandates cannot be said to be proportionate", vaccination is not mandatory in India. However, some states, such as Tamil Nadu, Maharashtra, and Madhya Pradesh have mandated vaccination for state government employees and for those accessing public transport and public spaces (Walia, 2022). Additionally, punishments such as suspending state benefits from pensions, reducing subsidies for food, and reducing salaries have also been considered and implemented in some states. Alternatively, some state governments have offered incentives and rewards to encourage people to get vaccinated. Incentives include TV sets, smartphones, washing machines, fridges and other home appliances, lucky draw prizes, gold nose pins for women, and unusual consumables such as cooking oil (Sarkar, 2021; Ganapathy, 2021; Hrishikesh, 2021). Discounts on airfare, fast food and groceries (India Today, 2021), medicines, and petrol have also been offered by a number of businesses. Some states have even promised to commit infrastructure funds for fully vaccinated villages (Ganapathy, 2021). In India, bodily integrity is protected under Article 21 of the Constitution, therefore, imposing vaccine mandates is deemed unconstitutional. As such, positive incentives seem to have worked better than restrictions at convincing people to get vaccinated.

Bodies involved in vaccine rollout

As shown above, at least 15 committees and task forces have been involved in the management of the Covid-19 pandemic in India. Some of these were scientific in nature, whereas others were composed of civil servants and politicians. The National Technical Advisory Group on Immunisation (NTAGI), a standing committee advising the Health and Family Welfare Ministry, set up several task forces/bodies to assist with the vaccine rollout. Firstly, the NTAGI created a Covid working group that provides technical guidance on immunisation as well as data on Covid-19 vaccines. Secondly, the NTAGI created a taskforce headed by Principal Scientific Adviser Prof. K. Vijay Raghavan, set up in April 2020, responsible for encouraging R&D for vaccine development. Thirdly, the NTAGI created the Indian Council of Medical Research (ICMR) Covid-19 task force, comprised of 21 experts - mainly epidemiologists and public health experts but also virologists, pharmacologists and technical/domain experts - from both within and outside the government, responsible for advising the government on the overall management of the pandemic as well as specific aspects of the vaccine drive. Lastly, the NTAGI created the Indian SARS-CoV-2 Consortium on Genomics (INSACOG), set up in December 2020 by the Ministry of Health and Family Welfare and bringing together 10 national laboratories, responsible for reporting the sequencing results to the Central Surveillance Unit (CSU) of the National Centre for Diseases Control (NCDC) (Ghosh, 2021). Some of the six groups, established under the National Disaster Management Act 2005 and headed by NITI AAYOG, have also contributed to the country's vaccine drive by conducting and providing relevant research (Ghosh, 2021).

The national vaccine deployment plan involved the National Expert Group on Vaccine Administration for Covid-19, co-chaired by Dr. V.K. Paul and Union Health Secretary Rajesh Bhushan. This group is composed of both scientists and civil servants, including All-India Institute of Medical Sciences (AIIMS) Director Dr. Randeep Guleria and representatives from India's Aids Research Institute, and the Indian Council of Medical Research. This group has been responsible for the distribution of vaccines across the country and the rollout of the Covid-19 vaccination programme (Sharma, 2020). However, its decisions have been contested by the government at times, for instance regarding the recommendation to prioritize people over 50, and the eventual decision of the government to open up vaccination for those over 60 from 1st March 2021 (Ghosh, 2021).

While there is limited data on citizens' perceptions about experts, this picture clearly reflects a complex environment: countless experts have been consulted about the vaccine rollout, but the decision-making process has been driven by political considerations and priorities.

Communication Strategy

Although India managed to gradually accelerate its Covid-19 vaccine drive, the government could have put more effort into instilling confidence in the vaccines, and encouraging people to get vaccinated. In addition, more could have been done to raise awareness on how to get vaccinated, especially among dispersed populations, women, and those with no access to health information or the internet (Krishnan, 2022; Pandey et al., 2021). Lastly, instead of adopting a carrot-and-stick approach, India could learn from the success of its prior polio vaccination programme (Hrishikesh, 2021), which employed a large-scale awareness campaign with clear messaging, and the participation of eminent figures and famous actors like Amitabh Bachchan (John, 2021).

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Kenya

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

On 28th February 2020, the President established the National Covid-19 Coordination Committee (NCCC) and opened the Covid-19 preparation facility (Ministry of Health, 2020). On 2nd March 2020, the Cabinet Secretary for Health declared Covid-19 a 'formidable epidemic disease' - this became the basis for the national response and allowed for the formation of various bodies and the application of restrictions (Government of Kenya, 2020). Subsequently, on 3rd March 2020, Kenya banned flights to Italy, and on 25th March 2020 imposed a full travel ban except for repatriation flights. The Ministry of Health announced the first positive Covid-19 case on 12th March 2020 and to date the Ministry releases daily updates. On 14th March 2020, the Public Health Emergency Operation Centre commenced operations. A national curfew was imposed on 27th March 2020 to discourage movement and help contain the spread of Covid-19; curfew hours were gradually reduced and eventually waived.

To combat community transmission, the government restricted movement from 4 counties, including the capital Nairobi, which had consistently reported the highest number of infections. To this end, the Cabinet Secretary for Health published several rules and regulations under the Public Health Act between 3rd and 6th April 2020. By August 2020, most travel restrictions were eased - with international flights allowed back into the country with a requirement for travelers to self-isolate for 14 days upon arrival. The Public Health Act established regulations related to limiting the size of religious gatherings, banning the sale of alcoholic drinks in pubs and restaurants, and reducing passenger capacity limits on public transport.

Institutions and bodies providing expert knowledge to policymakers

Kenya Medical Research Institute (KEMRI)

KEMRI is the national body responsible for carrying out health research in Kenya. The Ministry of Health relies on the research and expertise from KEMRI when developing national healthcare plans and healthcare delivery. KEMRI conducts national disease surveillance and rapid response capacity for significant disease outbreaks.

In response to the Covid-19 Pandemic KEMRI has overseen national testing and verification utilising its existing national network of laboratory infrastructure. KEMRI relies on expertise from its Centre for Virus Research when conducting genetic sequencing studies. It has regularly released research briefs and press statements on their website including articles about Genome sequencing (KEMRI, 2020a), and SARS-CoV-2 genomic diversity in Kenya during June - October 2020 (KEMRI, 2021). KEMRI's experts include virologists, clinicians, epidemiologists, microbiologists, and public health specialists.

National Public Health Laboratory (NPHL)

The NPHL operates within the Department of Preventive and Promotive Health under the auspices of the Ministry of Health. It is a public health facility comprising of seven reference laboratory units that provide referral services linking international, national, and county laboratories. The NPHL performs specialized testing for priority infectious and non-communicable diseases, laboratory-based disease surveillance, and provides quality assurance for the public health laboratory network (KEMRI, 2020b). The NPHL has worked with KEMRI in providing testing facilities and surveillance reports on Covid-19. It relies on doctors, nurses, clinicians, and public health specialists.

Disciplines informing policies

The KEMRI mainly employs clinicians, epidemiologists, microbiologists, public health specialists and virologists. The NPHL mainly employs doctors, nurses, clinicians, and public health specialists. Given the above, Kenya's Covid-19 response was informed primarily by the field of medical sciences.

Policymaking bodies receiving expertise

The National Co-ordination Committee on the Coronavirus (NCCC) was established in February 2020 to deal with the pandemic. The NCCC is Chaired by the Cabinet Secretary in charge of domestic affairs, and its members includes the Cabinet Secretaries, the Attorney General, the Head of the Public Service, and

the Chairperson of the Council of Governors. The NCCC has been responsible for providing a comprehensive national framework in response to the Covid-19 pandemic by coordinating actions undertaken by different arms of government, state agencies, and tiers of government. Experts within the NCCC have included virologists, epidemiologists, public health specialists, and clinicians. There is no legal or regulatory backing behind the NCCC, yet it was formed to ensure smooth cooperation between government departments and between the national and county governments (The Star, 2020).

Kenya's response to the pandemic was first attempted through an ad hoc Cabinet Committee, which was soon replaced by the National Emergency Response Committee on the Coronavirus (NERC) on 28th February 2020. The NERC has been chaired by the Cabinet Secretary for Health and its membership has included officials from various government departments, such as the office of the President. Representatives of the county governments as well as the director of medical services of the Kenya Defense Forces have also participated. The NERC has overseen the response coordination nationally and sub-nationally. More specifically, its responsibilities have ranged from coordinating capacity building for medical personnel and other professionals, to coordinating the preparation of isolation and treatment facilities, and supplying testing kits, critical medical supplies, masks and other protective gear (Kamau, n.d.). Additionally, it has been charged with conducting economic impact assessments, formulating mitigation measures, conducting surveillance at entry points, and coordinating work with development partners and key stakeholders (Ministry of Health, 2020). The NERC has been meeting regularly, and has signed-off all daily updates released by the Cabinet Secretary.

Lastly, on 31st March 2020, the Kenyan Senate established the 'Senate Ad Hoc Committee on the Covid-19 situation in Kenya' with the mandate to oversee actions and measures taken by the national and county governments. The Senate committee identified five main thematic areas within which it invited the public and practitioners to give input through written submissions. It is important to note that the Senate did not form sub-committees but instead put out an open call for listed experts to submit a memorandum on the best policy options for the country. Following the analysis of public submissions and an in-depth analysis of best practices in other jurisdictions, the committee drafted and presented to the Senate the 'Pandemic Response and Management Bill 2020' as a means to respond to the crisis (Republic of Kenya, 2020).

Place of experts in the government's communication strategy

The President has given regular briefings on the application and easing of restrictions. These briefings have been broadcasted on national television, and the speeches were circulated in media houses. In his addresses, the President was sometimes accompanied by Cabinet Secretaries. Moreover, the Cabinet Secretary for Health has given daily briefings and updates through press releases published on the Ministry of Health's website. It is important to note that the Cabinet Secretary provided the briefings on behalf of the NERC. During these briefings the Cabinet Secretary appeared along with officials from the Ministry of Health, including the Director General for Health, and the Head of the Public Health Department. The officials present were always medical doctors working in the Ministry of Health in administrative positions. Finally, KEMRI has communicated its research findings and recommendations regarding the pandemic through press releases and reports available on their website.

Role of regional/subnational level in the translation of expertise into measures

Kenya has a devolved system of government with the national/central government responsible for numerous functions, including health policy. Kenya has 47 county governments in charge of county health services, including health facilities and ambulance services. The Ministry of Health at the national level coordinates national health policies and issues guidelines. During the Covid-19 pandemic, the Ministry of Health and the Director General for Health regularly issued guidelines and directives to county governments (Council of Governors, 2020). Aside from hiring medical staff and ensuring efficient functioning of public hospitals, regional and sub-national governments are also charged with data collection and reporting to the Ministry of Health to aid application of national policy and regulations.

Impact of evidence-informed policies on public trust

According to the 2021 Edelman Trust Barometer, Kenyans generally don't trust their government, but between 2020 and 2021 trust in the government seems to have increased by four points (Edelman, 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Kenya received its first vaccine, Covishield (Oxford/AstraZeneca), through the COVAX facility on 3rd March 2021 (WHO Africa, 2021a) and began providing local hospitals with doses to begin mass vaccination on the 8th March 2021 (UNICEF, 2021). At the time, Kenya was experiencing a spike in Covid-19 cases, severe overcrowding in hospitals, and the emergence of the Delta variant (Dahir, 2021). Given these challenges and Kenya's weaker infrastructure, the COVAX facility played a critical role in providing low and medium-income countries with vaccines to manage the pandemic (WHO Africa, 2021a).

The Ministry of Health used a phased plan for vaccinating Kenyan citizens. The first individuals to get vaccinated between March – June 2021, were frontline healthcare workers, essential workers, and those aged 50 and over (Wamalwa et al., 2021). The next group of individuals to be vaccinated between July – December 2021, were those aged 18 and over with underlying conditions or disabilities (Mwaniki, 2021) and those working in hospitality and transport (Wamalwa et al., 2021). In the period between January - December 2022, vaccination was open to the general population, including pregnant women and children aged 15 and over (Ministry of Health, 2021). Currently, there are six vaccines available in the country - Spikevax (Moderna); Comirnaty (Pfizer/BioNTech); Sputnik V (Gamaleya); Covid-19 Vaccine (Janssen/Johnson & Johnson); Vaxzevria (Oxford/AstraZeneca); and Covilo (Sinopharm)- while another seven are in clinical trials (Covid19 Vaccine Tracker: Kenya, 2022).

Hesitancy has had a major impact on Kenya's overall vaccination rates. The government had hoped to have vaccinated 70% of the adult population by June 2022, however as of August 21st 2022, only 17.65% of Kenyans have been fully vaccinated (Ritchie et al., 2022). Hesitancy and scepticism have been identified as the main factors for the country's low vaccination rate (Orangi et al., 2021). There are several reasons why individuals are hesitant to get the Covid-19 vaccine. Firstly, there are pervasive beliefs that risk of Covid infection is low, and that government regulations are too difficult to adhere to. Secondly, many individuals are concerned about vaccine safety and vaccine efficacy, due to lack of literacy on the subject particularly amongst the older generations (Orangi et al., 2021). Thirdly, some individuals are hesitant to be vaccinated due to religious and/or cultural beliefs (Orangi et al., 2021). Beyond vaccine hesitancy, many individuals have limited access to vaccination centres, and lower levels of education in rural areas have made outreach programmes more difficult (Orangi et al., 2021). To combat these issues, the vaccination campaign requires reinforcement – particularly in its attempts to reach those without access and limited resources. Adding to that, hesitancy amongst community health volunteers, who are responsible for providing much of the care and information in rural areas, ranges from 12%-46% in the communities studied, suggesting that in at least some of these communities there is another challenge posed against sufficient vaccination (Osur et al., 2022).

Rules on vaccination

Rules for vaccination approval

Vaccines in Kenya, including for Covid-19, have been approved by the Pharmacy and Poisons board, a national regulatory board responsible for “regulating the practice of pharmacy and the manufacture and trade in drugs and poisons” (Ng'ethe, 2021). Usually to approve a vaccine, four phases of trials are conducted by researchers in community health and chemistry from the University of Nairobi, and KEMRI. However, for the Covid-19 pandemic, vaccines were mostly approved for emergency use via the ‘dossier method’ “where all information on the product is submitted in the common technical document format, including quality and clinical data that reflects efficacy and safety”. In essence, international regulatory bodies and vaccine manufacturers sent the Pharmacy and Poisons board their vaccine trial data (Ng'ethe, 2021).

Vaccination policies

The first batch of vaccines were administered voluntarily (Wamalwa et al., 2021). However, in December 2021, the National Emergency Response Committee (via the Ministry of Health) introduced a controversial mandate which required anyone seeking government services in person; using or driving public transport; entering spaces such as bars, restaurants and national parks; travelling from outside the country or to another region within the country - to present proof of full vaccination (NERC, 2021). These measures were introduced against the backdrop of the OMICRON variant of the virus, and low numbers of vaccinated, as part of a more aggressive vaccine rollout and uptake campaign (Al Jazeera, 2021; NERC, 2021). This mandate was met with protests from Human Rights Watch which emphasised the importance of keeping everyone safe, while also highlighting that such a policy would restrict individuals from accessing needed services, particularly given that only 10% of Kenyans had been vaccinated and there were not enough vaccines to go around (Human Rights Watch, 2021). Based on these condemnations,

the High Court temporarily suspended the mandate while awaiting a hearing and a democratic vote on the matter (Slimi, 2021). The Ministry of Health announced that it would be carrying out the mandate despite the ruling from the High Court (Amunga, 2021) which fueled further criticism. The mandate was finally blocked by the High Court (Africa News, 2022) meaning that mandates on a national scale only existed briefly.

Bodies involved in vaccine rollout

Kenya, like other medium to low-income countries, involved several national and international agencies/organisations in the vaccine rollout process. However, the involvement of expert bodies has been limited.

At the national level, the main body involved in the vaccine rollout has been the National Emergency Response Committee on Coronavirus (NERC), chaired by the Cabinet Secretary for Health. Aside from working closely with the Ministry of Health and providing expert advice, the NERC has been directly involved in publishing and establishing mandates (NERC, 2021), which the High Court determines the legality of (Slimi, 2021). On a regional scale, each county was responsible for storing and preserving vaccine deliveries, and administering them as advised by the Ministry of Health (Ministry of Health, 2021). Community health volunteers were responsible for providing much of the care and information in rural areas. The Ministry of Health was responsible for creating a phased national vaccination plan (Wamalwa et al., 2021), distributing and receiving vaccines, defining which groups should be given priority, and advising municipalities in the country about vaccine conservation (Ministry of Health, 2021). Lastly, the Ministry set targets and goals for vaccination, and released any information relating to vaccination status and updates (Ministry of Health, n.d.).

On an international scale, the COVAX facility was involved in distributing the vaccines to Kenya and providing syringes and safety boxes funded by the Vaccine Alliance (GAVI). GAVI already had a purchase agreement with the Serum Institute of India (SII), and was involved in purchasing the first vaccine that would be administered in Kenya. UNICEF was also involved, and the Copenhagen Supply Division was responsible for procuring and transporting the vaccines. The WHO was involved in the procurement and transportation of the vaccine (WHO Africa, 2021a). The Center for International Health, Education, and Biosecurity-Kenya (CIHEB-KENYA), an NGO aiming to safeguard communities from health-related threats and achieve health equity, created the Technical Assistance to Ready and Accelerate Capacity of Public Health Programs in Kenya (TRACK) to aid creation of national policies and materials regarding the vaccine rollout. This included, for example, building capacity for a smoother rollout process by developing standard operating procedures, training packages, and replicable models of implementation. TRACK has also been involved in teaching national trainers how to share their training to other counties (Institute of Human Virology, n.d.).

Communication Strategy

Considering Kenya's overall low vaccination rates, and the hesitancy displayed by the older population, the role of educating and incentivizing through a communication campaign is crucial. In an effort to combat the rampant hesitancy in the country, UNICEF in conjunction with the Ministry of Health, partnered with religious leaders in the county of Garissa, encouraging them to talk about the importance of vaccination during their sermons. Furthermore, UNICEF started a vaccination drive with the Inter-Religious Council of Kenya (IRCK) and the Ministry of Health in Nairobi. The drive included opening over 280 places of worship as vaccination centres. Religious leaders were also vaccinated publicly while being televised as part of the campaign (Brown, 2021). The Ministry of Health has also contributed to this effort. It engaged various measures: "partner collaboration, county engagement, risk communication, demand generation, and media engagement and public awareness efforts through social media and social mobilization" (WHO Africa, 2021b). In a joint effort with the WHO, the Ministry of Health launched conversations with stakeholders who "in turn reached communities through barazas/local meetings, social mobilization using public address system (town criers) and reaching out to communities at strategic positions (outreach sites)" (WHO Africa, 2021b). Furthermore, the Ministry has made educational resources available through its website (Ministry of Health, n.d.).

Actress and radio personality, Eve D'Souza, shared her experience with the vaccine and its side effects, reminding Kenyans that the side effects are not only temporary but evidence that the vaccine works (Wako, 2021). Additionally, in the county of Garissa, social media influencers have been using their platforms to provide education to hard-to-reach communities with low literacy on the subject (Khalif, 2021).

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Lebanon

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

Lebanon's Health Minister, Hamad Hasad, confirmed the country's first Covid-19 case on 21st February 2020 (Knecht and Francis, 2020). It was a 45-year-old woman returning from the Iranian city of Qom; after showing symptoms she was put in isolation. Two more cases were suspected within the same flight and promptly placed in isolation in a Beirut hospital (Knecht and Francis, 2020). All other passengers from the same flight were told to self-isolate for 14 days and report any symptoms so that they too could be tested and put in quarantine (Knecht and Francis, 2020).

At the time of the virus' emergence, the country was in a particularly challenging situation. Firstly, the national economic recession of 2019 (Blair, 2022) negatively impacted the functionality of all sectors of public society, due to a lack of resources to keep them functioning well (Massouh, 2021). Secondly, Lebanon's geographical proximity to several war-torn countries (e.g., Syria, Palestine, Iraq) makes it a prime destination for refugees originating from these areas. This influx of individuals has placed an extra strain on the systems of an already dense country population – particularly the underfunded and overcrowded healthcare system (Massouh, 2021). Thirdly, such a dense population can result in multigenerational, overcrowded homes, which pose increased risk for the spread of viruses and diseases (Massouh, 2021). These challenges have been severely amplified by the pandemic.

In the face of these difficulties, the government started responding to the pandemic by following all guidelines created by the WHO, including incentivising mask-wearing, enforcing social distancing, and emphasising hand hygiene and similar measures (Knecht and Francis, 2020). Early containment was also conducted thoroughly to allow capacity building for hospitals (Massouh, 2020). After three deaths and 99 cases, on 15th March 2020, the country entered a two-week lockdown, closing airports and ports, restaurants, and schools, and urging people to only leave the house in cases of extreme necessity. Exceptions to the new restrictions included those selling and offering essential services. Flights from areas with high numbers of cases such as China, Italy, South Korea, and Iran were suspended, and prayer services were halted (France 24, 2020). Security forces were deployed to ensure that people and businesses were following the curfew that was imposed (Houssari, 2020).

Lockdowns were often extended, reinstated after several surges, and even rescinded after protests from the private sector (MME and Agencies, 2020). Tragically, in August 2020, an explosion in Beirut claimed the lives of over 200 people and caused a huge strain on Lebanon's first response and health infrastructure. This incident led to a surge in Covid-19 cases with 1,006 new cases and 11 deaths registered within 24 hours (MEE and Agencies, 2020). As a result, a new two-week lockdown was imposed (MME and Agencies, 2020). In early 2021, Lebanon faced a deadly month with increasing cases and deaths, and an increasingly overburdened and unprepared health system (MOPH, 2021).

In February 2021, the vaccination campaign was launched but hesitancy and scepticism proved to be major obstacles, making the response more difficult when new variants were detected (Kaymakamian, 2021; AFP, 2021). It seems that Lebanon has not yet lifted its state of emergency, indeed, wearing masks and showing proof of vaccination is still required (GOVUK, n.d.).

Institutions and bodies providing expert knowledge to policymakers

National Communicable Disease Committee

This pre-existing body was called upon to deal with the pandemic in early 2020 (Minister Office, 2018). It was tasked with planning and strategising based on the recommendations of scientists and other health experts, as well as providing advice to the government (International Science Council, 2020). Members included experts in the areas of civil defense and health (International Science Council, 2020).

National Scientific Committee

As a part of the Ministry of Public Health, this committee is presided over by the General Director of the Ministry (Moussallem et al., 2022). Its main task is to advise the government on scientific matters and

propose ways to control and manage the spread of the virus (Moussallem et al., 2002). It is not clear what kind of expertise has been involved.

Communication Response Initiative

This partnership between the Ministry of Information, UNICEF, WHO and the United Nations Development Programme involved communication experts, and focused on creating a successful communications campaign by targeting the spread of fake news and misinformation on social media (UNICEF, 2020).

Disciplines informing policies

Expertise mainly came from the fields of medicine and public health. Communication experts and representatives of various UN organisations have also been involved (UNICEF, 2020).

Policymaking bodies receiving expertise

Parliamentary Health Committee

This pre-existing committee is led by a member of the Lebanese parliament and is responsible for aiding decision-making, and coordinating resources (Moussallem et al., 2022). Its chair at the onset and during the early stages of the pandemic was cardiologist Assem Araji and has been composed of several other MPs and experts. Members are voted in through elections (Taleb, 2022; Bou Khzam, 2022). The committee has been actively involved in the country's response to the pandemic calling for lockdowns during its early stages (IANS, 2021), and proposing that another committee be formed to help relieve the overtaxed healthcare sector (Taleb, 2022).

National Emergency Task Force

A National Emergency Task Force was established by former PM Saad Harari and has been led by his office of staff. This body was created for the same purposes as the Parliamentary Health Committee, and has been charged with establishing preventive measures and aiding the country's preparedness to deal with the virus. The mobilisation of resources, and county-level monitoring and coordination were also tasked to this committee (MOPH, 2020). Members included representatives of the Disaster Risk Management Team and other experts in policymaking and health (MOPH, 2020).

Interministerial Task Force

This body was set up on February 2nd 2020 (OCHA, 2020) and has been presided over by the Secretary General of the Supreme Defense Council (Moussallem et al., 2022). It was established to contribute to the management of the pandemic by coordinating different areas of civil society and different ministries. The body has worked with the UN and other relevant bodies to plan appropriate responses and plans of action (OCHA, 2022).

Place of experts in the government's communication strategy

Lebanon's communication strategy was mostly prepared and disseminated by the Ministry of Public Health, which created awareness videos circulated via audiovisual and social media, held daily press conferences, and released a situation report (MOPH, 2020). The MOPH also made resources available through its official website (MOPH, 2020). The PM at the time often made announcements regarding new measures and lockdowns (Crisis24, 2020). The Parliamentary Health Committee's chair, Assem Araji, was also involved in making public recommendations (Taleb, 2002). The government's measures were thus supported by a dedicated communication team.

An effort was made to fight misinformation through media campaigns addressing falsehoods about the virus, and a website that synthesised all credible information (UNICEF, 2020). More specifically, misinformation that originated locally was logged, and trustworthy information was provided to explain why the misinformation was inaccurate. A fact-checking mechanism was further made available, which aimed to provide explanations of credible information to citizens (UNICEF, 2020).

Role of regional/subnational level in the translation of expertise into measures

Lebanon's response and strategic plan was created to target the whole nation. Lockdowns, measures, and restrictions were applied nationally (MOPH, 2020; Todman, 2021). The city of Beirut's infrastructure – particularly its health response was damaged after the explosion in August 2020. This led to a deprioritisation of the fight against Covid-19, and resources were reallocated to those affected by the explosion (Fares et al., 2021). National protocols based on expertise were abandoned in the city (and affected region) during this period of turmoil.

Impact of evidence-informed policies on public trust

The levels of trust in the government were already low in 2019, with less than 5% of the citizenry trusting the governmental institutions in the nation. It has been suggested that the lack of trust was likely a result of widespread corruption. Corruption combined with high levels of misinformation, and the financial instability of the country negatively impacted citizens' will and ability to follow Covid-19 regulations (Hassouri, 2020). As a result of these issues, public trust in both the government and the expert community is low, and anti-lockdown protests have emerged (Al Jazeera, 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Vaccination against Covid-19 in Lebanon began on February 14th 2021 with the first jabs administered to Dr Mahmoud Hassoun, the head of the Intensive Care Unit at Beirut's Rafik Hariri University Hospital, and famous actor, 93-year-old Salah Tizani (Asfahani et al., 2021). The vaccine is available for free to the entire population, including for children aged 5-11 years. Four vaccines have been approved in the country: Comirnaty (Pfizer/BioNTech), Sputnik V (Gamaleya), Covishield Oxford/AstraZeneca formulation (Serum Institute of India), and Covilo (Sinopharm/Beijing) (Covid19 Vaccine Tracker: Lebanon, 2022).

Lebanon's financial and societal hardships (i.e., economic crisis, pandemic, port explosion) motivated the World Bank to approve a reallocation of US\$34 million under the Lebanon Health Resilience Project (LHRP). The LHRP was launched in 2017 as a low-interest loan worth US\$120 million to be repaid over 23 years, to increase access to healthcare services for citizens and displaced refugees. When Covid-19 hit, the reallocated funds were used explicitly for the procurement of Covid-19 vaccines (Asfahani et al., 2021; The World Bank, 2021). Despite close monitoring and involvement of international bodies (particularly the World Bank, the WHO, and several UN agencies), across all stages of the vaccination rollout, including the development of the National Deployment and Vaccination Plan (NDVP), Lebanon's vaccination drive has been widely criticized for being "expensive, slow and disorganized" (El Murr, 2021). Furthermore, despite communication that vaccines were available for everyone, there has been huge inequity in their administration. Specifically, Lebanese nationals received the vaccine at a much greater rate than Syrian and Palestine migrant/refugee groups. Given that these groups represent around 30% of the total population in the country, the vaccine rollout could be viewed as discriminatory (Diab, 2021). Lastly, several misconducts by Lebanese authorities have been reported, such as MPs jumping the vaccine line in February 2021. This scandal resulted in the World Bank threatening to suspend Covid-19 related support in the country (El Murr, 2021).

Anti-vaccination protests have been quite common in Lebanon, especially following the government's decision in January 2022, to mandate vaccination for public sector workers (Chehayeb, 2022). These protests have further fueled vaccine hesitancy in the country. According to the Health Minister, Firas Abiad, the number of protesters has been relatively low and most of them have been "misinformed and disingenuous". However, anti-vaccine content has been widely circulated on Lebanese social media platforms. It has been argued that the anti-vaxxer movement is borne out of mistrust in the authorities, and frustration with the country's prolonged economic instability (Chehayeb, 2022). Anti-vaccine conspiracies have also found supporters in Lebanon, though to a lesser extent compared to other countries.

Rules on vaccination

Rules for vaccines approval

As there is no independent drug regulatory authority in Lebanon, the Ministry of Public Health is charged with providing authorisation for medication and vaccine registration, importation, and marketing. In that regard, the Ministry of Public Health has issued an Emergency Use Authorization for the Pfizer vaccine on December 16th 2020 (Lebanon National Deployment and Vaccination Plan for Covid-19 Vaccines, 2021).

Vaccination policies

Following a surge in the number of cases during the 2021 Christmas period, all medical and public sector workers (including those in the armed forces, education, transport, and tourism) are required to be vaccinated or provide proof of a negative PCR test twice weekly (Reuters, 2021). Furthermore, a law was passed in December 2021 imposing a fine of 156 euros to unvaccinated individuals who spread Covid-19. This amount is unaffordable for many citizens because 80% of the Lebanese population lives below the international poverty line (Zaazaa, 2021). A number of restrictions have been imposed on the

unvaccinated population, including nightly curfews from 7pm-6am, and the requirement to present proof of vaccination (or a negative PCR test taken within the last 48 hours) to enter indoor spaces (Iskandarani, 2021). While the government has not provided any incentives to encourage vaccination, besides unrestricted access to all indoor and outdoor spaces and facilities, there has been a number of private initiatives, for instance, Uber has offered two free rides - up to around 25 euro each - for travel to and from vaccination centres (Elks, 2021).

Bodies involved in vaccine rollout

A Covid-19 Vaccine National Coordination Committee (NCC) was established in early November 2020 to implement the country's vaccination programme (Taha, 2021). The NCC's responsibilities include monitoring and incorporating guidelines issued by international organisations (such as the WHO) into the vaccination programme, setting priority groups for vaccination, and communicating with the press. With regard to its membership, the NCC has included senior-level officials from the Ministry of Public Health, UN and World Bank representatives, academics, and private sector partners (Taha, 2021). According to the National Deployment and Vaccination Plan, priority was initially given to frontline health care workers, the elderly and those with co-morbidities (Lebanon National Deployment and Vaccination Plan for Covid-19 Vaccines, 2021).

The Red Cross and Red Crescent Societies (IFRC), in collaboration with the Ministry of Public Health, has been responsible for monitoring the vaccination drive, including storage and stock of the vaccines, delivery at vaccination centres, and the eligibility of vaccine recipients (Asfahani et al., 2021). In that regard, IFRC was the one to inform the World Bank that a number of Lebanese MPs had been vaccinated in Parliament without the NCC's prior approval and without belonging to the groups eligible for vaccination at the time (Dadouch and Durgham, 2021).

The World Bank and other international development partners have also assisted the Lebanese government, in particular the Ministry of Public Health, to put together the National Deployment and Vaccination Plan, to conduct the Covid-19 vaccine readiness assessment, and to set up the NCC (The World Bank, 2021). Lastly, a Joint Monitoring Committee was established by the World Bank and composed of representatives from the World Bank, the WHO, UNICEF, IOM, the UN Refugee Agency and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) to monitor all aspects of the vaccination drive (Asfahani et al., 2021).

Communication Strategy

A targeted media campaign was launched by the Ministry of Public Health to counter vaccine hesitancy and encourage people to book a vaccine appointment via the Ministry's online platform. A number of walk-in vaccination marathons have also been organised by the Ministry, targeting different areas, professions, and age groups, in view of increasing vaccine uptake (Taha, 2021; Chehayeb, 2022). However, some of these marathons were postponed due to power and internet-related technical issues (El Murr, 2021).

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Portugal

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

On March 2nd 2020, Health Minister, Marta Temido, announced that two cases of Covid-19 had been found in Portugal (Agencia Lusa, 2020). The first two cases were a 60-year-old cardiologist who had just returned from a trip to Milan, Italy; and a 33-year-old man who had returned from Spain (Galha, 2022). The two men were quickly identified, isolated, and treated (Reuters, 2020a). The Portuguese healthcare system and government had already begun preparations for the eventuality the virus might reach them, claiming that it was simply a matter of time. At the start of the pandemic, Portugal implemented all WHO recommended safety measures before repatriating Wuhan nationals and monitoring all incoming flights from China (Reuters, 2020b). In the aftermath of cases originating from Italy, monitoring and tracing on Italian flights was also implemented (Reuters, 2020b). Additionally, the government placed the hospitals of Sao Jorge, Dona Estefania and Curry Cabral in a state of alert since January 2020 (Pacheco Campos and Lins, 2020). In February, the government increased the stock of medication in the National Health Systems (SNS) by 20% and issued guidelines to companies, ports and travelers by sea (Pacheco and Lins, 2020). Before the first Covid-19 cases were even confirmed in the country, the government implemented several measures. Temporary hospitals were created to help relieve the burden on the healthcare system, public sector workers were encouraged to work from home, full pay was offered for quarantined workers, companies and public establishments created local contingency plans for suspected cases, universities, museums, theatres, sporting and other mass-gathering venues were closed, flights from Italy were suspended, and a line of credit was created to help companies affected by these restrictions (Pacheco Campos and Lins, 2020).

Portugal's demographics, particularly the population's age, were a major factor in the preparedness of the nation. An average age of 45 (as of 2019; Morais Fonseca, 2019) is higher than most European countries, and means that the virus could have led to a high loss of human life. This made preparations for the inevitable arrival of the virus very tight. As such, after the announcement of a pandemic on March 11th 2020, more measures were applied including school closures, suspension of events and activities, raising civil service readiness; and restrictions to public spaces such as supermarkets, beaches, restaurants, malls, clubs, cruises, and flights (Pacheco Campos and Lins, 2020). Additionally, a system of furlough payments, similar to the one used in the UK, was set up to relieve the strain on companies, and ensure that workers received payment and did not get fired (Pacheco Campos and Lins, 2020). Self-employed people received emergency monthly support of 438 euros for 6 months. Families with children were also taken into consideration - especially those of lower income - with about 700 schools staying open to provide meals and care for children of essential workers. Finally, on March 18th 2020, non-compliance to these measures was considered a crime (Pacheco Campos and Lins, 2020).

Portugal's level of preparation meant that by April 1st 2020, the country registered significantly fewer cases and deaths than its neighbors (Ames, 2020). Subsequent waves were met with further lockdowns (Violante and Lanceiro, 2021). Furthermore, an existing positive vaccination culture meant that Portugal became the most vaccinated country in the EU, and the second most vaccinated worldwide (Ritchie et al., 2020). Such high levels of vaccine uptake greatly reduced the spread of the virus and minimised deaths.

Institutions and bodies providing expert knowledge to policymakers

Task force COVID-19

This body was created by the General Directorate of Health (DGS) and the National Health Authority, and is composed of several health experts. It was initially created within the national contingency plan to recommend actions based on guidelines by the WHO and the European Centre for Disease Prevention and Control (Correia et al., 2020). As such, most of its work involved informing the bodies that created it.

Commission for the Coordination and Surveillance of Epidemics

This body is a part of the National Council for Public Health (CNSP), which was created by the Ministry of Health and the General Directorate of Health. The CCSE gave information to the government regarding the severity of the crisis, and recommendations for measures that must be taken to surveil and control the

virus. It is formed of various public, private, and social sector representatives including academics and scientists, the General Directorate of Health, the National Health Institute, and representatives of the autonomous governments of Madeira and Azores (Correia et al., 2020; BDJUR, n.d.a). Additionally, the CCSE recommends policies and analyses statistical data.

Commission for the Coordination of Emergencies

The CCE is a part of the National Council for Public Health, and its objective is to evaluate and report on any circumstances that might constitute a grave health emergency (Correia et al., 2020; BDJUR, n.d.b). The CCE has been in charge of the creation of a national plan that deploys personnel to respond to emergencies (BDJUR, n.d.b). It is composed of the presidents of the regional health administrations, health authorities from the autonomous regions, the president of the directive of the National Institute of Medical Emergency, representatives of the INFARMED (the body responsible for the surveillance and approval of medical equipment and medicines), and the president of the national authority of civil protection (BJUR, n.d.b). At the discretion of its president, other experts may be called in.

Disciplines informing policies

Various health experts were involved in the Covid-19 task force and the Commission for the Coordination and Surveillance of Epidemics, though their specific areas of study are not listed.

Policymaking bodies receiving expertise

The expert bodies involved in the Covid-19 response have advised the national government through the Ministry of Health, the General Directorate of Health and the National Council for Public Health, which in turn crafted and implemented policies on this basis.

Place of experts in the government's communication strategy

The General Directorate of Health has been the main body responsible for the communication strategy through its social media, and daily press conferences. It has played a crucial role in the dissemination of information about the pandemic (Goncalves et al., 2021). The PM, Antonio Costa, and the Minister of Health, Marta Temido, were heavily involved in disseminating information relating to Covid-19 measures, and incentivised citizens to comply with the rules and get vaccinated. Although most communication was carried out by figureheads of the ministries and governmental administration, conferences often included health professionals, which has increased compliance levels.

Role of regional/subnational level in the translation of expertise into measures

Portugal's coherent response was mostly coordinated on a national level. The autonomous regions of Azores and Madeira were privy to the same expert bodies, though measures and mandates differed. Their initial response was delayed and not equal to the measures taken in continental Portugal (Pacheco Campos and Lins, 2020). In Madeira for example, mask wearing in public was made compulsory before any other region (Reuters, 2020c), and the Azores imposed a 14-day quarantine for visiting tourists which violated the constitution (Demony and Vicente Rua, 2020). Lockdowns were also not equally imposed (Roberts, 2021).

Impact of evidence-informed policies on public trust

One reason why Portugal enjoyed high levels of compliance to Covid-19 measures and restrictions, was the concern from the general public over the safety of their aged population (Ames, 2020). However, while public trust in the government and its communication campaign is high, the public appears to favour health professionals as sources of information (Goncalves et al., 2021). It could therefore be argued that expert input that has directly informed government measures, has helped keep trust and compliance levels high.

The role of experts and evidence-informed policies in the vaccine rollout

Background

Portugal launched its vaccination programme on December 27th 2020 with the first dose administered to a doctor at the Hospital de São João in Porto, in the presence of the Minister of Health Marta Temido (Safe Communities Portugal, n.d.a). The vaccine is available to the entire population, including to the age group 5-11 from mid December 2021 (Reuters, 2021). Five vaccines against Covid-19 have been approved for use in Portugal: Comirnaty (Pfizer/BioNTech); Spikevax (Moderna); Vaxzevria (Oxford/AstraZeneca), Covid-19 Vaccine (Janssen/ Johnson & Johnson) and Nuvaxovid (Novavax) (Covid19 Vaccine Tracker: Portugal, 2022). The Covid-19 vaccine HIPRA (Laboratorios Hipra SA) is in clinical trials much like in Spain, Italy, and Vietnam (Covid19 Vaccine Tracker: Portugal, 2022). Because

Portugal was exemplary in its' vaccination rollout in the EU and is the second most vaccinated country worldwide (Ritchie et al., 2020), many other countries have looked to Portugal for lessons.

An important factor for Portugal's success was the selection of a high-ranking naval officer to head up the country's Covid-19 vaccination taskforce. Vice Admiral Henrique Gouveia e Melo took charge of the vaccination rollout in February 2021 when the national health system was on the verge of collapse. Health expert Francisco Ramos (a political appointee to whom the job was initially assigned), resigned amid claims of queue-jumping and delays in supplies (Euronews, 2021; Kakissis, 2021). To safely vaccinate large numbers of people, vaccination hub 'production lines' were established at large sports centres across the country. These featured a reception area, a waiting room, cubicles where vaccines were administered, and a recovery area. Furthermore, an effort was made to build confidence in the system by consistently showing soldiers, doctors, and nurses receiving the vaccine (Euronews, 2021; Santora and Minder, 2021). According to Gouveia e Melo, the key to Portugal's successful vaccine rollout was keeping politics out. However, there is no doubt that efficient planning and trustworthiness displayed by a military officer played a crucial part (Santora and Minder, 2021). Arguably the most decisive success factor was the populace's long-standing positive attitude toward national vaccination programmes (ABC News, 2021; ITV News, 2021). Indeed, anti-vaxxers represent less than 3% of the population and are, certainly, less vocal compared to vaccine doubters in other countries (ABC News, 2021; Kakissis, 2021).

Rules on vaccination

Rules for vaccines approval

Vaccines administered in Portugal have been approved by the European Medicines Agency (EMA) and the National Authority of Medicines and Health Products, I.P. (INFARMED) - a government agency under the Ministry of Health.

Vaccination policies

Vaccination is not mandatory in Portugal, not even for healthcare workers and/or workers in long-term facilities (ECDC, 2022). Indeed, the government made it clear that it did not ever intend to make vaccines mandatory. However, a recent study suggests that 67% of the Portuguese are in favour of making vaccination mandatory for adults, and 79% are in favour of making vaccination mandatory for health workers, school and university personnel, and public service workers (The Portugal News, 2021). The high levels of vaccine uptake in Portugal can be attributed to the country's history with national vaccination programmes. Indeed, after the fall of the 40-year, right-wing dictatorship in 1974, a strong public health system and vaccination programme was built to battle polio and measles (Kakissis, 2021). Therefore, the Portuguese have long-held positive beliefs towards vaccines (ABC News, 2021; Hatton, 2021). Although only tetanus and diphtheria are legally mandatory vaccines, most people perceive all vaccines included in the national vaccination programme to be mandatory.

In January 2022 the government announced some incentives to encourage the population to get booster jabs. These included removing the requirement to display a negative test to attend events and enter public spaces, removing the requirement to isolate (unless one lived with someone who had contracted the virus), and removing the requirement to miss work or school if a fellow employee or school colleague tested positive (Hatton, 2022; Portuguese Government, 2022).

Bodies involved in vaccine rollout

Responsibility for the overall management of the pandemic lays with the Directorate-General of Health, within the Ministry of Health, and two ad hoc bodies: the Covid-19 Task Force, and the Technical Advisory Committee for Covid-19 Vaccination (NITAG). An additional special task force was created to run and oversee the vaccination programme (Taborda, 2022). This task force was composed of Vice Admiral Henrique Gouveia e Melo who acted as coordinator, and one representative from each of the Ministry of Internal Administration, the Security Intelligence Service, the Directorate-General of Health, INFARMED, and the Shared Services of the Ministry of Health (SPMS, EPE). Gouveia e Melo brought together a team of 30 people including elite military personnel from Portugal's Army, Air Force and Navy; strategic experts; doctors; mathematicians; and analysts. These individuals worked with officers from the Ministry of Health to ensure the smooth implementation of the vaccination programme in 300 vaccination centres across the country (Santora and Minder, 2021; ABC News, 2021). The logistics-based and centrally managed vaccination campaign has been backed by opposition parties, while public health experts and an array of public figures have also shown their support (VaccinesToday, 2022).

The Portuguese government utilised expert advice during the vaccination rollout (Safe Communities Portugal, n.d.b). In fact, technical meetings between the President of the Republic, the PM, party leaders, and experts from INFARMED, the National Association of Public Health Physicians (ANMSP) and Lisbon's Institute of Molecular Medicine (IMM), have been regularly consulted to inform pandemic measures and restrictions (Safe Communities Portugal, n.d.b; The Portugal News, 2022). Recent polls suggest that there are high levels of public trust in health authorities, including in recommendations coming from the standing national vaccination commission (ITV News, 2021; VaccinesToday, 2022). The commission has provided guidelines on the order of priority groups, and recommendations regarding specific Covid-19 vaccines in specific age or target groups, for instance regarding the Oxford/AstraZeneca vaccine. Specifically, the commission recommended that the AstraZeneca vaccine be administered only to people aged 60 years and older, and the Janssen vaccine be administered to all people above 50 years but only to males below 50 years (ECDC, 2022).

Communication Strategy

The Portuguese government, in collaboration with the task force, the Directorate-General for Health and the Shared Services of the Ministry of Health, launched a portal in December 2020 with detailed information on the Vaccination Plan (Safe Communities Portugal, n.d.a). Regular press conferences have been held following the meetings of the Council of Ministers, and the meetings between the executive and the experts. Admiral Gouveia e Melo became a household name, appearing regularly on television and providing answers to concerns and commonly asked questions (Hatton, 2021). The Admiral always presented himself in army suits and used military language in his tv appearances, and as a result he managed to eliminate misinformation and doubt. This was a huge success, given how widespread misinformation was when the vaccines first became available (Santora and Minder, 2021). While his war-like approach is thought by some to have instilled a sentiment of fear and limiting the capacity of people to disobey or question authorities (Santora and Minder, 2021), a share of health experts attributed the country's success to the efficient coordination between the military, health professionals, and local officials.

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Russia

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first Covid-19 cases in Russia were confirmed at the end of January 2020, yet no cases were reported in February. Instead, the mass spread of the virus started in March (Statista, n.d.). On March 12th 2020, the PM introduced a number of measures aiming to mitigate the spread of Covid-19, for example the suspension of entry via the Russian-Polish border, and the Russian-Norwegian border for foreign citizens. In addition to border control measures, the Ministry of Healthcare introduced healthcare protocols for confirmed Covid-19 cases while sharing information on the novel coronavirus, the Ministry of Industry and Trade investigated the country's manufacturing capability for personal safety equipment, and the Federal Service for the Oversight of Consumer Protection and Welfare (Rospotrebnadzor) also provided the public with up-to-date information on the virus. Finally, the governments of the Moscow Region and of Moscow were tasked to organise training courses in biosecurity for medical professionals (The Russian Government, 2020). On March 19th 2020 the PM declared a "high alert status in the country", and on March 31st 2020 the State Duma adopted legislation allowing the PM to declare a state of emergency. During this state of emergency citizens would face penalties for violating quarantine or knowingly spreading misinformation (Mankoff et al., 2020).

By the end of March, the government closed all national borders and restricted movement via roads, railroads, pedestrian, and river checkpoints (INGSA, 2020d). On March 29th 2020, Moscow tightened its lockdown measures, with almost all other Russian regions following its example (Tass, 2020a). Simultaneously, all international flights were suspended but repatriation flights. Subsequently, on April 2nd 2020 the President announced mandatory holidays until the end of April. Following this, most Russian regions introduced general lockdowns, while a number of them restricted movement for vulnerable groups (INGSA, 2020e; Gulina, 2020). Moscow's government took additional measures on April 11th 2020, which required citizens to possess a digital pass for personal and public transport trips within Moscow and the greater Moscow region (INGSA, 2020a). Lockdown and digital passes in Moscow remained in place until the end of May 2020 (INGSA, 2020f). Finally, the vote on the constitutional amendment, scheduled for April 22nd 2020, and the Victory Day Parade, scheduled for May 9th 2020, were postponed due to the pandemic (Liik, 2020).

The following month the Russian authorities began preparations for the gradual easing of the lockdown. While deconfinement would occur in accordance with the epidemiological burden of each region, the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing, suggested that this should happen in three stages. In each stage, heads of regions would make decisions based on the proposals of the head sanitary physicians (Tass, 2020a).

Subsequently, on May 27th 2020 the Moscow Mayor partially lifted the lockdown measures by allowing outdoor exercise. Nevertheless, mask and glove-wearing remained mandatory (Office of the President of Russia, 2020a). Finally, on June 8th 2020 most restrictions in Moscow were lifted (INGSA, 2020c) in anticipation of the upcoming vote on the constitutional amendment.

While the infection rate rose again in autumn 2020, local authorities were reluctant to reintroduce lockdowns, with few closing schools. Simultaneously, the Federal government aimed to mitigate the virus by employing the Russian-developed vaccine rather than enforcing restrictive measures. As a result, the easing of the lockdown in May 2020 allowed the virus to spread in Russia's most distant provinces, where the health infrastructure could not cope with such increased demand (Kramer, 2020a).

Russia's response to the pandemic indicated that experts and expert knowledge were employed in accordance with the government's wider political agenda. Initially, the Federal government was hesitant to impose restrictive measures advised by most medical experts, and instead prioritised its economic agenda. When the need for lockdowns became inevitable, the Russian President chose to transfer this responsibility to regional governors. In addition to blame-avoidance, the Russian Federal government took several steps that demonstrated its preference for political gain over expert advice. Firstly, the government chose to dismiss a well-established medical doctor when he voiced concerns over the Russian vaccine testing procedures. Secondly, the government chose to ease the lockdown measures earlier than

expected, so that the planned constitutional referendum could take place. While we have limited evidence on how this approach affected public trust in experts and the government, an independent phone survey conducted in May 2020 showed that the President's approval was at a historic low. Medical services also suffered a dip in public approval because they were believed to be unprepared for the pandemic.

Institutions and bodies providing expert knowledge to policymakers

The Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor) acted as the main body of expertise with respect to the management of the Covid-19 pandemic. Rospotrebnadzor is responsible for sanitary and epidemiological surveillance at the federal level. Its mandate includes the enforcement of the relevant federal legislation, and the issuance of sanitary and anti-epidemic (preventive) measures (Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing, n.d.). The head of the Service, Anna Popova, also acts as the State's Chief State Sanitary Physician. She took the lead to inform the public on the development of the virus. Additionally, the Ministry of Health appeared to have a key role in the information-gathering process, and launched an online registration system of all coronavirus infection cases and community-acquired pneumonia (INGSA, 2020b).

It is worth noting that some of the experts within the Ministry of Health voiced objections to the official policy line. In particular, Professor Alexander Chuchalin, a top respiratory doctor, quit the Russian Health Ministry's ethics council after raising objections about the registration of the Russian vaccine on 'safety' grounds. At the same time the majority of Russia's physicians appeared sceptical of the vaccine's effectiveness (Kramer, 2020b).

Disciplines informing policies

While there is limited data on the type of expertise employed during the pandemic, the structure and mandate of the institutions providing expert knowledge suggests that medical experts and epidemiologists were certainly consulted. Nevertheless, the Covid-19 working group at the State Council (see below) played a prominent role combining medical expertise with economic and security advice. All in all, while medical experts had a central role during this period, economists were instrumental in the decision-making process and for promoting the government's economic agenda.

Policymaking bodies receiving expertise

On March 15th 2020, the Russian President established a Covid-19 working group at the State Council. The group comprised of 19 members and senior regional officials were encouraged to participate in it. The group was led by Moscow Mayor Sergei Sobyanin - one of the first Russian officials who took measures to mitigate the virus' outbreak. The First Deputy Prime Minister and two Deputy Prime Ministers acted as his deputies. The group also included the Healthcare Minister, the Minister for Industry and Trade, the Transport Minister, a senior Presidential aide, the heads of the Presidential Domestic Policy Directorate, the Presidential Directorate for Public Relations, the Communications Office, the Federal Service for the Oversight of Consumer Protection and Welfare, the Federal Service for Veterinary and Phytosanitary Supervision, the Federal Medical-Biological Agency, the Federal Customs Service, and the FSB Border Service. It also included the Deputy Ministers of the Interior, Foreign Affairs, Defence, and Emergencies and Disaster Relief (Office of the President of Russia, 2020b). The group reported its results and consulted on future steps with the PM.

Place of experts in the government's communication strategy

The Russian government appointed prominent Russian doctor and media personality Alexander Myasnikov to head the National Coronavirus Information center. Myasnikov was also head of the Moscow Public Chamber's Health, Demography, and Social Policy Commission, and a close adviser to the President and the Moscow Mayor. He was known for holding a particularly optimistic view on the virus. The mandate of the information center was to inform citizens about the threat of the virus and to disseminate information on treatment and prevention methods. The center was also responsible for cracking down on 'fake news' (The Moscow Times, 2020a).

Apart from the Information Center, the members of the Covid-19 working group held regular briefings with the press, and they also published excerpts from the minutes of their meetings. The political members of the working group, namely the Deputy Prime Ministers and the Moscow Mayor, usually conducted these briefings, with the occasional participation of the head of Rospotrebnadzor.

The President appeared less engaged with the pandemic, giving only two national addresses on March 27th 2020 and on April 2nd 2020. The first address focused on announcing a week-long national holiday and financial aid measures. However, the address was vague with respect to the pandemic and the need to comply with restrictive measures. His second address focused more on protection measures, striking a slightly harsher tone and prolonging the national holiday until the end of April 2020 (Duclos, 2020; Mankoff et al., 2020).

Role of regional/subnational level in the translation of expertise into measures

In his effort to avoid any blame for the restrictive measures, the Russian President appeared disengaged from the crisis-management effort. Instead, he allowed the working group and regional governors to handle the day-to-day management of the virus (Liik, 2020). Indeed, the Mayor of Moscow took the lead by being among the first to implement measures against the pandemic (Mankoff et al., 2020). Subsequently, the PM urged the other regions to follow Moscow's example. All in all, the Covid-19 pandemic was one of the few periods during which Russia operated as a true federal state with regional governments having substantial powers. Nevertheless, the President eventually reasserted his authority on salient issues for his agenda. In particular, he 'forced' the Moscow mayor to lift the lockdown so that the vote on the constitutional amendments could take place (Liik, 2020).

Impact of evidence-informed policies on public trust

A phone survey conducted in May 2020 by one of the few independent research institutes in Russia indicated that President Putin's approval rating fell to a historic low of 59%, while 33% disapproved of his work. Contrary to this, most respondents approved of the work conducted by local governors (The Moscow Times, 2020b). The same research center suggests that people respect the work of physicians and nurses but have a very low opinion of the medical services more broadly, and attribute lack of Covid-19 preparedness to the healthcare system (Liik, 2020).

The role of experts and evidence-informed policies in the vaccine rollout

Background

On August 11th 2020, Russia registered the first vaccine against Covid-19: Sputnik V. Russian regions began administering the vaccine in early December 2020 - with Moscow the first region to inoculate its medical personnel (BBC, 2020). Thereafter, the Russian Federal Service for Surveillance in Healthcare approved 6 vaccines in total, all produced in Russia (Sputnik V, KoviVac, Sputnik Light, Aurora-CoV, EpiVacCorona and Gam-COVID-Vac) (Covid19 Vaccine Tracker: Russia, 2022). The approval of only Russian-developed vaccines is linked with the country's legal framework, which mandates that the government purchases Russian products rather than foreign ones (Mikule et al., 2021). The above vaccines are available to the whole population, including to children above 16 years old (Ritchie et al., 2020). However, there has been unequal supply of vaccines across the country's regions, and the vaccination rate in Russia remains notably low due in part to scepticism over the safety of the approved vaccines (Mikule et al., 2021).

The anti-vaccine movement in Russia is animated and active. Vaccine hesitancy in the country is based on a mix of conspiracy theories, distrust in the government, and long-standing vaccine scepticism (Mikule et al., 2021). Social media and the internet have been used to propagate the anti-vaccination message (Dettmer, 2021). In addition, the anti-vaccine movement has a strong offline presence. Indeed, several high-profile politicians like the leader of Russia's Communist party, and prominent celebrities like actors and musicians have promoted an anti-vaccine narrative (Radio Free Europe, 2021). To add insult to injury, several medical professionals have also supported anti-vaccine messages. Specifically, the Independent Association of Doctors runs a popular website and social media account that shares misinformation on the pandemic and the vaccines. These issues are further complemented by a nationalistic and anti-government rhetoric that is popular in Russia (Twigg and Posner, 2021). To tackle the rise in anti-vaccine beliefs the Federal Service for Surveillance in Healthcare has threatened disciplinary action for medical personnel that spread misinformation (Radio Free Europe, 2021). Furthermore, 11 chief physicians from leading hospitals across the country have invited leading figures of the anti-vaccine movement to Covid-19 hospital wards. To reinforce this effort, the Federal agency that oversees compliance with the laws in the media has sought to remove misleading material from the Russian internet (Russia Beyond, 2021).

Rules on vaccination

Rules for vaccines approval

Vaccine approval fell under the authority of the Federal Service for Surveillance in Healthcare. The Service approved the Sputnik V vaccine in August 2020 (Federal Service for Surveillance and Healthcare, 2020) before the end of phase III clinical trials - a decision that raised concerns about the vaccine's safety. The approval of Sputnik V was announced by the President of Russia rather than the head of the Service - a decision that further exacerbated doubts about the vaccine's approval process (Michlin-Shapir and Khvostunova, 2021).

Vaccination policies

The Russian government has not established a vaccine mandate at the federal level and it has avoided implementing measures that would place restrictions on the unvaccinated (Pavlova, 2022). Simultaneously, the government has rejected the possibility of introducing monetary penalties against those who remain unvaccinated (Tass, 2021a). Instead, regions have been left to decide on vaccine mandates, with some regions implementing mandatory vaccination for those over 60 years old. Other regions established similar mandates for certain groups - such as state employees, medical staff, and teachers (Tass, 2021b). The Moscow region was particularly successful in mandating that 60% of its capital's service sector had to be vaccinated. Currently, more than half of Russia's regions have implemented some type of vaccine mandate. As an alternative, the Russian government has attempted to create some positive incentives too, including mandates for two paid days of leave for all those willing to be vaccinated (Stronski, 2021a). In addition, certain regions organised raffles with rewards such as dental services, appliances, and fuel (The Moscow Times, 2021a). In an even more enticing move, the Moscow regions offered retirees a cash handout of 10,000 rubles (\$140) to encourage them to be vaccinated (The Moscow Times, 2021b).

Bodies involved in vaccine rollout

Political considerations rather than scientific input seem to have guided Russia's vaccine rollout. The first vaccine was produced by the Gamaleya Research Institute of Epidemiology and Microbiology - a Russian state scientific institution. The state-run Russia Direct Investment Fund provided funding for this project (Michlin-Shapir and Khvostunova, 2021). While the Lancet published an article confirming a 91.6% efficacy for the vaccine (Mikule et al., 2021), it appears that the public, medical experts, and regulators abroad remained sceptical. Indeed, in a survey conducted in October 2021 most Russians expressed their preference to be vaccinated with an international version of the vaccine (Satanovskiy, 2021). Even medical workers appeared to report high levels of scepticism towards the Russian vaccines (Mikule et al., 2021), and foreign medical experts expressed concern over the vaccine process that was followed (Baraniuk, 2021). Indeed, the World Health Organization announced that it lacked data on the efficacy of the Russian vaccines, hence it stopped the vaccine's emergency review in September 2021. In addition, regulators in Canada, Japan, South Africa, the European Union and the United States raised concerns (Stronski, 2021b).

Experts also played a minor role informing regulations for access to the vaccine. The Russian Health Ministry decided on the prioritisation list, with medical personnel and teachers receiving the first doses. Prioritisation soon expanded to include police, employees in public transport, trade, agencies of social protection, enterprises of public catering, and other organisations whose employees come in direct contact with large numbers of people (Tass, 2020b). With a low vaccine uptake, the prioritisation list soon widened further with mass vaccinations starting in mid January 2021 (Michlin-Shapir and Khvostunova, 2021). Finally, in April 2021 the vaccine became available to the whole Russian population (Ritchie et al., 2020).

The Federal government in cooperation with the local regions undertook the administration of the vaccine. The Federal government was responsible for producing the necessary vaccine doses and delivering them to the regions. The latter then had the responsibility to set up vaccination centers and administer the vaccine (Michlin-Shapir and Khvostunova, 2021). The whole process was met with problems. Initially the Federal government was not able to keep up production, causing vaccine shortages. Moreover, the size of the country made the distribution of vaccines difficult, giving rise to a number of logistical problems and unequal coverage between regions. In addition, several logistical problems appeared with the organisation and booking of vaccine appointments (Michlin-Shapir and Khvostunova, 2021).

Communication Strategy

The government's communications effort appeared to be orientated mainly towards boosting the international profile of its vaccine, rather than on convincing more people to vaccinate. On one hand,

certain scientists and policy figures promoted Sputnik V on the basis of its scientific merit. The director of the Gamaleya Research Institute and the Sputnik V lead researcher both became fervent advocates of the vaccine's efficiency. Leading politicians, like the Prime Minister and the Health Minister, also tried to promote the vaccination effort, yet their efforts occasionally exhibited contradictory messages (Michlin-Shapir and Khvostunova, 2021). More importantly, the Russian President appeared hesitant to take the vaccine, thus exacerbating doubt about its safety (Stronski, 2021b).

While some efforts were made to boost the vaccine drive by employing medical experts, the narrative of the Russian government mainly emphasised the success of the first registered vaccine and simultaneously criticised other governments for not approving it. Russian news outlets also spent a great deal of effort on undermining confidence over foreign vaccines. However this strategy backfired, with many Russians articulating similar arguments with respect to Russian-developed vaccines (Dettmer, 2021).

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South Africa

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

On March 5th 2020, the Minister of Health announced the first case of Covid-19, and the government began building capacity to respond to the pandemic. On March 15th 2020, the Cabinet met and agreed to declare a state of disaster under the Disaster Management Act 2002 (RSA Department of Co-operative Governance and Traditional Affairs, 2020). The country remained under this legal status for 750 days, until April 4th 2022 (Givetash, 2022). South Africa has oscillated between 5 alert levels, with level 1 = the lowest alert, and 5 = a complete lockdown (South African Government, 2020). Between March 23rd 2020 and April 1st 2020, South Africa raised the Alert to a level 5 (national lockdown) which included the closure of borders and the suspension of flights. Between May 1st -31st 2020, the country moved to alert level 4, which included extreme precautions to limit community transmission while allowing the resumption of some activities (South African Government, 2020). Schools and workplaces were reopened on June 1st 2020 when the country moved to alert level 3, where international borders were partially reopened. Alert level 3 lasted until August 17th 2020. As the country moved through the first wave, the alert level was reduced to level 2 on August 18th and to alert level 1 on September 20th 2020. By December 28th 2020, South Africa was no longer in a state of disaster.

When the second wave of Covid-19 began as a result of an increase in cases coupled with the South African Variant (501.V2 or B.1.351), the country moved back to alert level 3. The latter was introduced on December 29th 2020 and is still in effect today. In the current alert level 3 several hotspots in Western Cape, Eastern Cape, Gauteng, KwaZulu-Natal, Limpopo and North West Provinces are under stricter measures, including longer curfew periods (South African Government News Agency, 2020). These stricter regulations also applied to hotspots from the beginning of the pandemic, regardless of the national alert level in South Africa.

Institutions and bodies providing expert knowledge to policymakers

South African Medical Research Council (SAMRC)

SAMRC was established in 1969 with a mandate to improve the health of the country's population through research, development, and technology transfer. The organisation runs multiple research projects on tuberculosis, HIV/AIDS, cardiovascular and non-communicable diseases, gender and health, and alcohol and drug addiction. SAMRC runs Intramural and Extramural research units. The Extramural Units are external research divisions commissioned to conduct research on SAMRC's behalf. This research - which includes basic laboratory investigations, clinical research, and public health studies - is undertaken by scientists employed by different South African and international science councils, medical schools, universities and research institutions (SAMRC, n.d.a). The Intramural research units are internal research divisions which employ specialized scientists to conduct laboratory investigations, clinical research, and public health studies. Research conducted by the Intramural Units provides the South African Government and the National Department of Health with the information and insights needed for health planning and assessment (SAMRC, n.d.b). SAMRC works with stakeholders in South Africa, including the National Department of Health and the Department of Science and Innovation, to support research and rapid response to the Covid-19 disease outbreak. Their research is used by the Ministry of Health and, consequently, by the various taskforces in the decision-making process.

SAMRC also has a pivotal role in the national Covid-19 response including: i) providing research support and surveillance, including genomic sequencing; ii) gathering and publishing data on weekly Covid-19 fatalities, iii) coordinating with universities and research centres across the country to conduct research; and iv) launching a waste water warning system for Covid-19 to be used in the Western Cape, Eastern Cape, Limpopo and Gauteng provinces (SAMRC, 2020a). SAMRC relies on virologists, microbiologists, epidemiologists, clinicians, pathologists, and public health specialists to contribute to the country's Covid-19 response.

South African Population Research Infrastructure Network (SAPRIN)

SAPRIN is a national research platform funded by the Department of Science and Innovation (DSI) and hosted by the South African Medical Research Council (SAMRC). The SAPRIN responded rapidly to the Covid-19 emergency by developing a surveillance protocol that was implemented in March 2020. The

research involves ongoing telephone interviews to screen for Covid-19 symptoms across more than 60,000 rural households in Mpumalanga, Limpopo and KwaZulu-Natal. SAPRIN relies on sociologists, epidemiologists, and clinicians (SAMRC, 2020b).

National Institute for Communicable Diseases (NICD)

The National Institute for Communicable Diseases is a national public health institute in South Africa, providing reference microbiology, virology, epidemiology, surveillance, and public health research to support the government's response to communicable disease threats. On February 1st 2021, the NICD and its research partners (i.e., Perinatal HIV Research Unit, PHRU; Epicentre; and Genesis Analytics), announced a Healthcare Utilisation and Seroprevalence survey of Covid-19 in three South Africa districts. Through this research, they aimed to identify the actual disease burden, given the high number of asymptomatic or mild Covid-19 cases experienced in South Africa (NICD, 2021).

Ministerial Advisory Committee on Covid-19 (MAC)

The MAC on Covid-19 is a non-statutory Advisory Committee appointed by the Minister of Health to provide high-level strategic advice on managing the Covid-19 outbreak in South Africa. It was established on March 30th 2020 and is composed of 4 committees: i) Pathologists and Laboratory, ii) Clinicians, iii) Public Health, and iv) Research. Each committee reviews local and international material/evidence, and provides advice to the National Department of Health. The MAC is composed of experts from different disciplines and is chaired by the Minister of Health. On September 28th 2020, the Minister reinforced the composition of the MAC for combating Covid-19 by including bio-medical practitioners, clinical experts, specialists in ethics, nurses, social scientists, researchers, and community leaders to advise on interventions that would influence the behavioural pattern of citizens. The Minister has implemented most of the advice provided by the MAC. Additionally, the MAC may call upon the different research institutes to provide expert evidence (RSA Department of Health, 2020a).

Multisectoral Ministerial Advisory Committee for Social Behavioural Change (MAC SBC)

The MAC SBC was launched on June 16th 2020 and is co-chaired by the Minister of Health and the Minister of Social Development. The MAC SBC has focused entirely on social mobilisation to address the pandemic, and has provided a comprehensive response to the pandemic's socio-economic consequences. The MAC SBC has used lessons learnt from the campaign on HIV and AIDS in which stakeholder mobilisation was critical for behavioural change (RSA Department of Health, 2020b).

Disciplines informing policies

Epidemiologists, virologists, microbiologists, clinicians, pathologists, bio-medical practitioners, specialists in ethics, sociologists, and social scientists have helped shape South Africa's response to the pandemic.

Policymaking bodies receiving expertise

The Presidency and Cabinet make the final policy decisions, but rely on various committees (which receive and analyse expert information) to make national policy recommendations. Additionally, there are decision-making structures at the provincial and district level.

Presidential Advisory Committees

The National Coronavirus Command Council (NCCC) and the President's Coordinating Council (PCC) advise the President. They are composed of cabinet ministers and may also include experts from time to time. The NCCC and the PCC are formed on an ad hoc basis as there is no legal support for them. In most presidential addresses, the President refers to deliberations from the NCCC and the PCC when announcing new measures in the bid to tackle the Covid-19 pandemic (South African Government, 2021).

National Coronavirus Command Council (NCCC)

At the start of the pandemic, the South African executive response was coordinated by an Inter-Ministerial Committee chaired by the Minister of Health. On March 17th 2020, the President announced the establishment of the NCCC, which he co-chairs with the Minister of Cooperative Governance and Traditional Affairs. While there is no legal basis for the NCCC, the President clarified on March 15th 2020 that "the NCCC coordinates government's response to the coronavirus pandemic making recommendations to Cabinet on measures required in terms of the national state of disaster" (Head, 2020). The NCCC consists of 20 ministers, the representatives of the NatJoints (a security structure led by the secretary of defense and comprised of the police, the army and intelligence), and the directors-generals of the 20 departments. Despite its constitutionally informal nature, the NCCC advises the President after analysing expert evidence and information from various government agencies (Eyewitness News, 2020).

President's Coordinating Council (PCC)

The PCC is co-chaired by the President and Deputy President and comprises ministers and premiers of all provinces, and the South Africa Local Government Association (SALGA). It is set up to ensure coordination of government functions and allows the national and local governments to discuss and agree on policy options. The PCC has been in place prior to the Covid-19 outbreak, and since the start of the pandemic the PCC meets frequently to review expert advice, get input from different local governments, and make policy recommendations that the Cabinet discusses.

Minister of Health

The National Health Act 2003 provides a legislative mandate for the Minister of Health to establish advisory and technical committees. In line with this, three Ministerial Advisory Committees (MACs) have been established to respond to the Covid-19 pandemic. These are the Ministerial Advisory Committee on Covid-19 (MAC), the MAC on Coronavirus Vaccine (MAC-Vacc) and the Multisectoral MAC for Social Behavioral Change (MAC SBC). The Ministry of Health relies on expertise from the three MACs when determining the national policy and responses.

Place of experts in the government's communication strategy

The South African Government runs an official Covid-19 Online Resource & News Portal 'sacoronavirus.co.za', which contains all relevant news, including daily press briefings from the Minister of Health. The President has held at least one press briefing every month since February 2020, informing the nation of any new measures imposed or easing of restrictions. These briefings have often been based on his deliberations with the NCCC and the PCC. Furthermore, the Minister of Health has released daily briefings and updates via press releases available on governmental websites and press conferences. The different research institutes mentioned above, have also made regular public statements regarding the pandemic based on their research.

Role of regional/subnational level in the translation of expertise into measures

In South Africa, the sub-national response has been coordinated by the Ministry of Cooperative Governance and Traditional Affairs. The sub-national governance system consists of provinces, municipalities, and institutions of traditional leadership. The management of the pandemic at these levels has been conducted through guidelines issued to national departments responsible for Cooperative Governance and Traditional Affairs (COGTA) under the Disaster Management Act 2002. Once the country declared a state of disaster, a coordination structure was set up through the Government Gazette Notice 43147 of March 25th 2020. As a result Municipal and Provincial Command Councils were established, which were at the frontline of the sub-national response. These councils were required to ensure the delivery of public services, surveillance and data collection, and the development of Covid-19 response plans. To date, the Ministry of Cooperative Governance and Traditional Affairs is charged with drafting and publishing regulations for the whole nation and for areas identified as hotspots (Republic of South Africa, 2020).

Impact of evidence-informed policies on public trust

The Edelman Trust Barometer measures the level of citizens' trust in the government, the media, NGOs and businesses (Edelman, 2021). The 2021 Edelman Trust Barometer suggests that while South Africans still distrust their government, there has been a 7-point gain in trust compared with 2020. This is the biggest increase in public trust compared to all other institutions/bodies.

The role of experts and evidence-informed policies in the vaccine rollout

Background

South Africa administered its first Covid-19 vaccine on February 17th 2021 (Meldrum, 2021). The vaccine rollout faced several challenges. Firstly, acquiring vaccines was difficult and many African countries were less able to purchase vaccines than their Western counterparts. Secondly, South Africa's socio-economic conditions impacted the functioning of the healthcare systems and the ability to administer vaccines (Dzinamarira et al., 2021). Lastly, the emergence of a new, more contagious variant was speculated to be more resistant to the existing vaccines (Meldrum, 2021). Most other countries in Africa started vaccinating with the CoronaVac vaccine due to its low cost, however, clinical trials showed that it could be less effective in dealing with "mild, moderate" disease stemming from the new variant (Meldrum, 2021). As a result, South Africa stopped using CoronaVac on February 8th 2021, and began administering the

Janssen/Johnson & Johnson Covid-19 Vaccine because it showed effectivity against the new variant (Dzinamarira et al., 2021).

The rollout started with vaccinating healthcare staff and frontline workers (Dzinamarira et al., 2021), moving on to the elderly (Karim and Dyk, 2021), and then to other public workers, and the general adult population (Katoto et al., 2022). The latest group to be vaccinated is children and teenagers of 12-17 years old (Govender et al., 2022). Five vaccines have been approved in the country, namely Covid-19 Vaccine (Janssen/Johnson & Johnson); Comirnaty (Pfizer/BioNTech); Covishield - Oxford/ AstraZeneca formulation (Serum Institute of India); Covillo (Sinopharm); and CoronaVac (Sinovac) while another 19 are in clinical trials (Covid19 Vaccine Tracker: South Africa, 2022).

Hesitancy has been a major obstacle in the country's vaccine drive (Katoto et al., 2022). According to a survey, 52% of South Africans do not want to take the vaccine, despite the need to have 67.35% of the population vaccinated in order to achieve herd immunity. Survey responders referred to "religion, fear of needles, and unconsented government tracking" when asked about the reason for being hesitant (Dzinamarira et al., 2021). Socio-economic factors play a crucial role too, indeed vaccine uptake can be hindered if individuals have limited access to resources needed to register online, have low income and lack of education, and have to rely on someone else to make the decision for them (Katoto et al., 2022). Other important factors include belief in conspiracy theories, the prevalence of misinformation, lack of media literacy, and distrust in the government (Dzinamarira et al., 2021).

Rules on vaccination

Rules for vaccines approval

Vaccines in South Africa have been approved by the South African Health Products Regulatory Authority (SAHPRA) (South African Government, n.d.a).

Vaccination policies

Vaccination became increasingly critical with the emergence of a new variant in February 2021 and a spike in Covid-19 cases (Meldrum, 2021). The government set up an Electronic Vaccination Data System (EVDS) which required people to provide information to help the government identify whether they were eligible to get vaccinated. The EVDS further enabled the government to plan the supply of vaccines and other items, to inform the citizenry of where to get vaccinated, and communicate other information about the vaccination programme (South African Government, n.d.b). The platform allowed registration according to the vaccine rollout schedule.

Vaccination was encouraged but never mandatory. As the pandemic evolved, mandates similar to the ones imposed in France and the United States of America were briefly considered by the national government, however they were not implemented (Coterill, 2021). In the end, companies were the ones imposing vaccine mandates on their employees. These mandates had to follow a process set up by the Ministry of Employment and Labour (RSA Department of Employment and Labour, 2021) due to concerns that forcing individuals to get the vaccine would violate employees' constitutional rights. As a result, employers had to outline in their risk assessments whether or not they would require their employees to be vaccinated. This specifically applied to employees that might pose a risk to others' health if not vaccinated (e.g., if they work in direct contact with other employees and have no health-related exemption), and would only be considered mandatory once the employee was able to register on the EVDS and book a vaccination date.

Bodies involved in vaccine rollout

Apart from the South African Health Products Regulatory Authority (SAHPRA), which has been responsible for the approval of vaccines, no other expert bodies were directly involved in the country's vaccine drive. The South African government has been in charge of the vaccination rollout; it has sourced, purchased, and distributed the vaccines to provincial governments and the private sector (NICD, n.d.). The Ministerial Advisory Committee on Coronavirus Vaccine (MAC-Vacc), established on September 14th 2020, has focused on the development of vaccines and on ensuring that there is sufficient access to the vaccine. The Ministry of Health also played an important role because it was responsible for drafting the vaccination programme, coordinating the vaccine rollout, running the campaign to incentivise people to get vaccinated, establishing the EVDS, and publishing Covid-19 related data (RSA Department of Health, 2020a). An Inter-Ministerial Committee (IMC) on Covid-19 vaccines was also established as part of the country's response. The Committee successfully achieved a smooth vaccine rollout with support from all

sectors of society. Moreover, the Ministry of Employment and Labour has been responsible for defining the rules and processes to be followed by employers looking to establish mandates (RSA Department of Employment and Labour, 2021).

Aside from the South African government, the COVAX facility (launched by the WHO and the European Commission) whose aim is to make access to vaccination available to all (including low-income countries), has played a key role in delivering vaccines to the country (Dzinamarira et al., 2021).

Communication Strategy

One of the solutions to combatting vaccine hesitancy is to create a better information campaign, particularly given that access to information and media literacy is low (Katoto et al., 2022). One of the most identifiable campaigns has been the Vomma campaign launched by the Ministry of Health. It includes Vomma Vax Champs, which encourage people to get educated, to educate their friends and family, and to report any vaccination issues within their area (RSA Department of Health, n.d.). There has also been the Vomma Weekend Campaign in conjunction with UNICEF South Africa, which focused on educating the population by having cabinet members visit provinces and promote vaccination. This campaign also used a truck to broadcast stories about how Covid-19 impacted local people's lives, and encouraged people to get vaccinated. Moreover, the Zwala campaign, led by young "Covid-19 champions", ran a dance competition and a mobile vaccination center (UNICEF, 2021). Furthermore, several celebrities, including rugby player Faf de Klerk and actress Pearl Thusi used their social media platforms to dispel misinformation and combat hesitancy (Turner, 2021; Tshwaku, 2021).

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South Korea

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first Covid-19 case in South Korea was reported on January 20th 2020. The South Korean government immediately raised its national alert level to yellow, and raised it again to orange on January 27th 2020, with the confirmation of four new cases (Kang et al., 2020). Although ‘Special Entry Procedures’ for incoming travelers were implemented early on, and extensive contact tracing was in place, South Korea experienced a rapid spread of the virus during February 2020 with hundreds of cases reported daily (Cha and Kim, 2020). Most of the cases were associated with a major outbreak in the city of Daegu following the controversial practices of the secretive Shincheonji Church of Jesus (Pannell, 2020); these involved “worshippers sitting packed together on the floor, wearing no face masks, coming to church even when sick, splitting up into groups for Bible study and going out into the streets and proselytize” (Sang-Hun, 2020). On February 23rd 2020, the government raised the alert level from orange to red (Kang et al., 2020). While the epidemiological situation during February and for most of March 2020 was far from being contained, by April 30th 2020, South Korea had managed to suppress the virus to the point that there were no new cases (Neuman, 2020). This was a remarkable achievement given that the country had held its parliamentary elections only two weeks earlier. More impressive still, is that this achievement was not the product of a strict lockdown or complete travel ban, but rather a well-rounded strategy triggered early on and remained in place throughout the pandemic. Although the country witnessed a second wave in July-August 2020 and a third one in December 2020-January 2021, South Korea managed to flatten the curve while sustaining social and economic activities, and maintaining an open society (Schwak, 2020).

South Korea has been applauded internationally for its highly sophisticated pandemic response, and for its exemplary blending of technology and testing. The Korean model has been based on a TRUST strategy, an acronym for ‘Transparency, Robust screening and quarantine, Unique but universally applicable testing, Strict control, and Treatment’, also known as ‘3Ts’ - testing, tracing, and treatment (Oh, 2020). There are several main reasons for South Korea’s success. Firstly, South Korea used a centralised crisis management and communication approach that followed strong science-based evidence. Secondly, South Korea used powerful diagnostic testing via innovative drive-through and walk-through screening stations (this approach was informed by the 2015 Middle East Respiratory Syndrome (MERS) outbreak; Schwak, 2020; Lee and Choi, 2020). Thirdly, South Korea took a big data approach to contact tracing such that authorities were allowed to retrieve CCTV footage, cell-phone G.P.S. data, credit-card payment information, and travel and medical records to chart patients’ trajectories. Lastly, South Korea’s citizens were extremely compliant with the government’s measures and guidelines.

Institutions and bodies providing expert knowledge to policymakers

The Korea Centers for Disease Control and Prevention (KCDC)

The KCDC was set up under the Ministry of Health and Welfare in 2004 as the country’s primary epidemic control center. It comprises of scientific experts and medical specialists, led by infectious disease and public health expert Jung Eun-kyeong. During the Covid-19 pandemic, the KCDC has been at the forefront of South Korea’s response. Its Laboratory Diagnosis Management Coordination Team developed a diagnostic test kit, and provided technical support to testing labs and medical institutions across the country. Moreover, the Office of Risk Communication, established by the KCDC, provided guidance on the disclosure of reliable data and information. The KCDC became a stand-alone government agency in September 2020, renamed to Korea Disease Control and Prevention Agency, and was given independent authority to plan and implement policies on the management of infectious diseases (Kwon et al., 2020; Government of the Republic of Korea, 2020).

The Korea National Institute of Health (KNIH)

The KNIH has conducted extensive research on Covid-19, including detecting immune reactions and antibodies to the virus in blood.

The Korea Health Industry Development Institute (KHIDI)

The KHIDI was set up in 1999 as a government-affiliated institution under the Ministry of Health and Welfare to promote advanced healthcare services.

The National Medical Center (NMC) and the Central Clinical Committee for Emerging Disease Control

The committee, under the leadership of the NMC, has provided information and guidelines to hospitals, treating facilities, and health personnel regarding the treatment of Covid-19 patients.

Disciplines informing policies

Public health experts, infectious disease specialists, epidemiologists, clinicians, physicians, immunologists, microbiologists, vaccinologists and other health professionals, as well as statisticians, economists and psychologists helped shape South Korea's response to the pandemic.

Policymaking bodies receiving expertise

The Central Disaster and Safety Countermeasure (CDSC) Headquarters was 'activated' on February 23rd 2020 following the shift to the red alert level (Kang et al., 2020). It was headed by the PM Chung Sey-kyun and has been responsible for orchestrating an all-of-government response. Decisions were made through discussions between the Office for Government Policy Coordination, the Ministries of Economy and Finance, Education, Science and ICT, Foreign Affairs, Justice, Interior and Safety, Trade, Industry and Energy, and Health and Welfare, the KCDC, the Korean National Police Agency, the National Fire Agency, the Korea Health Industry Development Institute, the Korea Foundation for International Healthcare, the Korea International Cooperation Agency, the National Medical Centre, and the Korea International Medical Association (MOHW, n.d.; Government of the Republic of Korea, 2020). CDSC Headquarters meetings also involved Korea's local governments. They were held daily up to late April 2020 and 2-3 times per week from May 2020 onwards.

Under the leadership of the CDSC Headquarters, the Central Disease Control Headquarters, headed by the Director of the KCDC, has acted as the command centre for all prevention and control measures. Its work has been supported by the Central Disaster Management Headquarters, under the leadership of the Minister of Health and Welfare.

Place of experts in the government's communication strategy

The CDSC Headquarters held a video conference every morning to update the public on the latest developments regarding Covid-19. These conferences were led by the PM with the participation of government officials from different ministries and regional governments. Moreover, the decisions made during the CDSC Headquarters meetings were communicated to the public through twice daily press briefings, one in the morning held by the Minister of Health and Welfare Park Neung-hoo, or the Vice-Minister of Health and Welfare Kim Gang-lip, and one in the afternoon held by the Director of the KCDC Jung Eun-kyeong or the Director of the Korea National Institute of Health Kwon Jun-wook (Lee and Choi, 2020). Overall, scientists and experts played an instrumental role in Korea's crisis communication strategy. This helped prevent the spread of fake news and build trust with citizens.

Role of regional/subnational level in the translation of expertise into measures

The Minister of Interior and Safety, who has also acted as Vice Head 2 of the CDSC Headquarters, has been responsible for ensuring coordination between the central and local governments. From the outset of the pandemic the CDSC Headquarters meetings involved South Korea's seventeen provinces and major cities which fostered partnerships between the central and regional governments. This approach was informed by successes and failures from the 2015 MERS outbreak. As a result, an amendment to the Infectious Disease Control and Prevention Act in 2017 positioned responsibility for disease control measures with local governments.

During the Covid-19 pandemic, the epidemic response network, comprised of the KCDC, local governments, and local medical associations, enabled the timely and efficient suppression of local outbreaks, (e.g., in the city of Daegu). In such cases, local authorities were given the autonomy and power to take necessary action without having to first report to the KCDC (Mao, 2021). The establishment of Local Disaster and Safety Management Headquarters, under the head of each local government, also allowed for even distribution of Infectious Disease Hospitals, critical care beds, personnel, and other resources across the country (MOHW, n.d.).

Impact of evidence-informed policies on public trust

Although there are no public opinion surveys directly assessing public trust in evidence-informed policies, it could be argued that the extensive involvement of scientists in the crisis communication strategy increased citizens' cooperation and trust in the government. According to a public opinion survey, conducted in March 2020, 87% of South Koreans stated they trust the KCDC, 81% the National Medical Centre, and 72% the Ministry of Health and Welfare (Kim, 2020). The same survey suggests that seven out of ten South Koreans believed that the government's response to the pandemic was efficient. A later survey reveals that 86% of South Koreans thought that their country has handled the Covid-19 pandemic well (Devlin and Connaughton, 2020). Public opinion data regarding President's Moon Jae-in's approval have fluctuated since the onset of the pandemic; although he won the National Assembly elections of April 15th 2020 and initially handled the pandemic well, a March 2021 opinion poll shows that his approval rating has fallen to its lowest point (34.1%) since he took office in 2017 (Yonhap, 2021).

The role of experts and evidence-informed policies in the vaccine rollout

Background

Vaccination against Covid-19 in South Korea began on February 26th 2021 with the first doses administered to staff and patients at different nursing homes across the country (Gallo, 2021). The vaccine is available for free to the entire population, including to children aged 5-11 (Sajid, 2022). Six vaccines have been approved for use in South Korea: Nuvaxovid (Novavax), Spikevax (Moderna), Comirnaty (Pfizer/BioNTech), Covid-19 Vaccine (Janssen/Johnson & Johnson), Vaxzervia (Oxford/AstraZeneca) and SKYCOVIONE (SK Bioscience Co Ltd), while another nine are in clinical trials (Covid19 Vaccine Tracker: Republic of Korea, 2020).

South Korea was one of the last 'developed countries' to launch its vaccination drive despite its international renown and overall success in handling the pandemic (Kwon and Oh, 2022). This delay has been linked to the idea that the virus could be suppressed without resorting to vaccines, and the South Korean government's preference for domestically produced vaccines (Fendos, 2021). Initial vaccine shortages meant that only 15% of the South Korean population was vaccinated by August 2021. However, in just 4 months (i.e. by November 2021), South Korea had managed to fully vaccinate more than 80% of its citizenry (Wee et al., 2021; Stangarone, 2022). South Korea's advanced information and communication technology led to the development of an innovative reservation system which allowed for last-minute reservations. Therefore, South Korea was able to encourage vaccine uptake and simultaneously reduce vaccine waste.

The anti-vaccine movement in South Korea has been very weak – similar to other Asian-Pacific countries - largely because of high levels of public trust in the government, and a sense of responsibility for the community above and beyond individual freedoms (Wee et al., 2021). In addition, the South Korean government has been able to stop the spread of misinformation by producing reports and disclosing all information related to vaccines, including side effects and adverse reactions. This transparency has arguably increased public trust in the government and in vaccines (Norheim et al., 2020). Nonetheless, when the government announced that vaccination would begin for children 5-11, many parents were hesitant and expressed their concerns regarding possible negative reactions and unknown long-term side effects (Woo-hyun, 2022).

Rules on vaccination

Rules for vaccines approval

Vaccines administered in South Korea have been approved by the Ministry of Food and Drug Safety, which is responsible for regulating food, pharmaceuticals and medical products, and overseeing their manufacturing and distribution (Wang et al., 2021).

Vaccination policies

Vaccination is not mandatory in South Korea, rather the government focused more on incentivising people to get vaccinated rather than punishing them for failing to do so. Such incentives included easing of social distancing measures, and exemption from the mandatory two-week self-quarantine after returning from travel abroad (Wee et al., 2021; Kwon and Oh, 2022). Furthermore, the government has been providing compensation of around 250 US dollars to individuals who experienced adverse effects from the vaccines, while the Korea Disease Control and Prevention Agency (KDCA) has been covering all medical expenses for individuals who experienced severe side effects (KDCA, 2021).

Bodies involved in vaccine rollout

The Korea Disease Control and Prevention Agency (KDCA), formerly Korea Centers for Disease Control and Prevention (KCDC), has acted “as a control tower for the entire vaccination program from the planning to the management” (Kwon and Oh, 2022). The KDCA, which falls under the competency of the Ministry of Welfare and Health, was granted full autonomy and the legal authority to directly negotiate and close deals for vaccine procurement. This authority was given following the recommendations of a special task force set up within the KDCA, and composed of experts who were charged with monitoring international developments on the production and distribution of vaccines.

The Korea Advisory Committee on Immunization Practices (KACIP), comprising experts from different disciplines and representatives of various ministries, was set up as a legal entity under the Infectious Disease Prevention and Management Act. The KACIP was responsible for defining the priority groups for vaccination, and to advise on best practices for vaccination. Three priority groups were identified, group A = the elderly, individuals with underlying medical conditions, and staff and residents of care facilities, group B = health care professionals, and people in close contact with those falling within group A, and group C = the rest of the population (Kwon and Oh, 2022).

Taken together, South Korea’s vaccination rollout has been entirely evidence-based. Indeed, aside from input from the KDCA and the KACIP, other expert bodies and agencies have also provided guidance throughout the vaccination drive. A number of ministries have also been involved, for instance, the Ministry for National Defence provided security support for the distribution and storage of vaccines, and the Ministry of Interior and Safety assisted local governments in implementing the vaccination programme.

Communication Strategy

The South Korean government’s communication strategy to encourage vaccine uptake, has centered on the disclosure and frequent update of scientific data and information on different aspects of the vaccination programme. An effort has also been made to inform and reassure citizens of any possible side effects or adverse reactions. Furthermore, both the KDCA and KACIP have published regular press releases on national and international developments. Indeed, KACIP has even released the notes of their meetings, explaining in detail why certain choices were made and decisions were taken (Kwon and Oh, 2022).

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Sweden

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first Covid-19 case in Sweden was diagnosed on January 24th 2020. By February 1st 2020, the Swedish government classified the coronavirus as an illness posing danger to the public and society. This allowed state agencies to make decisions about quarantine if necessary, including quarantining contagious or ill people. Nevertheless, the government initially advised that the risk of the virus spreading was low, therefore no substantial measures were taken in February 2020.

With respect to travelling, on March 2nd 2020, Sweden banned flights from Iran, and on March 14th 2020 the Ministry for Foreign Affairs advised against non-essential travel to all countries. Five days later the government decided to stop non-essential travel from all countries except those in the EEA and Switzerland. The entry ban applied primarily to foreign citizens attempting to enter Sweden, yet it did not affect Swedish nationals. Restrictions to travel remained in place until June 15th 2020.

In the early stages of the first wave, the Swedish government focused on providing relevant services with the necessary budget to monitor and mitigate the spread of the virus. On March 11th 2020, the Swedish parliament approved an amendment to the budget. Subsequently, Sweden's Public Health Agency received an additional 41 million SEK, and the National Board of Health and Welfare received an additional 20 million SEK. The Swedish Medical Products Agency received an additional 5 million SEK, together with the 25 regions, to ensure the supply of medicines. The National Board of Health and Welfare's credit framework was trebled to enable purchase of protective equipment and testing kits.

With respect to sanitary measures, the Swedish government implemented an order that prohibited public gatherings and events with more than 500 participants. By March 29th 2020, the order was extended to all gatherings, indoors and outdoors, of more than 50 participants. The government further banned visits to aged care facilities. The Public Health Agency issued guidelines for restaurants and pubs instructing them to avoid crowding in confined spaces. With respect to schools the agency recommended that high schools, universities, and other education institutions adopt remote teaching. Nevertheless, schools and preschools remained open. During the first wave, Sweden largely avoided implementing mandatory measures, and instead allowed public transport and shopping malls to continue functioning unrestricted. In this sense, Sweden's approach followed a *de facto* herd immunity approach. Subsequently the infection reached a peak in April 2020, and slowed down between July - September 2020 (Claeson and Hanson, 2021).

Following this, the Swedish government opted to loosen restrictions in October 2020 by increasing the number of people allowed to attend public events. This approach led to a second wave in November - December 2020, with the number of Covid-19 deaths in Sweden surpassing that of the other Nordic countries (Laurent, 2020). Despite rising deaths, Sweden retained its voluntary approach by urging people to remain home and to limit contact with people outside their households. Furthermore, Sweden kept in place its controversial non-mandatory approach to mask-wearing; the Public Health Agency only recommended mask-wearing on public transport (Claeson and Hanson, 2021). Simultaneously, public gatherings were capped at eight people, schools were shut, some for the first time, and alcohol sales were banned after 10 p.m (Laurent, 2020). Sweden started its vaccination programme in January 2021, also announcing plans for a vaccination card that would make travelling around Europe easier (Höppner 2021).

Overall, Sweden's governmental response to the Covid-19 pandemic closely followed the advice of the main expert body - the Public Health Agency. However, the Public Health Agency proved to be controversial. Indeed, the agency avoided imposing mandatory restrictions and adopted a quite controversial stance vis-a-vis mask-wearing suggesting that it might not be an effective measure of protection (Reuters, 2020). While this relaxed approach was mainly informed by Sweden's political and administrative culture (Petridou, 2020), it had a negative impact on virus management. Not surprisingly, despite reporting high levels of inter-personal and institutional trust before the pandemic, Swedish citizens soon lost faith in both the government and the Public Health Agency.

Institutions and bodies providing expert knowledge to policymakers

The Public Health Agency

The mandate of the Public Health Agency is to ensure good public health for the Swedish population. Subsequently, the Public Health Agency is responsible for protecting the population against communicable diseases, and coordinates communicable disease control on a national level. It also develops regulations and guidance for healthcare professionals to ensure effective communicable disease control. Moreover, it performs microbiological laboratory analysis including diagnostic testing. Some of the agency's responsibilities include vaccination programmes, emergency preparedness for health threats, and national stockpiles of communicable disease medications. An important part of its work is to collect and analyse data on communicable diseases and to monitor the occurrence of diseases in general. Finally, it provides operational support to Sweden's regions and municipalities during outbreaks (Public Health Agency of Sweden, n.d.g).

During Covid-19, the Public Health Agency was led by Anders Tegnell, an epidemiologist and civil servant. The Agency's Covid-19 strategy was to slow the spread of the virus to protect vulnerable groups, and to avoid overwhelming the healthcare system. The agency endeavoured to implement long-term sustainable measures. Contact tracing, testing, hygiene and protective measures, and physical distancing were adopted and adapted as the pandemic evolved. Based on a tradition of individual responsibility, the agency employed a combination of legally binding rules, and multiple recommendations. Examples of legally binding rules include a ban on public gatherings with more than 50 participants, and a ban on visits to nursing homes. These rules were supplemented with guidelines that made it easier for the population to comply. Consequently, operations and employers were responsible for adapting the activities to prevent the spread of infection.

Overall, the Agency made its decisions based on daily assessments and input from other responsible agencies at the national level, the 21 regional medical officers, and international bodies such as the European Union and the WHO. While the agency suggested that its strategy was evidence-driven, a number of Swedish scientists and experts have publicly denounced the Agency's approach, and asking it to take additional mandatory measures. Finally, there has been criticism that the Public Health Agency did not consult with key stakeholders, including scientists, civil society, and behavioural and communications experts (Claeson and Hanson, 2021).

The Corona Commission

Due to the country's poor performance in managing the pandemic, and amid growing pressure from the opposition, the Swedish government appointed a special commission to review and evaluate the country's response to the first wave of the pandemic. The Commission focused primarily on older people in care homes, suggesting that this was the main source of virus spreading. The Commission was headed by Mats Melin, an attorney who formerly served on Sweden's top court for administrative cases (Claeson and Hanson, 2021).

Disciplines informing policies

The Public Health Agency mainly hosts epidemiologists, microbiologists and communicable diseases experts (Public Health Agency of Sweden, n.d.g). Given the Agency's central role in the country's response to the pandemic, Sweden mainly drew from the field of epidemiology and medical science to inform its response.

Policymaking bodies receiving expertise

Sweden approached the Covid-19 pandemic using its existing institutional and legal framework. The Swedish constitution does not allow the imposition of a state of emergency in peacetime, as such the central government was not able to re-centralise power. Therefore the burden of pandemic management fell to regional governments. Furthermore, the Swedish government viewed crisis-management as an operational issue better handled by localities and the state bureaucracy (Petridou, 2020). The autonomous state agencies were also involved in crisis-management but only issued recommendations rather than rules (Claeson and Hanson, 2021).

Place of experts in the government's communication strategy

The Public Health Agency held a central role in the government's communication strategy, and it monitored the public's attitude and behaviour in order to communicate measures accordingly (Public Health Agency of Sweden, n.d.g). The agency took the lead by communicating all measures and

guidelines in daily press briefings, while its head Anders Tegnell, became the public face of the crisis-management effort. Officials from other agencies were occasionally present in these briefings. The Swedish PM appeared rarely to deliver statements, as is traditional in Sweden (Petridou, 2020).

Role of regional/subnational level in the translation of expertise into measures

Sweden operates within a system that emphasises decentralisation, and delegates decision-making power to autonomous state agencies in conjunction with a small government. Therefore, Sweden's response to the pandemic unfolded largely via local governments. Indeed, municipalities were solely responsible for crisis preparedness and management (Petridou, 2020), while healthcare and social services retained their decentralised form and function. Nevertheless, local municipalities received expert input by the Public Health Agency. Sweden's decentralised system has been criticised during Covid-19 as being ineffective. In particular, multisector coordination and regime complexity vis-a-vis responsibilities and accountability were identified as major problems (Claeson and Hanson, 2021).

Impact of evidence-informed policies on public trust

A survey in March 2020 showed that the public lost trust both in researchers and the government. Nevertheless, doctors and health professionals seemed to enjoy stable levels of public support (Jakobsen and Bergström, 2020). Another survey published in June 2020 showed that Swedes were increasingly losing faith in the country's Covid-19 strategy, while the Public Health Agency suffered decreasing levels of public trust. In addition, the government and the PM's popularity experienced a similar decline (Henley, 2020). Despite this trend a survey conducted between March and June 2021 found that despite the controversial strategy of the Public Health Agency, public trust towards experts has stabilised and increased. In particular, 83% of the survey's respondents trusted policies coming directly from experts either a 'great deal' or a 'fair amount', while 75% of the respondents stated that they trusted experts a "great deal" or "fair amount" (YouGov, 2021). The most recent data on the matter, found that in a sample of unvaccinated Swedes, public trust in experts was low and trust in the government was even lower. Moreover, when it came to trusting sources of vaccine endorsement, individuals were more likely to favour non-government affiliated scientists compared to government affiliated scientists, and the government itself (YouGov, 2022).

The role of experts and evidence-informed policies in the vaccine rollout

Background

The vaccine rollout in Sweden began in early 2021. The vaccine is universally available to the population, including to children up to 11 years old (Ritchie et al., 2020), and non-Swedish citizens residing in the country or seeking asylum (Public Health Agency, n.d.a). Moreover, the Swedish government operates a monitoring platform to register and analyse suspected adverse reactions to the Covid-19 vaccine. Five vaccines are currently available in Sweden: Comirnaty (Pfizer/BioNTech); Spikevax (Moderna); Vaxzevria (AstraZeneca); Covid-19 Vaccine (Janssen/ Johnson & Johnson) and Nuvaxovid (Novavax) (Covid19 Vaccine Tracker: Sweden, 2022).

Sweden has an active anti-vaccine movement that focuses primarily on opposing the government's vaccine pass. Protests are organised by the so-called 'Freedom Movement', with several extremist groups including neo-Nazis associated with the movement.

Rules on vaccination

Rules for vaccines approval

Vaccine approval is under the authority of the European Medicines Agency, though the Swedish Medical Products Agency, is also responsible for investigating, approving, and monitoring vaccines against the coronavirus.

Vaccination policies

In line with its previous liberal approach, vaccination in Sweden is voluntary, with few restrictions for the unvaccinated. In particular, the Swedish Public Health Agency has issued special guidelines for the unvaccinated, recommending that they avoid crowded indoor spaces. Vaccination certificates for those attending indoor events with more than 50 people are required (Public Health Agency of Sweden, n.d.b). While Sweden has not established any concrete positive incentives to encourage vaccination, the Swedish

parliament has approved the compensation of patients that suffered vaccination-related injuries (Hofverberg, 2021).

Bodies involved in vaccine rollout

The vaccine rollout in Sweden is operated via three bodies, the Swedish Medical Product Agency, the Public Health Agency of Sweden, and the regional governments. The first two bodies are comprised of experts who provide advice and guidance on the approval and administration of vaccines. Regional governments are then responsible for implementing these guidelines and driving the vaccination rollout.

The Swedish Medical Products Agency (which approves and monitors Covid-19 vaccines), initiated a monitoring platform to register and analyse suspected adverse reactions to the vaccines (Swedish Medical Product Agency, 2022).

The Public Health Agency, a permanent agency hosting epidemiologists and communicable diseases experts, was responsible for creating a vaccination plan and defining vaccine priority groups (Public Health Agency of Sweden, n.d.c). As such, it gave priority to healthcare workers, while issuing guidelines for the vaccination of children (Public Health Agency of Sweden, n.d.d) and pregnant citizens (Public Health Agency of Sweden, n.d.e). Following this regulation, regional authorities are responsible for administering the vaccine (Swedish Medical Product Agency, 2021). A dedicated website has been created so that citizens can book their vaccination appointments. All vaccinations are then registered in the National Vaccination Register (Public Health Agency of Sweden, n.d.a).

Communication Strategy

The communication campaign that aims to increase Sweden's vaccination rate utilises input from the Public Health Agency. Consequently, the Agency has produced and published numerous information videos on Covid-19 and on vaccines, along with a dedicated website for frequently asked questions (Public Health Agency of Sweden, n.d.f). At the same time, the Medical Products Agency contributes to this effort by maintaining a website that aims to debunk misinformation regarding the Covid-19 vaccine.

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United Kingdom

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The first two confirmed cases in the UK were identified on January 31st 2020. Following this, new national regulation allowed medical authorities to quarantine individuals with symptoms. The UK government also issued guidelines for healthcare professional on how to approach a suspected Covid-19 patient, and for the general public to limit the virus' spread. Following these initial steps, the government published its official coronavirus action plan on March 3rd 2020. This plan set out the UK's response to the pandemic and provided relevant advice to the public. The government's plan was structured around four pillars: i) containment by detecting early cases, and preventing the disease from spreading, ii) delaying the spread of the virus, iii) better understanding the virus in order to identify actions that will mitigate it, and iv) providing the best care possible for people who become ill (UK Department of Health and Social Care, 2020a).

On March 12th 2020, the UK Chief Medical Officer raised the risk level in the UK from moderate to high (UK Department of Health and Social Care, 2020b). Subsequently, the UK government announced its transition from the containment phase 1 to the delay phase 2. Persons with symptoms were advised to self-isolate for seven days. Yet, public events were not banned, and schools remained open (Prime Minister's office, 2020a). A week later, the PM updated these guidelines, asking individuals with symptoms to self-isolate for 14 days, and the general public to avoid unnecessary travel and exercise social distancing. At the same time, working from home was encouraged, and people were asked to avoid pubs and restaurants. Mass gatherings were actively discouraged (Prime Minister's office, 2020b).

On March 20th 2020, the UK government decided to take more drastic measures closing entertainment, hospitality, and leisure premises, including pubs, bars and restaurants. The calls for social distancing and working from home were renewed (UK Ministry of Housing, Communities and Local Government, 2020). On March 22nd 2020, the government issued a complementary set of rules urging people in vulnerable groups to stay at home (UK Department of Health and Social Care, 2020c). The following day, the PM announced strict lockdown measures that would be enforced by the Police. This included the closure of all non-essential shops (Stewart et al., 2020). Furthermore, the government decided to close schools - except for children of key workers and vulnerable children (UK Department for Education, 2020). Concurrently, the Foreign and Commonwealth office advised all travelers based in the UK to return home, while entry to the country became increasingly restricted (Foreign and Commonwealth Office, 2020).

In May, as the government issued its pandemic recovery strategy, advice was given to passengers on how to use public transport safely. This advice asked people to maintain social distancing in public transport, wear face masks and sanitise hands regularly. Citizens were further asked to consider alternative means of transportation (UK Department for Transport, 2020a). Mask-wearing would become mandatory on all public transport by June 15th 2020 (UK Department for Transport, 2020b). Furthermore, wearing masks was recommended in enclosed public spaces (UK Department of Health and Social Care, 2020d). As deconfinement moved forward, the government issued guidance to help people return to work safely (UK Department for Business, Energy and Industrial Strategy, 2020), and on May 13th 2020 the government decided to allow outdoor recreational activities (UK Ministry of Housing, Communities and Local Government, 2020b). This was expanded to allow open-air gatherings of six people by June 1st 2020 (Prime Minister's office, 2020c), and by June 23rd 2020, pubs, bars and restaurants reopened (Prime Minister's office, 2020d). Nevertheless, the government maintained a 14-day mandatory isolation period for all travelers entering the UK (Home Office, 2020).

With infections rising in September 2020, the government followed expert advice and established a new IT system to ameliorate Britain's test and trace capacity, and make further lockdowns unnecessary. However, the system's centralised structure led to flawed practices that failed to contain the full spread of the pandemic. Moreover, the government failed to clearly communicate to local authorities the evolving rate of infection. Given Britain's flawed response to the pandemic's second wave, the country went back

to a full lockdown on November 5th 2020 (Reuters, 2020). The government kept the lockdown in place until early December 2020, but a dramatic rise in cases led to a further lockdown in early January 2021 (BBC, 2021a).

In January 2021, the UK commenced a full-fledged vaccination campaign and by early March 2021, at least one dose of the vaccine had been administered to around 23 million people. Subsequently, the UK government announced its plans for a gradual easing of restrictions from March 2021 to June 21st 2021 when all restrictions would be lifted. The government labeled the easing of lockdown measures as irreversible, meaning that after this the country would not return to such sanitary restrictions again (BBC, 2021b).

Overall, Britain's response to the pandemic did follow expert advice, and was guided by the Scientific Advisory Group for Emergencies (SAGE). Nevertheless, the government was criticised for implementing these measures in a flawed way. In particular, the UK government was criticised for failing to impose a timely lockdown during the first wave, while the track and trace plan implemented during the second wave appeared to have serious problems such as being unable to accurately and timely depict the spread of the virus. Finally, the easing of lockdown in December 2020 led to a dramatic rise in new cases which led to another lockdown soon thereafter. Given this poor performance, the government's trust took a serious hit, and only improved after the commencement of the vaccination programme.

Institutions and bodies providing expert knowledge to policymakers

Public Health England (PHE)

PHE is an executive agency, under the auspices of the Department of Health and Social Care. Its mandate is to provide the government, local governments, the NHS, Parliament, industry, and the public with evidence-based scientific expertise and support. With this aim in mind, the PHE is responsible for improving the health of the whole population by sharing information, and by identifying and preparing for future public health challenges. PHE also supports local authorities and the NHS to plan and provide health and social care services such as immunisation, and screening programmes. Lastly, PHE conducts research, collects and analyses data to address public health problems (Public Health England, n.d.). During the pandemic the agency aided the government's contact tracing efforts by conducting clinical research, and providing up-to-date information on the spread of the virus and the emergence of new variants. Furthermore, PHE facilitated the rollout of the vaccination campaign in January 2021 while providing relevant information to the public.

Scientific Advisory Group for Emergencies (SAGE)

SAGE is chaired by the Government's Chief Scientific Advisor and co-chaired by the Chief Medical officer of England. During the Covid-19 outbreak Sir Patrick John Thompson Vallance, a physician and pharmacologist, held the position of the Government's Chief Scientific Advisor. Professor Chris Whitty, a physician and epidemiologist, held the position of the Chief Medical Officer for England. SAGE is primarily comprised of academics from various UK universities and some government officials who hold the title of Chief Scientific advisor (Government Office for Science, 2022).

SAGE's role is to provide evidence-based scientific advice to support government decision makers during emergencies. During Covid-19, SAGE provided ministers and officials with advice based on external scientific evidence and a wide source of essential information (Government Office for Science, 2020a). Specifically, SAGE utilises external advice from expert groups and academic papers. The main sources of information for advising on the pandemic were the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG), and the Scientific Pandemic Influenza Group on Modelling (SPI-M) in the Department for Health and Social Care, and the Independent Scientific Pandemic Influenza Group on Behaviours (SPI-B). The above groups provided advice on the nature and the spread of the virus, along with measures to manage it. During the pandemic SAGE also produced bespoke in-house modeling advice (Government Office for Science, 2020a). Before the second wave, SAGE advised the government to develop a contact-tracing system which in conjunction with social distancing would mitigate the spread of the virus in local communities (Reuters, 2020).

In addition to the aforementioned bodies, SAGE received advice from other independent groups, like the Scientific Pandemic Insights Group on Behaviours, and the PHE Serology Working Group. A brief overview of these groups is provided below:

Scientific Pandemic Insights Group on Behaviours (SPI-B)

The focus of SPI-B is to provide advice to SAGE on people's behavior towards interventions that are recommended by medical or epidemiological experts. The Group aims to increase the effectiveness of pandemic mitigating measures by increasing compliance. It is mainly comprised of academics from different disciplines including behavioural scientists, health and social psychologists, anthropologists, and historians (Independent Scientific Pandemic Insights Group on Behaviours, 2020). Chief Scientific Advisers from the government also take part in these meetings (Government Office for Science, 2020a).

Scientific Pandemic Influenza Group on Modelling (SPI-M)

SPI-M is a group that reports directly to SAGE, and provides data on epidemic spread using infectious disease modeling. Its membership includes academics and a small number of government officials (Government Office for Science, 2020a).

PHE Serology Working Group

The Serology Working Group is tasked with monitoring and reviewing population-based seroprevalence surveys in England. Sero-epidemiology is crucial in informing the government's understanding on the extent of Covid-19 transmission. Its membership includes academics and public health officials (Government Office for Science, 2020a).

COVID-19 Clinical Information Network (CO-CIN)

CO-CIN collates clinical information from the health care records of people admitted to hospitals to map the clinical features of UK patients with severe Covid-19. Its membership includes academics and the Deputy Chief Medical Officer (Government Office for Science, 2020a).

Environmental Modelling Group (EMG)

EMG aims to identify the role that environmental modelling, data analysis, and environmental sampling can play in understanding Covid-19 transmission. This can lead to greater understanding of transmission routes and factors that influence this. The EMG also investigates environmental and behavioural interventions at a mechanistic level. Its membership includes academics and government officials holding the role of Chief Scientific Advisor (Government Office for Science, 2020a).

Children's Task and Finish Working Group (TFC)

TFC focuses on studying and providing evidence-informed advice to the government on the transmission of Covid-19 in children, and within schools. Its membership includes academics and government officials from various departments (Government Office for Science, 2020a).

Hospital Onset COVID-19 Working Group (HOCl)

This working group focuses on hospital-onset Covid-19 infection (HOCl) and advises on ways to reduce this. Its membership includes academics and public health officials (Government Office for Science, 2020a).

Social Care Working Group (SCWG)

The SCWG aims to limit the impact of Covid-19 in social care service provision by providing advice based on modelling and evidence review. Its membership includes academics and public health officials (Government Office for Science, 2020a).

Ethnicity Subgroup

This subgroup advises on Covid-19 risks and impacts for minority ethnic groups. Its membership includes academics and government officials (Government Office for Science, 2020a).

Disciplines informing policies

As indicated above, the UK government drew from a wide range of disciplines and expert bodies to inform their policies. While epidemiologists and medical experts seemed to be central in the work of SAGE, a number of other interdisciplinary scientists (e.g., behavioural, sociological, and environmental) provided further input on the handling of the pandemic. In addition to scientific experts and academics, government officials with scientific backgrounds provided input. Overall, Britain seems to have taken into account all scientific angles when designing its pandemic response.

Policymaking bodies receiving expertise

Civil Contingencies Committee (COBR or COBRA)

COBRA is the acronym for Cabinet Office Briefing Rooms, a series of rooms located in the Cabinet Office. This Committee is convened to handle matters of national emergency or major disruption. It coordinates different departments and agencies in response to such emergencies. COBRA's mandate includes high-level decision-making in the events of a natural disaster, terrorist attack, and major industrial accidents or disruption. COBRA helps coordinate the wider government response to national emergencies, and records and disseminates key decisions to all relevant ministers. COBRA also provides ministers and the PM with up-to-date information on the emergency. The composition of COBRA meetings depends on the nature of the crisis at hand. However, it usually comprises a mixture of officials and agency personnel, alongside ministers, from relevant ministries. The meetings are often chaired by the PM if he or she is attending (Haddon, 2022).

In the early phases of the pandemic, COBRA operated as the platform that brought together all relevant ministries. Initially, the lead was given to the Secretary of Health and Social Care. Ministers from Scotland, Wales and Northern Ireland also attended these meetings in order to ensure cross-UK coordination. The chair and co-chair of SAGE also attended these meetings. From the March 2nd 2020 onwards the PM took the lead and chaired the COBRA meetings. As the number of cases rose COBRA operated as the main decision-making body, with the ministers of devolved governments also attending.

C-19 and ministerial implementation committees

In conjunction with COBRA the PM held daily Covid-19 meetings (C-19) of the cabinet committee with a smaller group of senior ministers and officials. From mid March 2020 onwards, the Prime Minister established ministerial implementation committees in four different fields: health, public services, economic response, and international aspects. The C-19 meeting was supposed to monitor and refine the work of COBRA, while the implementation committees were designed to provide further input for the C-19 meetings. However, from May 10th 2020 onwards, C-19 and the implementation committees appeared to replace COBRA. The role of experts remained central to these meetings, indeed the chair and co-chair of SAGE took part in C-19. In June 2020, as the UK was entering a recovery phase, the government replaced the ministerial implementation groups and the daily C-19 meetings with cabinet committees for Covid strategic response (CS), and Covid operational issues (CO). This structure was similar to that which was adopted right before BREXIT. The PM chairs the CS meeting and the Minister for the Cabinet Office, chairs the CO meeting, while participation varies according to the agenda (Haddon and Ittoo, 2020).

Place of experts in the government's communication strategy

The PM led daily press briefings supported by scientific and medical experts including the Chief Medical Officer and Chief Scientific Adviser. The government appeared to embrace scientific expertise with the PM regularly referring to the advice of experts (Prime Minister's office, 2020e). In addition, the UK government decided to apply full transparency on how it reached certain decisions during the pandemic. It therefore published the SAGE Committee meeting minutes and the scientific evidence provided to it (Government Office for Science, 2020b).

Role of regional/subnational level in the translation of expertise into measures

The devolved nations (Northern Ireland, Scotland, and Wales) played a prominent role in pandemic management because issues of public health fell under their authority. As the pandemic's first wave unfolded, a UK-wide action plan was put in place. Following this, the leaders of the devolved governments occasionally participated in COBRA meetings, and ministers from the devolved administrations participated in the various ministerial implementation groups. In doing so, the devolved nations were able to achieve greater coordination between themselves and the UK government. However, they were not invited to the cabinet committees that replaced these bodies in June 2020.

Each of the devolved administrations has its own chief medical officer and chief scientific adviser, yet they all coordinate their advice with the chief medical officer and the chief scientific adviser of the UK government. Moreover, all scientific advisory groups are convened at the UK level to provide advice to the chief medical officers of the four nations, to health authorities in the devolved administrations, and to the devolved governments. Broadly speaking the ministries of the devolved nations took measures similar to

the ones employed by the UK government. Nevertheless, they diverged with respect to deconfinement strategies after the first wave and on the pace of the vaccination programme (with England having by far the most effective programme).

With respect to England, the UK government chose to centralise the country's response to Covid-19. Indeed, the government centralised all testing, clinical research, and contact-tracing operations. Only the mayors of certain major cities retained some form of decision-making autonomy.

Impact of evidence-informed policies on public trust

Public trust in the work of scientists and health experts has grown during the coronavirus pandemic, a poll has found. The opinion poll by the Open Knowledge Foundation, an open data campaign group, found 64% of voters were now more likely to listen to expert advice from scientists and researchers, with only 5% saying they were less likely to do so (Carrell, 2020). In another relevant poll by YouGov, findings suggest that the health authorities have enjoyed high levels of public trust throughout the pandemic (YouGov, 2020). A survey conducted between March and June 2021 found similar results with 74% of the respondents declaring a high or fair amount of trust towards experts (YouGov, 2021). In contrast to the scientific community, since May 2020, the government has lost support, with only a small peak in January 2021, after the rollout of the vaccination campaign (YouGov, 2020). Furthermore, the public reported wanting much greater access to scientific data, and disliked restrictions on their right to get information. In particular, another survey found that 67% of voters believed that all research findings in the search for a Covid-19 vaccine should be made freely available (Carrell, 2020).

The role of experts and evidence-informed policies in the vaccine rollout

Background

The UK began its vaccine rollout in early December 2021. The successful early vaccine rollout is attributed to the government's planning and the early purchase of both vaccines and vaccination equipment. The UK government spent £11.7 billion on purchasing vaccines and on vaccine research, thus making sure that it had an adequate number of vaccines as soon as they became available. In addition, the funding ensured that a Covid-19 vaccine would be produced within the UK (Giles et al., 2021). On December 2nd 2021, the UK's Medicines and Healthcare products Regulatory Agency approved the Pfizer-BioNTech vaccine (Sasse and Hodgkin, 2022). Subsequently, the Agency gradually approved another six Covid-19 vaccines (UK Department of Transport, 2021), namely Spikevax (Moderna); Vaxzevria (Oxford/AstraZeneca), Covid-19 Vaccine (Janssen/Johnson & Johnson), Nuvaxovid (Novavax), Spikevax Bivalent Original/Omicron BA.1 (Moderna) and VLA2001 (Valvena) (Covid19 Vaccine Tracker: United Kingdom, 2022). Vaccines are available to the whole population, including to children above 5 years old (Ritchie et al., 2020). Vaccine take-up has been similar across the UK's four nations (Sasse and Hodgkin, 2022).

The UK has an active community of anti-vaxxers. They have engaged in violent activism against Covid-testing sites and conducted protests in front of politicians' homes. Recent reports suggest that anti-vaccine groups are organising combat training in preparation for violent clashes with the police (Coleman and Sardarizadeh, 2022). Using online channels, the UK anti-vaccine community has spread misinformation that according to England's Chief Medical Officer has contributed towards lower vaccination rates (Townsend, 2022).

Rules on vaccination

Rules for vaccines approval

The Medicines and Healthcare products Regulatory Agency is the main body involved with the approval of Covid-19 vaccines. Vaccine manufacturers had to submit vaccine-related data to the Agency. The Agency then assessed and evaluated this data, asking the manufacturer to address potential problems. Following the manufacturer's response, the Agency decided on the vaccine's approval.

Vaccination policies

The UK has avoided enforcing vaccination for the general population, with the exception that all care home workers and visitors of care homes have to be fully vaccinated as of November 2021 (Chadwick, 2022). Interestingly the UK chose not to move forward with the mandatory vaccination of all frontline NHS workers, despite its initial announcements. To encourage vaccination the Ministry of Health has worked with businesses to offer discounts, free services, and products as incentives (O'Connor, 2021). In addition, the government has established a Vaccine Damage Payment for all those that could potentially suffer the vaccine's adverse effects (UK Government, n.d.).

Bodies involved in vaccine rollout

There were three main bodies responsible for the vaccine rollout in the UK: the Medicines and Healthcare products Regulatory Agency, the Joint Committee on Vaccination and Immunisation, and the UK government's Vaccine Taskforce. The Medicines and Healthcare products Regulatory Agency and the Joint Committee on Vaccination and Immunisation are both expert bodies responsible for providing advice regarding the approval and the administration of vaccines. The Task Force had a more practical role ensuring that the vaccine would be available to the overall population in a quick and efficient manner.

The Medicines and Healthcare products Regulatory Agency is an executive agency, sponsored by the UK Department of Health and Social Care. Its main responsibility is to regulate medicines, medical devices, and blood components for transfusion in the UK (Medicines and Healthcare products Regulatory Agency, 2022). Upon approval by the Agency, it was up to the government to arrange the delivery of the approved vaccine via advice from the Vaccine Taskforce and Public Health England (Department of Health and Social Care, 2021a). Another responsibility of the Medicines and Healthcare products Regulatory Agency is to advance research on the development of additional vaccines. The National Institute for Biological Standards and Control and the Clinical Practice Research Datalink, both centres within the Agency, have initiated several platforms related to vaccine development and research on Covid-19 (Medicines and Healthcare products Regulatory Agency, 2022).

The Joint Committee on Vaccination and Immunisation is a permanent independent expert body that is responsible for advising the UK Government on vaccines and immunisation. Its membership mainly consists of academics and medical doctors. The Committee provided advice on prioritisation for the Covid-19 vaccine, and emphasised the need to prevent mortality, and protect healthcare workers. As such, it advised that elderly and their carers be the first to receive the vaccine, then those over 80 years old, frontline health and social care workers, and then the rest of the population in order of age and health vulnerability (Department of Health and Social Care, 2021a). The Committee also provided guidance on the ideal time interval between vaccine doses (Department of Health and Social Care, 2021a). In January 2021 the Committee chose to diverge from the manufacturers' advice, and extend the interval between doses from 3-4 weeks to 12 weeks in an effort to immunise a greater swath of the population (Sim, 2021).

Several government agencies and structures were deployed to facilitate the vaccine rollout. In April 2020 the Vaccine Taskforce was established to coordinate the practical aspects of the vaccination effort, and in December 2020, the PM appointed a minister responsible for vaccination. The Taskforce, along with the department for Business, Energy and Industrial Strategy, was responsible for purchasing vaccines (Sasse and Hodgkin, 2022), and securing and developing the necessary equipment for their administration (Department of Health and Social Care, 2021a). The vaccine rollout fell under the authority of the Department of Health and Social Care and of Public Health England (later renamed UK Health Security Agency). The centralised structure of the National Health System was employed to coordinate the vaccination effort across multiple sites (Sasse and Hodgkin, 2022).

Communication Strategy

The Department of Health and Social Care took an active role in the vaccine communication campaign by promoting vaccination on tv, radio adverts, social media posts, and out-of-home advertising. The campaign focused primarily on healthcare workers showcasing the work of scientists (Department of Health and Social Care, 2021b). As the Omicron variant emerged, the government attempted to renew its communication effort with the PM taking a central role (Campbell, 2021). The National Health System is also operating a dedicated website with frequently asked vaccine-related questions (National Health System, n.d.).

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United States of America

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

The USA reported its first Covid-19 case on January 22nd 2020. By the end of January 2020, a public health emergency was declared. This declaration led to the temporary reassigning of state and local personnel to respond to the emerging crisis. At the same time, the President enacted an executive order to limit the entry of foreign nationals who had recently been to China. Limitations for incoming travelers escalated in the following days, with borders closing for passengers from Iran on February 29th 2020. The ban was extended to travelers from Europe on March 11th 2020, and to travelers from the UK and Ireland on March 16th 2020. Non-essential travel across Mexican and Canadian borders was barred on March 21st 2020.

During March 2020, Congress passed a series of legislative acts to increase funding for the main services involved with the monitoring and the handling of the pandemic. On March 15th 2020, the President declared the Covid-19 outbreak a national emergency. The following day the President issued Coronavirus guidelines for the public entitled “15 Days to slow the spread”. These guidelines included: stay-at-home recommendations for individuals suffering from symptoms or individuals with recent contact to someone who had tested positive, and stay-at-home recommendations for older persons and persons with underlying conditions. For the general population, working from home and frequent handwashing was encouraged, while the authorities advised people to avoid gatherings of more than 10 people. Two days later, on March 18th 2020, Congress made testing for Coronavirus free. The following day the State Department issued the “Global Level 4 Health Advisory-Do Not Travel” warning and urged Americans abroad to return immediately. On March 30th 2020, the President updated the relevant guidelines and extended them through April 2020.

At the end of April 2020, the Trump administration published a new coronavirus testing overview and blueprint. In this, the Federal government passed the responsibility for testing to the states, but it was unclear whether financial aid would be provided to increase states’ testing capacity (Lopez, 2020a). It has been suggested that the Federal government deferred decision-making to each state in an effort to avoid the blame for restrictive measures. This stance was further entrenched by the belief that the pandemic was dissipating, and that states had enough resources to manage it themselves. As a result, there was no unified response to the pandemic, and each state was left alone to choose their own independent strategy. Following this pattern, decisions on lockdown measures also rested with state governments (Lopez, 2020b). The Federal government continued to issue guidelines to help the states through the process (Shear et al., 2020). However with the President pushing for a full reopening of the economy, many states were forced into reopening prematurely. Indeed, many reopened in May 2020 without having the required capacity for testing, and track and tracing (Lopez, 2020b).

Subsequently, in June 2020 a new surge of cases emerged which the Federal government and the states were not prepared to respond to. In fact, the Federal administration was slow to react suggesting that the resurgence of cases was due to increased testing rather than a second wave (Lopez, 2020b). After a relative flattening of the infection curve, cases started rising again in November 2020, with the trend continuing during Christmas, affecting the whole country and leading to a record number of daily infections (Hills, 2020).

With the new Biden administration in place, the US changed its approach to the pandemic. In particular, in January 2021 the Biden administration published a comprehensive national strategy guide against the pandemic (White House, 2021). Biden also re-empowered and mobilised federal agencies to contribute to the crisis-management effort. Subsequently, there was increased involvement of the Federal Emergency Management Agency (FEMA) and the Department of Defense to support vaccination distribution and testing expansion for underserved populations. Biden further mobilised the private sector to increase the production of test kits, vaccines, and personal protective equipment. Finally, the administration managed to pass a national Covid-19 relief package in Congress (Gerber and Gall, 2021), and the US rejoined the World Health Organisation.

Overall, there was a stark contrast in how the pandemic was handled between the Trump and the Biden administration. The Trump administration chose a more disengaged approach and followed the optimistic advice presented by only one medical expert within the President's team. The Trump administration then issued guidelines and allowed states to bear the responsibility for managing the pandemic. A belief that the pandemic was dissipating led President Trump to advocate for a prompt and premature reopening of economic activity. On the other hand, the Biden administration appeared to have a more institutionalist perspective and based its decisions on advice that it received from Federal Agencies traditionally tasked to manage such emergencies.

Institutions and bodies providing expert knowledge to policymakers

Centers for Disease Control and Prevention (CDC)

The CDC is a federal agency within the department of Health and Human Services. It has a broad mandate to address health, safety, and security risk both domestically and abroad. This includes managing new and emerging health threats, such as epidemics. Indeed, prior to the Covid-19 pandemic, CDC acted as a first responder to the Ebola outbreak in West Africa, and the Zika Virus in South America. The CDC is also responsible for providing guidance to state and local health departments. However, the CDC has no regulatory authority at the state level (Felter, 2020).

To fulfil its mandate the CDC acts as the primary agency communicating critical health information to the public, and employs scientific staff who conduct research. Its director is usually a political appointee by the President, but she/he is always a health-care professional. During the Covid-19 pandemic, Robert Redfield, a virologist and doctor, acted as the agency's head.

During the pandemic, the CDC was responsible for warning the public on the severity of the threat, and guiding medical staff and first responders. It has also issued guidance for the public, on mask-wearing, social distancing, handwashing and travelling. CDC was also responsible for developing diagnostic tests, and received some criticism for the early failures of testing kits. CDC is also responsible for issuing guidance to states. To that end, it has published a variety of communication resources that state and local governments can use to plan their response. Finally, CDC also monitors the spread of the new variant of Covid-19, and advises schools and businesses on their operation and potential re-opening. More recently, it has been working alongside the FDA and other agencies in the nationwide rollout of the first Covid-19 vaccines (Felter, 2020).

National Institute of Allergy and Infectious Diseases (NIAID)

The National Institute of Allergy and Infectious Diseases is located within the National Institute of Health and falls under the authority of the Department of Health and Human Services. The NIAID's primary function is to conduct and collate research on the new virus, focusing specifically on identifying ways to stop its spread and mitigate its health effects. With this aim NIAID researchers examine the origins of the virus, how they cause disease, while also developing new treatments and vaccines (National Institute of Allergy and Infectious Diseases, n.d.). Presently, NIAID is conducting and supporting clinical trials that evaluate therapeutics and vaccine candidates. Dr. Anthony Fauci is the long-time head of NIAID. He is an infectious disease expert with significant experience in the management of emerging diseases such as Ebola and Zika.

Disciplines informing policies

The USA mainly employed experts from the field of medical sciences to inform their response to the pandemic. As will be analysed in the following section, two medical experts appeared to guide the administration's response. Firstly, Dr. Deborah Birx, a physician and diplomat with significant experience in the fight against AIDS/HIV, was appointed as response coordinator for the Coronavirus Task Force. Secondly, Dr. Fauci, the head of NIAID. Dr. Birx employed certain modelling predictions to strongly advocate that the pandemic's spread would decrease after the spring months of 2020. On the other hand, Dr. Fauci, employed a more inductive approach, and suggested a strategy of gradual easing with the maintenance of certain sanitary measures.

Policymaking bodies receiving expertise

The Coronavirus Task Force

On January 29th 2020, the US president created the White House Coronavirus Task Force. Its mandate was to lead the administration's response to the virus, including its monitoring and containment. It worked with Congress and State governors to coordinate the government's response to the pandemic.

The Task Force was initially comprised of 12 people headed by the U.S. Health and Human Services Secretary, Alex Azar. Its members initially included top officials from the CDC, the NIAID, and the National Institutes of Health, the Department of Homeland Security, the Transportation Department, and the Department of State.

The following month, the Vice-President replaced the Health and Human Services Secretary as the head of the task force, with Dr. Deborah Birx appointed response coordinator for the Coronavirus Task Force. The administrator of the Centers for Medicare and Medicaid Services, a health policy official and consultant, also took part in the Task Force. In addition to medical experts and health professionals, the Task Force included officials from other domains such as the head of the United States Citizenship and Immigration Services (who also served as acting deputy secretary of the Department of Homeland Security), the National Security advisor, and the Domestic Policy Council Director. The membership of the Task Force expanded overtime including political advisors and economists like the White House Deputy Chief of Staff for Policy Coordination, the US secretary of the Treasury, and the Director of the National Economic Council.

Reports have suggested that the Coronavirus Task Force drew its advice from Dr. Deborah Birx. The latter drew her insights from a plethora of epidemiological models that mapped the pandemic's potential development. According to this advice, the Task Force embraced the idea that after the spring months, the number of cases would gradually fall. As such the Task Force planned accordingly for the gradual loosening of measures in April 2020, and issued guidelines to help states through this process. While Dr. Birx was optimistic, Dr. Fauci was more cautious, which led the Task Force to overlook his advice because it was not aligned with the prompt reopening of the economy (Shear et al., 2020).

In addition to clashes between experts, there have been multiple reports that the Trump administration's response to the Covid-19 pandemic was defective. During his term, President Trump appeared to overlook the guidance issued by the Task Force, and occasionally took advice from other bodies with no official mandate related to Covid-19, such as the Domestic Policy Council. Moreover, the President undermined the Task Force's authority by contesting its guidance, in particular with respect to the proposed deconfinement timetable (Shear et al., 2020). Furthermore, contrary to all expert advice, President Trump appeared to contest the effectiveness of face masks and suggested that increasing the country's testing might not be beneficial (Lopez, 2020b).

The relationship between the CDC and the Task Force has also been problematic. In July 2020, the administration ordered hospitals to bypass the CDC and send coronavirus patient information directly to a new database overseen by the Department of Health and Human Services. President Trump occasionally exhibited mixed messages with respect to CDC's guidance, hence undercutting its authority.

Federal Emergency Management Agency (FEMA)

FEMA's mandate is to help US citizens before, during, and after disasters. It is therefore responsible for developing the National Response Framework (NRF) - a guide - on how to respond to all types of disasters and emergencies. Its aim is to help jurisdictions, citizens, non-governmental organisations, and businesses to develop whole community plans. This approach includes integrating continuity plans, helping to build responses to cascading failures among businesses, supply chains, and infrastructure sectors, and collaborating to stabilise community lifelines and restore services (Federal Emergency Management Agency, n.d.).

During Covid-19, FEMA was tasked by the White House to lead the government's operations effort despite the fact that initial planning called for the Department of Health and Human Services to do so. FEMA found itself leading the National Joint Information Center in an effort to keep the public up to date on the virus' development. Given the unprecedented nature of the crisis, FEMA reported certain intra-agency coordination problems vis-a-vis the division of labor and overlapping responsibilities that required informal communication in order to be mitigated (Federal Emergency Management Agency, 2021). Furthermore, reports have claimed that the White House Task Force occasionally sidelined FEMA (Gerber and Gall, 2021).

In more practical terms, FEMA's operations during the pandemic included the activation of the National Response Coordination Center (NRCC), and the completion of 249 'Project Airbridge' flights to transfer units of personal protective equipment (PPE) and other medical supplies into the United States. FEMA also coordinated with the private sector on distribution of billions of equipment and supplies. Finally, it has

also been involved in assisting disadvantaged populations, such as the homeless, that faced particular challenges during the Covid-19 pandemic (Federal Emergency Management Agency, 2021).

Place of experts in the government's communication strategy

Daily briefings were held by the Vice-President, given his role as the head of the Task Force. The President occasionally participated in these briefings. Other key figures who were present include Dr. Deborah Birx, as response coordinator for the Coronavirus Task Force, and Dr. Anthony Fauci, the head of NIAID. Unlike past emergencies, CDC officials were largely absent for much of 2020. On several occasions health experts and political leaders diverged in terms of public messaging, with political leaders advocating a more relaxed approach. For example, President Trump often communicated messages that were contradictory to expert advice. Such incidents included the wearing of masks, the reopening of the economy, the contagiousness of the virus, and the treatment of Covid-19 with chlorine (Shear et al., 2020).

Role of regional/subnational level in the translation of expertise into measures

As suggested above, from April 2020 onwards, states were left to handle the pandemic almost independently of the Federal government. This led to a fragmented effort to quell the pandemic, with states competing for the purchase of PPE. Consequently, states had unequal access to testing kits, and lacked the essential resources needed for a successful pandemic-management. Moreover, the administration contradicted its own advice to leave decision making to each state, with President Trump actively pushing states for an immediate lifting of restrictions.

Impact of evidence-informed policies on public trust

Data on levels of public trust in experts and the government are lacking for the US. However, in a survey conducted by Pew in July-August 2020, it appears that levels of public trust in the government is low and continues to remain low, with 68% of respondents arguing the government fails to handle public health issues efficiently (Pew, 2020). On the other hand, scientists seem to enjoy higher levels of public trust among Americans. In an October poll by the nonprofit Kaiser Family Foundation, 72% of respondents trust the CDC to provide guidelines based on scientific evidence (Palosky, 2020).

The role of experts and evidence-informed policies in the vaccine rollout

Background

The US initiated their vaccine rollout in late December 2021, with the first dose administered on December 14th 2021 in New York (BBC, 2020). The vaccine is available to the whole US population and to children 5 years old and above (Ritchie et al., 2020). The Food and Drug Administration agency (FDA) has approved four vaccines in total, namely Comirnaty (Pfizer/BioNTech); Spikevax (Moderna); the Covid-19 Vaccine (Janssen/Johnson & Johnson) and Nuvaxovid (Novavax) (Covid19 Vaccine Tracker: United States of America, 2022), with the first two designated as the preferred ones (Centre for Diseases Control and Prevention, 2022a).

The anti-vax movement remains very active in the US, building on a longstanding tradition of vaccine scepticism. During the pandemic's early phases, misinformation and disinformation regarding the pandemic and the upcoming vaccine ran rampant, and was even promoted by the then- President Trump. The US anti-vaccine movement perpetuated this narrative and spread the anti-vaccine message via social media (Berkeley, 2021). Online platforms allowed anti-vaccine advocates to organise and coordinate their actions (Pfleger, 2021), and form close relationships with pro-Trump Republicans and conservatives. Indeed, the latter see the vaccine issue as a salient topic upon which they can motivate the Republican base, and as a result, Republican voters appear to be more susceptible to vaccine misinformation, and more likely to remain unvaccinated (Brumfiel, 2021). At the same time, a number of anti-vaccine leaders are closely tied with conspiracy theories surrounding the recent US presidential elections (Devine and Griffin, 2021).

Rules on vaccination

Rules for vaccines approval

The Food and Drug Administration (FDA), a federal agency of the Department of Health and Human Services, is responsible for reviewing and approving vaccines. As such, the FDA was involved in screening and approving each phase of vaccine development against Covid-19 (US Food and Drug Administration, n.d.).

Vaccination policies

In September 2021, the US administration announced a vaccine mandate requiring all employers with more than 100 employees to prove that their employees are either fully vaccinated or tested on a weekly basis. Moreover, federal workers and contractors were required to be fully vaccinated, along with healthcare workers at Medicare and Medicaid participating hospitals and other healthcare settings. The administration also called on large entertainment venues to require proof of vaccination or testing for entry (The White House, 2021a). However, in January 2022, the US Supreme Court partially blocked the government's mandate in respect to companies of more than 100 employees, although it upheld the mandate covering healthcare workers (Sherman, 2022). The mandate on federal workers has already been blocked by a federal court in Texas, however, the Biden administration has appealed the decision (Wise, 2022). The administration has also established several positive incentives to boost the vaccination effort. In particular, it offered compensation to businesses that allowed paid leave to their employees so that they and their children could be vaccinated. Furthermore, the government asked state authorities to provide a cash benefit of \$100 to those that decide to vaccinate. Several states have applied this measure along with other offerings like free drinks and theme park tickets (National Governors Association, 2021). Some businesses have even offered cash benefits to their employees if they choose to receive the vaccine (The White House, 2021b).

Bodies involved in vaccine rollout

The vaccine rollout in the US started under the outgoing Trump administration, and taken up by the new Biden administration. Throughout this process the US government made full use of expert bodies.

The FDA has approved three vaccines, with the mRNA vaccines preferred over Johnson & Johnson's Janssen vaccine due to the latter vaccine's adverse effects (Centre for Disease Control and Prevention, 2022b). Only the two mRNA vaccines, i.e. Comirnaty (Pfizer/BioNTech) and Spikevax (Moderna), have received full approval, while the Janssen vaccine is still administered under FDA's emergency use approval (US Food and Drug Administration, 2022).

With respect to the administration of vaccines, the Advisory Committee on Immunisation practices (ACIP) has developed relevant regulation on access and prioritisation. ACIP is an independent body comprised of medical and public health experts operating within the US Centers for Disease Control and Prevention (CDC). ACIP reviews clinical information and data related to recipients of the vaccine including: how they reacted to it, what side effects they demonstrated, and what were the health-related outcomes of the infection. Based on these assessments ACIP decides on vaccine access and vaccine prioritisation. With respect to the latter, ACIP established four ethical principles to guide its prioritisation regulation: i) maximize benefits and minimize harms, ii) mitigate health inequalities, iii) promote justice, and iv) promote transparency. ACIP's advice was transmitted to the CDC and formulated into national recommendations. According to these recommendations the priority groups were as follows: group 1 = healthcare personnel of long-term care facilities, group 2 = people aged 75 and over, and non-medical frontline workers, and group 3 = people aged between 65-74, and people with medical conditions. Following these groups, the vaccine became gradually available to the whole US population aged 5 and above (Centre for Disease Control and Prevention, 2021a). ACIP's prioritisation policy appeared to be well-planned, preventing the loss of nearly as many lives as a theoretically perfect rollout. Finally, it is important to note that ACIP's recommendations were not legally binding, and every state has the discretion to decide on its prioritisation policy (Centre for Disease Control and Prevention, 2021b).

The Federal government also played a role in vaccine administration, indeed it was initially responsible for purchasing and delivering the vaccines to all states. The states were then responsible for organising the vaccine operation. This led to varying coverage between states, and most local authorities faced problems of preparedness, coordination, and lack of federal funding to run the vaccine operation (Lopez, 2021). This picture changed radically in January 2021 once the Biden administration was in place. The new administration adopted a more hands-on approach. Indeed, a full-fledged strategy was presented and all available vaccines were released in an effort to increase coverage (The White House, 2021c). The government ramped up vaccine and medical equipment production, and created additional vaccine sites. At the same time, the administration issued detailed guidelines, addressed to states and local communities, on how to operate all types of vaccination sites (Centre for Disease Control and Prevention, n.d.). Moreover, it established a number of channels, online and phone-based, that facilitated the arrangement of vaccine appointments (The White House, 2021d). The administration also urged states to

widen vaccine-eligibility to all adult population, while also alleviating a big part of vaccine-related costs (The White House, 2021c).

Communication Strategy

The United States Department of Health and Human Services (HHS) launched a science-based public education campaign to motivate behaviour change in favor of the vaccine. The campaign aimed to build public trust in the vaccine, mitigate vaccine hesitancy, and educate the public on protective measures. It was designed to convince people that were unsure of whether to take the vaccine. The HHS explicitly sought to run a campaign informed by science and aligned with evidence-based best practices. It created tailored messages for specific audiences and disseminated the information via traditional, digital, and social media platforms. Part of the campaign's material was built on testimonials of healthcare workers and Covid-19 survivors, while some clips featured medical experts such as the U.S. Surgeon General. Overall, HHS' campaign utilised insights from communication science. It offered tailored messages that aimed to reach distinct communities with high levels of vaccine hesitancy (Covid-19 Public Education Campaign, 2022).

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Zimbabwe

The role of experts and evidence-informed policies in the management of the Covid-19 pandemic

Background

Zimbabwe detected its first Covid-19 case on March 20th 2020 in a 39-year-old resident of Victoria Falls who had returned from a trip to the United Kingdom (Murewanhema et al., 2021). The threat of the viral spread was immediately reckoned with, given the pre-existing challenges the country faced. Specifically, previous crises demonstrated that Zimbabwe's healthcare system was overburdened and under-resourced, and the government was at times ineffective in its responsibilities (Noah et al., 2020). The immediate response was guided by WHO recommendations, which encouraged hand washing, using hand gel, using masks, practising self-isolation, avoiding crowded places, and maintaining social distancing (Mutanda, 2022). However, following these guidelines proved difficult in Zimbabwe due to a shortage of personal protective equipment and face masks which led to the quick spread of the virus (Chingono, 2020).

A nationwide lockdown, effective from March 30th 2020 and lasting 21 days, was announced in the aftermath of the first confirmed case. On May 16th 2020, the level 2 national lockdown was extended indefinitely following further increases in the number of new cases (Mutanda, 2022). In mid July 2020, another indefinite lockdown from dusk till dawn was imposed to relieve yet another surge in cases. More lockdowns were established in the following months. Although the government attempted to curb the spread of the virus through these means, the need for people to leave their homes to work and earn money meant that lockdown orders were often broken (Mutanda, 2022).

Zimbabwe's already poor infrastructure was struggling to cope with the rate of new cases and the rapid spread of the virus, especially given that in several provinces (Manicaland, Masvingo, and Mashonaland East) an outbreak of malaria took hold simultaneously as Covid-19 raged on (Chingono, 2020). The impact of the pandemic was heightened by several factors including shortages of equipment, qualified staff, and sanitation, a lack of good housing conditions, and general corruption in the enforcement of restrictions (Mathew et al., 2022). The spread of the 501Y.V2 (Beta/South African variant) in February 2021 (BBC News, 2021), caused further spikes in cases and deaths (Ritchie et al., 2020) and resistance to the most used vaccine in the country. As a result, another lockdown was triggered which caused even greater strain to the nation's systems. In December 2021, the spread of the Omicron variant caused a 35% increase in positive cases (Ndlovu and Marawanyika, 2021a), leading to the further overloading of a burdened system, and stricter lockdown measures and vaccination mandates (Xinhua, 2021a; Chronicle, 2021). Such consecutive lockdowns affected the poorest and most marginalised in society (Scoones, 2021a). In June 2022, the country lifted the national curfew and eased some domestic restrictions.

Institutions and bodies providing expert knowledge to policymakers

Expert Advisory Committee

The Expert Advisory Committee provides evidence-based advice and guidance to the several ministries that form the Inter-Ministerial Committee (Mahomva, 2020). The committee consists of planning experts, biomedical scientists, pathologists, epidemiologists, clinical researchers, surgeons, professors of health, and public relations practitioners (Ministry of Health and Child Care, 2020).

Community Engagement and Accountability (CEA) Technical Working Group

This body aims at ensuring community engagement by implementing relevant actions and by centering the needs of those most affected at the heart of the government's response (OCHA, 2022). This group is assumed to have been advising both the national and the sub-national governments. There is no clear indication of which experts, aside from experts representing UN bodies and organisations, have been involved with the group (OCHA, 2022).

World Health Organisation (WHO) experts

Besides providing guidelines on how to respond to and minimise the spread of the virus, the WHO conducted a study that aimed to investigate community and healthcare workers' perspectives on the Covid-19 pandemic. Specifically, the study focused on early responses to the pandemic during the first two weeks of the national lockdown in Zimbabwe. Findings were then reported to the Ministry of Health

and Childcare, and the national Covid-19 Task Force (Mackworth-Young et al., 2021). The relevant WHO researchers were experts in the fields of hygiene and tropical medicine, biomedical sciences, tropical epidemiology, community medicine, and public health (Mackworth-Young et al., 2021).

Disciplines informing policies

Biomedical scientists and health professionals, in particular pathologists, epidemiologists, surgeons, clinical researchers and surgeons, have been involved in the country's management of the pandemic.

Policymaking bodies receiving expertise

Inter-Ministerial Task Force Committee for Covid-19

Created in March 2020, this committee consists of a command centre responsible for implementation, monitoring and evaluation of government decisions and actions, and a chief coordinator branch (which is the office of the President and Cabinet) comprised of the working party of secretaries. There are sub-committees working under these bodies, each with different compositions and tasks (Mahomva, 2020). The Inter-Ministerial Task Force Committee for Covid-19 is made up of various representatives of the national government (including the office of the President and Cabinet, and working party of secretaries, the Ministry of Health and Childcare, the Ministry of Primary and Secondary Education, the Ministry of Local Government, Public Works and National Housing, the Ministry of Information Publicity and Broadcasting, the Ministry of Public Service, Labour and Social Welfare, the Ministry of Industry and Commerce, the Ministry of Home Affairs and Cultural Heritage, and the Ministry of Transport and Infrastructural Development) (Mahomva, 2020). These Ministries have crafted legislation, policy and mandates and implemented them based on advice and information provided by experts within the committee.

Standing Cabinet Committee

This is a body under the stewardship of the Minister for Local Government and Public Works whose purpose was to supervise governmental responses to the ongoing health crisis. The committee achieved this by working with humanitarian partners and other UN bodies. They also coordinated with provincial and regional governments in their response, ensuring that humanitarian codes and aims were followed (OCHA, 2022). The Standing Cabinet Committee consisted of various relevant UN bodies and agencies, humanitarian groups, the Minister for Local Government and Public Works, and local and provincial administrators (OCHA, 2022).

Covid-19 Task Force Victoria Falls

For the most part, coordination of crisis response can be pinpointed to the central government; however, the city of Victoria Falls created its own task force for Covid-19. Indeed, Victoria Falls dealt with preparedness and response on various fronts: communications, volunteer coordination, public works and maintenance, rural outreach, isolation centres, procurement and logistics, finances and resources, public safety, food security, advocacy and lobbying, quarantine facility, and tourism recovery (We Are Victoria Falls, n.d.). The task force was created after a meeting between private and public stakeholders including: the Hwange District Minister of Health and Childcare (also the leader of said task force), the municipality and council, local business owners and associations, NGOs and NPOs located in the region, and concerned citizen groups (We Are Victoria Falls, n.d.).

Place of experts in the government's communication strategy

Zimbabwe used a centralised approach to communicate the country's Covid-19 strategy. The most common spokesperson for the government was the Minister of Health and Childcare, and the serving Vice-President, Constantino Gueya Dominic Chiwenga, a retired general. The VP released several announcements and interviews regarding the pandemic and the government's handling of it (Chiwenga, 2021). Furthermore, the Ministry released daily updates, reports, and guides/advice through the official website (Ministry of Health and Child Care, n.d.). The country's President, Emmerson Mnangagwa, who was also the Vice-President during the Mugabe administration and a long-time ally and member of the former President's party, also participated in the communication campaign. The official website for the Zimbabwean Government is responsible for communication including publicising news and the latest updates on the virus (Government of Zimbabwe, n.d.).

The involvement of the Minister of Health and Childcare, and the VP in the communication campaign created some mistrust in the campaign because of the association of the Ministers with the government (Dzinamarira et al., 2022). Indeed, this mistrust is largely attributed to negative perceptions of the ruling

party, rampant corruption, and repression of opposition and protestors. Repression of protestors and the opposition party was used as a motive to distrust Covid-19 government mandates, because it coincided with larger repressive measures used by the Mnangagwa administration (Mutanda, 2022; Scoones, 2021a).

In the context of the deteriorating healthcare system, the Minister of Health received backlash, particularly as mass resignation of healthcare staff - due to low pay - occurred. The Ministry has responded by withholding certificates of good standing from nurses, making prospects of working abroad more difficult (The Zimbabwe Mail, 2022). Equally, the introduction of increasingly controversial lockdown measures and vaccine mandates by the Minister, have led to wide-scale backlash from unions and human rights groups for targeting the more vulnerable in society, and impeding citizens' right to choose (Mutsaka, 2021a; Chingono, 2021). These factors compiled explain some of the shortcomings of Zimbabwe's communication campaign, which, unlike other countries such as Portugal, cannot rely on the charisma of the messenger to create a successful communication strategy.

However, one part of Zimbabwe's communication strategy that has been more successful was its use of 'edutainment' (from education and entertainment) under the Risk Communication and Community Engagement (RCCE) strategy. This approach has been based on similar past campaigns for malaria and HIV (Dzinamarira et al., 2022). For example, Covid roadshows such as the 'in-your-face' nationwide campaign, have been successful. This involved a travelling van with health personnel inside whose mission was to dispel myths and conspiracies about Covid-19, whilst encouraging mask wearing and other such measures through skits and songs. More than a million people were reached within a month (Dzinamarira et al., 2022). Similar campaigns including the use of music, poetry and jingles, and dramas and puppetry targeting children have also been employed (Dzinamarira et al., 2022).

The Risk Communication Sub-Committee, led by the Ministry of Information Publicity and Broadcasting, has the responsibility for raising awareness, ensuring community engagement, and working on media management (Mahomva, 2020). This includes planning education activities, talking to community stakeholders, and disseminating methods of improving risk communication (UNICEF, 2020).

[Role of regional/subnational level in the translation of expertise into measures](#)

The inter-ministerial committee worked with provinces and regions to ensure that expertise was being communicated to lower government levels. The same applied for the UN bodies that were concerned with advising on a human rights basis. Zimbabwe's Covid-19 management plan was centralised nationally so that all challenges identified, restrictions mandated, and all Covid related communications were applied on a national scale. Some cities, however, took their own action such as the creation of the Covid-19 task force in Victoria Falls. This approach was deemed to be successful by the city's website.

[Impact of evidence-informed policies on public trust](#)

There is a lack of data assessing the impact of evidence-informed policies on public trust. However, several studies suggest that lack of trust in the government has been the largest obstacle to following national restrictions and guidelines. Indeed, trust in the government was low before the pandemic, and seems to have remained low even after the government enacted its pandemic management strategy (Scoones, 2021b). The Government has been highly criticised for its strict measures and lockdown mandates, which have been viewed as limitations to citizen's freedoms and human rights. Violence and heavy repression have been used against protestors under the guise of lockdown-breaking punishment, which has severely impacted the country's rankings on political rights and civil liberties (Freedom House, 2022). Therefore, it would appear that the biggest obstacle to trusting experts, is the government's own history of corruption and restriction, rather than the quality of the expertise provided to decision-makers.

[The role of experts and evidence-informed policies in the vaccine rollout](#)

[Background](#)

The first vaccine in the country was administered on February 18th 2021, and given to the Vice-President/Health Minister, Constantino Chiwenga (Reuters, 2021a). Similar to South Africa, the vaccine rollout faced several challenges. Firstly, a rush to purchase vaccines meant that low-income countries with few resources had difficulty acquiring and administering the vaccines (Dzinamarira et al., 2021). Secondly, the outbreak of a new variant (501Y.V2) which originated in South Africa, spread quickly amongst African

countries, and appeared resistant to the most widely available and cheapest vaccine option at the time (CoronaVac/AstraZeneca) (Meldrum, 2021).

The latter issue is of special relevancy to Zimbabwe because the country was not a part of the COVAX facility, and therefore did not receive the initial cheaper doses that were given to most other low-income countries. Instead, Zimbabwe had to depend on 20,000 donations of the Sinopharm (Covillo) vaccine from China, which at the time was yet to be approved by the WHO. Eventually Zimbabwe received more doses from Russia and India (Murewanhema et al., 2022), which enabled the start of the ambitious vaccination plan. A plan which aimed to have a minimum of 60% of the population vaccinated in order to achieve herd immunity (Chiwenga, 2021). The vaccine rollout was set up in phases: Phase 1 = frontline workers (e.g., healthcare, and transport workers (Mavhunga; Phase 2 = people with chronic illnesses, the elderly, “prison populations, and others in confined settlements (including Tongogara refugee camp)”; Phase 3 = lecturers and other education workers, and other medium-risk workers; and finally Phase 4 = low-risk populations (Chiwenga, 2021). Currently, there are five vaccines available in the country: Covid-19 Vaccine (Janssen/Johnson & Johnson); Sputnik V (Gamaleya); Covaxin (Bharat Biotech); Covilo (Sinopharm); and CoronaVac (Sinovac); the Spikevax (Moderna) is in clinical trials (Covid19 Vaccine Tracker: Zimbabwe, 2022).

Although Zimbabwe is yet to achieve the goal of herd immunity, it still finds itself ahead of other countries in Sub-Saharan Africa (Murewanhema et al., 2022). This is likely due to the special focus Zimbabwe placed on targeting vaccine hesitancy amongst its citizens.

Indeed, vaccine hesitancy is extremely common in Sub Saharan Africa (Murewanhema et al., 2021) and advanced initial low levels of vaccine uptake. The fact that the Covaxin, Coronavac, and Sputnik vaccines had not been approved by the WHO also contributed to the initial hesitancy (Murewanhema et al., 2021). Other factors that impacted vaccine uptake include cultural and religious beliefs (e.g., being a member of the Apostolic faith), which was shown to negatively impact health-seeking behaviours, such as receiving the vaccine (Dzinamarira et al., 2021). Prevalence of information overload, misinformation (including from healthcare staff) (Murewanhema et al., 2021), and myths/conspiracy theories on the internet have also contributed to hesitancy (Dzinamarira et al., 2021). Lastly, complacency, and belief that vaccines are not necessary or that the virus is not serious has contributed to anti-vaccine sentiment and behaviour.

Rules on vaccination

Rules for vaccines approval

The country’s medicine regulator - Medicines Control Authority of Zimbabwe (MCAZ) - is responsible for ensuring the safety of medication, vaccines, and medical devices which means it was actively involved in the approval process of the Covid-19 vaccines. The Ministry of Health and Childcare was informed that the regulatory agency had carried out trials to approve the emergency use of the Sinopharm vaccine. The MCAZ was confident that the vaccine was safe (Mutsaka, 2021b), despite concerns that it had not yet shown to be effective against the South African (Delta) variant (Mavhunga, 2021b). Equally, the MCAZ carried out trials to approve the Sinovac, Sputnik V, and Covaxin vaccines (Reuters, 2021b). At the time of approval, these vaccines had yet to achieve WHO approval (Murewanhema et al., 2021). Emergency approval for the Janssen/Johnson & Johnson vaccine was achieved by “reviewing the technical documentation that was submitted by the manufacturer” (Reuters, 2021c).

Vaccination policies

In the initial plan set up by the Ministry of Health and Childcare, the goal was solely to offer vaccines on a voluntary basis (Chiwenga, 2021). However, as of September 2021, 6 months after the beginning of the vaccine drive, the Ministry announced that vaccines would be mandated to all government workers with the risk of facing termination or disciplinary action if compliance was refused (Ndlovu and Marawanyika, 2021b). Many private companies followed suit (Mutsaka, 2021a). This garnered critique from worker unions, namely the Zimbabwe Congress of Trade Unions (ZCTU) which incorporates over 35 trade unions. The ZCTU argued that these mandates violated worker and individual rights by removing autonomy to choose to be vaccinated. The ZCTU even took the government and six companies to court for this very reason in September 2021 (Chingono, 2021).

Additional groups - such as Human Rights Watch - brought to light other concerns regarding these mandates. In particular, the groups argued that lack of resources in the country would make these mandates less effective than in Western countries (Mutsaka, 2021a). The lack of access to vaccine facilities across the country, and the lack of vaccines in general, posed a great challenge to compliance, which meant that the most vulnerable were in danger of losing their livelihoods (Mutsaka, 2021a).

In June 2021, the Vice-President and Health Minister Constantino Chiwenga announced that proof of vaccination would be required in selected public markets. An announcement that would affect a large percentage of the population that occupies informal posts (Xinhua, 2021b). Furthermore, in December 2021 as a response to spikes in Covid-19 cases caused by Omicron, the government announced that vaccination cards would need to be presented when boarding public transport (Xinhua, 2021c). Concerns around personal choice, autonomy, and punishing citizens at the lower end of the income bracket were ignored by the government which is known for having a history of authoritarianism (Mutsaka, 2021a).

The Ministry of Healthcare and Childcare has been responsible for drafting and beginning implementation of the national vaccination programme (Chiwenga, 2021). His duties include ordering and purchasing necessary vaccines and supplies (Mavhunga, 2021a), publishing daily situation updates (Murewanhema et al., 2021), creating mandates, and monitoring the situation.

Bodies involved in vaccine rollout

The rollout process involved different bodies and institutions. The beginning of the outbreak necessitated the creation of an Inter-Ministerial Task Force Committee for Covid-19, which, as outlined above, consisted of a command centre, a chief coordinator branch and the expert advisory committee, made up of a team of experts responsible for providing evidence-based advice and guidance. Additionally, there have been sub-committees working under the bodies described above, each with different compositions and tasks (Mahomva, 2020). The World Bank was also involved in the vaccine rollout due to its efforts to fund the deployment of vaccines in the country, through the Zimbabwe Covid-19 Emergency Response Project (ZCERP). This project consisted of a series of grants given to the Zimbabwean government (World Bank, 2022). Although not an early member, Zimbabwe received over 900,000 batches of vaccines through the COVAX facility which includes organisations such as GAVI (vaccine alliance), WHO, and CEPI (Coalition for Epidemic Preparedness Innovations), in October 2021 (WHO Africa, 2021).

Communication Strategy

In order to meet vaccination targets, Zimbabwe's communication strategy focused on critical consciousness (i.e. the attempt to change citizens' anti-vaccine beliefs by exposing them to social and political contradictions), and incentivism (Murewanhema et al., 2021). Zimbabwe appears to have excelled in these parameters by using several strategies. For example, vaccine mandates for public transport were accompanied by erecting vaccination centres at stations (Xinhua, 2021c). Another example includes 'ZimbosAbantu Healthcare On Wheels' which was established in September 2021 in order to reach communities with otherwise difficult access to vaccines (Ntali, 2021). This appears to be an effort to address the convenience and compliancy aspects of hesitancy within the country.

Overall, campaigns to raise awareness and target vaccine hesitancy were deployed by governmental, private, NGO, and civil society actors. This has been because "the concept of using peer educators and peer support arrangements is a well-established phenomenon in the success of multicomponent public health programmes and may have played an important role in increasing uptake in Zimbabwe" (Murewanhema et al. 2021). Showing public images of politicians such as the Vice-President, and frontline workers receiving the vaccine has also been an important tool to encourage vaccination (Tshili, 2021). This seems to have made a big difference between Zimbabwe and its other Sub-Sahara African counterparts in the fight against hesitancy. Particularly given that Zimbabwe has reduced vaccine hesitancy significantly compared to the first 3 months after the launch of its vaccination programme.

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3. Index on experts in the management of the Covid-19 pandemic and the vaccine rollout

The index below presents an overview of how nations across the globe employed experts to manage and mitigate the effects of the Covid-19 pandemic. The index reviews the involvement of experts during the pandemic’s different phases (i.e., the design and implementation of protective measures prior to the vaccine rollout, and during the vaccine rollout). The index identifies three categories on the involvement of experts: 1) low involvement, 2) medium involvement and 3) high involvement. Low involvement refers to cases where experts played only a marginal role in the pandemic’s management. Placing some nations in the “low involvement” category does not mean that governments discounted experts’ input altogether. Instead, they used it sporadically and in line with political and economic aspirations. Conflicting public statements from experts and politicians, along with well-evidenced disagreements between the two, for instance between former U.S. President Trump and Chief Medical Advisor Anthony Fauci, were used to identify such cases. The “medium involvement” category includes nations that have evidently employed expert input but have also accounted for other variables such as electoral and economic costs. Evidence of this approach is apparent in the structure and function of decision-making bodies that operated during the pandemic - especially those compromised of both experts and politicians/political appointees. Finally, the “high involvement” approach refers to nations that have heavily drawn upon the knowledge and advice of experts to determine their response to the pandemic. This approach does not exclude the influence of non-expert actors, but recognises that the main drivers of policy were scientific experts. Governments in this category sought to follow expert advice even when this resulted in political and economic costs, and placed experts in the center of their respective communication campaigns.

Our index provides a general overview of how evidence-informed policymaking was employed during the pandemic. It allows for the assessment of the flexibility and resilience of evidence-informed policymaking during the pandemic and during crises at large.

Use of expertise and evidence-informed policies in the management of the Covid-19 pandemic prior to the vaccines

Low Involvement	Medium Involvement	High Involvement
Brazil	Greece	Australia
Bulgaria	Kenya	Germany
India	Lebanon	South Korea
Russia	Portugal	Sweden
United States of America	South Africa	
	United Kingdom	
	Zimbabwe	

Use of expertise and evidence-informed policies in the vaccine rollout

Low Involvement	Medium Involvement	High Involvement
Brazil	Greece	Australia
Bulgaria	Kenya	Germany
India	Lebanon	South Korea
Russia	Portugal	Sweden
United States of America	South Africa	
	United Kingdom	
	Zimbabwe	

4. Data on cases/deaths and vaccine uptake per country

Table 1: COVID-19 cases and deaths per million, and percentage of case fatalities, by country

Country	Population (millions)	COVID-19 Cases (per million)	COVID-19 Deaths (per million)	Case fatality rate (%)
Australia	25	384,888	528	0.14%
Brazil	213.9	160,272	3,187	1.99%
Bulgaria	6.8	179,865	5,457	3.03%
Germany	83	383,751	1,763	0.46%
Greece	10.6	451,111	3,093	0.69%
India	1.39 billion	31,536	374	0.19%
Kenya	54.9	6,378	107	1.68%
Lebanon	6.7	215,776	1,898	0.88%
Poland	10.2	525,366	3,411	0.65%
Russia	143.4	130,839	2,591	1.98%
South Africa	60.0	67,524	1,716	2.54%
South Korea	51.7	439,956	609	0.12%
Sweden	10.4	244,998	1,892	0.77%
UK	67.5	349,175	3,042	0.87%
US	331.3	279,017	3,093	1.11%
Zimbabwe	15.1	16,048	349	2.18%

Data source: Our World in Data August 14th 2022

Data depicts number of COVID-19 cases and deaths per million between January 1st 2020 and August 14th 2022. Due to difficulties surrounding attribution of deaths to COVID-19 alone, these data may not accurately reflect the true number of deaths. Limitations and restrictions in testing mean the number of cases is likely much lower than reported here.

Table 2: Percentage of population fully and partially vaccinated, by country

Country	COVID-19 Partially Vaccinated %	COVID-19 Fully Vaccinated %
Australia	6.58	55.89
Brazil	6.95	79.82
Bulgaria	0	29.80
Germany	1.81	76.02
Greece	2.76	73.09
India	3.08	66.80
Kenya	23.5	17.30
Lebanon	5.80	42.70
Poland	3.31	86.54
Russia	5.09	51.86
South Africa	4.95	52.45
South Korea	0.34	86.16
Sweden	4.76	76.19
UK	4.73	75.13
US	11.43	67.30
Zimbabwe	10.53	29.34

Data source: Our World in Data August 13th 2022

Data depicts the percentage of the population who received only one dose, and the percentage of the population who received a full protocol (two doses for most

5. Matrix on experts in the management of the Covid-19 pandemic and the vaccine rollout

Country	Experts in the management of the Covid-19 pandemic							Experts in the vaccine drive			
	Advising	Implementing	Permanent	Ad hoc	Centralised or decentralised	Experts in comms	Committee of experts	Experts in vaccine rollout			
								High	Average	Low	Experts in comms
Australia	X		X	X	Decentralised	Central	Multidisciplinary	X			X
Brazil	X		X		Decentralised	Marginal	Multidisciplinary		X		X
Bulgaria	X			X	Centralised	Marginal	Unidimensional			X	
Germany	X		X		Decentralised	Central	Unidimensional	X			X
Greece	X			X	Centralised	Central	Multidisciplinary	X			X
India	X		X		Decentralised	Marginal	Multidisciplinary	X			
Kenya	X		X		Centralised	Central	Unidimensional		X		
Lebanon	X		X		Centralised	Marginal	Unidimensional		X		
Portugal	X		X	X	Centralised	Central	Multidisciplinary	X			X
Russia		X	X	X	Decentralised	Marginal	Multidisciplinary			X	
South Africa	X		X	X	Centralised	Marginal	Multidisciplinary	X			
South Korea	X	X	X		Decentralised	Central	Multidisciplinary	X			X
Sweden	X		X	X	Decentralised	Central	Unidimensional	X			X
UK	X		X		Decentralised	Central	Multidisciplinary	X			X
US	X		X		Decentralised	Central	Unidimensional	X			X
Zimbabwe	X		X		Centralised	Marginal	Multidisciplinary		X		

6. Conclusions

Our report presents an overview of how governments utilised expert advice, both medical and non-medical, during the different phases of the Covid-19 pandemic in sixteen different countries. As such, the report covers both the containment phase, in which governments attempted to limit the spread of the virus while lacking a vaccine, and the vaccine rollout phase. We discuss the policies and functions of geographically and politically diverse governments across the globe, in an effort to provide a more accurate picture of how expert knowledge was employed during the pandemic.

As shown in the matrix (part 5), we propose a typology that includes different categories:

- **Role of experts in the policy response to the Covid-19 pandemic:** Governments are distinguished between those that employed expert bodies in order to receive advice, and those that handed experts decision-making and executive powers. 90% of the countries in our sample (14 out of 16) opted for the former option, while only two (Russia and South Korea) assigned executive powers to their expert bodies. As such, a clear trend emerged with most governments limiting experts to an advisory role, while keeping their executive powers intact.
- **Existing or ad hoc expert bodies:** Another distinction was made based on whether governments employed expert bodies that were already in place, or created them in view of the emerging pandemic. Mixed results can be observed here, with slightly more than half of our cases employing permanent expert bodies (9 out of 16), 5 employing both permanent and ad hoc bodies, and only 2 employing purely ad hoc bodies (namely, Greece and Bulgaria).
- **Experts in central or regional government:** Another dimension across which governments seemed to diverge was whether expert input/decisions were produced at the central or regional level. With respect to this distinction, we did not observe a strong tendency for centralised crisis-management during the pandemic's early stages. Indeed, the states that had already a decentralised governance framework in place kept it as such. For example, the UK and the USA kept their decentralised modus operandi, while Portugal and Greece opted to continue with their centralised mode of governance.
- **Experts in communication campaigns:** Governments diverged over how much they employed experts in their communication campaigns vis-a-vis the containment of Covid-19. Results are mixed with half the countries of our sample (8 out of 16) placing experts at the forefront of their communication effort (e.g. Australia, South Korea, Sweden), while the other half kept experts at the margins of their communication campaign (e.g. Brazil, Bulgaria, India, South Africa).
- **Composition of expert bodies:** The composition of expert bodies differed from country to country. We found both unidimensional (i.e. only medical experts) and multidisciplinary (i.e. medical experts, economists, behavioural scientists) bodies. For instance, 60% of our sample (i.e. 10 out of 16 countries) employed multidisciplinary expert bodies (e.g. Australia, Portugal, South Korea), while the rest received advice from medical experts solely (e.g. Germany, Kenya, Sweden, USA).
- **Experts and Covid-19 containment:** The index demonstrates that governments diverged over how much they involved experts in the management of the Covid-19 pandemic. Indeed, 25% of our sample (4 countries: Germany, Australia, South Korea, Sweden) drew heavily from experts in order to determine their approach to the pandemic and to decide their containment strategy. The majority (i.e. 7 countries of different geographical regions and of different political orientations) opted for a more "middle-of the road" approach. While they employed expert input they also considered other elements such as electoral and economic costs. Finally, five countries (USA, Brazil, Russia, Bulgaria and India) fall under the "low involvement of experts" category. While the degree of expert involvement does not lead to straightforward insights regarding the mortality rate, it is evident that the countries that made marginal use of experts performed poorly.

The index in part 5, in association with table 2, also reveals variation in how governments employed expert input during the vaccine rollout:

- **Role of experts in the vaccine rollout:** Governments diverged over how much they involved experts in the vaccine rollout (i.e., whether they followed expert advice on vaccine prioritisation, children eligibility, and the practicalities of vaccine uptake). Specifically, 60% of our sample (10 out of 16 cases), extensively involved experts in the vaccine rollout, while another 4 appeared to fall under the “medium involvement” category of our index. Generally speaking, the countries that extensively involved experts, achieved higher vaccine uptake. Only two countries, namely Russia and Bulgaria, appeared less prone to involve experts in the vaccine rollout. These states also appeared to perform poorly with respect to vaccine uptake.
- **Experts in vaccination communication campaigns:** Governments differ on how much they involved experts in their Covid-19 vaccine communication campaign (i.e. whether they employed experts as figures that would promote the vaccination effort against Covid-19). Again, the majority of our cases, 60% (10 out of 16), appeared to employ experts in order to boost the vaccine effort. For example, the US developed a full-fledged communication strategy with medical experts playing a central role. Moreover, the two countries in our sample that appeared to employ expert advice minimally in the vaccine rollout (i.e. Russia and Bulgaria), made little use of experts in their respective communication strategies.

In light of the above data and categorisation, several key themes have emerged. Overall, the countries that appeared to perform better with respect to the Covid-19 pandemic (i.e., in terms of deaths per million, and vaccine uptake), have all relied heavily on the advice of experts. As such, we argue that, while the application of evidence-informed policies does not guarantee the success of crisis-management efforts, it nevertheless constitutes a necessary feature to achieve this result. This provides a valuable lesson on how governments can successfully leverage expert knowledge to manage future crises. As a result, our study has wider implications for the policy community providing a *modus operandi* that can facilitate crisis-management efforts and lead to better policy outcomes.



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