Witness Name:

Professor Brooke Rogers

Statement No.: 1

Exhibits: BR/01 – BR/97

Dated: 6 October 2023

Ref: M2/SAGE/01/BR

UK COVID-19 INQUIRY

WITNESS STATEMENT OF PROFESSOR BROOKE ROGERS – MODULE 2

I, Professor Brooke Rogers, will say as follows: -

1. Introduction:

1.1. I make this statement pursuant to the Covid-19 Inquiry's Rule 9 request of 30 March 2023.

1.2. The matters I set out within this statement are within my own knowledge save where I state otherwise. Where I refer to facts that are not within my own knowledge, I will give the source of my knowledge of those facts.

1.3. In the spirit of cooperation with the Inquiry, I have taken note of several questions, by which the Inquiry seek my opinions on various policies and Government actions. While I have endeavoured to provide full responses within the scope of my personal knowledge and expertise as a psychologist, I must emphasise that my role before the Inquiry, is that of a witness of fact, not an expert witness to the Inquiry. Consequently, as a factual witness I have taken care to provide information based on my first-hand experience and knowledge. I understand that the Inquiry may require their independent experts to provide in-depth analysis based on the specific facts and their own expertise, where they lack the contextual experience of the events of which I detail in my statement. Throughout my statement, I acknowledge instances where questions venture beyond my purview or area of expertise, either by indicating this limitation or by providing a narrowed response. No discourtesy is intended to the Inquiry. My intention is to approach this process with respect to the distinct roles of a factual witness and an independent expert witness to the Inquiry. In situations where my response is limited, I believe it is prudent for the Inquiry to consider direct engagement with the relevant individuals or Government Departments, or alternatively to consult their own panel of independent expert witnesses for a comprehensive perspective. This approach aims to uphold the clarity and integrity of the delineations between the two roles, the latter of which I do not hold.

Background

1.4. I am a Professor of Behavioural Science and Security in the Department of War Studies, and Vice-Dean (People & Planning) in the Faculty of Social Science and Public Policy (SSPP) at Kings College London (KCL).

1.5. I am a social psychologist specialising in understanding how attitudes and beliefs are formed, and how these attitudes and beliefs inform human behaviour. I use theories of risk perception, risk communication, and health psychology to investigate the

behavioural science aspects of risks and threats traditionally addressed with physical, technological, or medical science approaches. My expertise in understanding how members of the public, emergency response organisations, and critical national infrastructure (CNI) organisations understand, perceive, communicate about, prepare for, respond to, and recover from low-likelihood, high-impact extreme events has developed across 25 years of research, teaching, and independent science advisory roles.

1.6. My career is built upon a commitment to undertake high quality, empirically driven, translational research to guide and inform organisations in their planning, response, and recovery efforts. My collaborative research into public and practitioner understandings and perceptions of, and behavioural responses to extreme events has generated evidence across a broad range of risks and threats.

1.7. I previously shared my academic and professional qualifications as per the Inquiry's initial questionnaire. In response to the Inquiry's expanded request for comprehensive information, I have included a detailed list of these qualifications and my expertise in Annex A for reference.

2. Structures ('the What')

Scientific Advisory Group for Emergencies (SAGE)

2.1. I became a SAGE participant on 13 February 2020, in response to the Covid-19 pandemic.

2.2. SAGE is convened to provide independent scientific advice to support decision-making in the Cabinet Office Briefing Room (COBR) in the event of a national emergency. SAGE is an advisory group and does not make decisions or set policy. Its advice is limited to scientific matters and is a cross-disciplinary consensus view based on the best available evidence at the time. Government considers a range of evidence when making decisions including economic, social, and broader environmental factors.

2.3. Table 1 below details the roles I had in various SAGE groups during the UK Government's Covid-19 pandemic response.

Table 1 – SAGE and Sub-groups

13 February 2020 to 10 February 2022 (suspended animation)	SAGE participant
14 February 2020 to 7 March 2022 (suspended animation)	Independent Scientific Pandemic Insights Group on Behaviours (SPI-B) deputy chair from 28 February, and I then became co-chair on 11 April 2020
April 2020 to 4 February 2021 (suspended animation)	SPI-B Group on Education sub-group (SPI-Kids) chair
April 2020 to 28 June 2021 (suspended animation)	SPI-B Security & Policing sub-group (SPI-B S&P) workstream lead
June 2020 to 9 February 2021 (suspended animation)	Children's Task and Finish Working Group (TFC) member
30 September 2020 to 8 February 2022 (suspended animation)	SPI-B Senior Coordinating Group (SPI-B SCG)
October 2020 to November 2020	Celebrations and Observances Task and Finish Group member
9 November 2020 to 28 May 2022 (suspended animation)	SAGE Science Coordination Group (SCG) participant

2.4. "Suspended animation", in the context of the UK Government's response to the pandemic, refers to a temporary state of reduced activity of SAGE and its sub-groups, while maintaining its structures and capabilities. The decision to place SAGE in suspended animation was made possible by the growth in Government Departments' own expert capability.

2.5. The term signifies that while SAGE and its sub-groups were not actively convening or providing regular advice, it was kept in a state of readiness posed to resume its activities promptly when needed. This strategic approach allowed SAGE to remain responsive to emerging developments, without the need for a complete reconstitution.

Formation of Scientific Pandemic Insights Group on Behaviour (SPI-B)

2.6. On 13 February 2020, I attended my first Covid-19 SAGE (Meeting 7) {**BR/01 – INQ000106109**}. After the meeting, Sir Patrick Vallance spoke with Professor James Rubin and me. Sir Patrick Vallance asked us to discuss and decide if one of us would consider chairing SPI-B, a sub-group of SAGE. Professor James Rubin agreed to do this. I supported this fully. Professor James Rubin had greater flexibility and capacity due to his sabbatical. Additionally, I had returned from maternity leave recently and had taken on a new senior leadership role at my university. I continued to comment on SAGE meeting notes and participated in the planning and setting up of SPI-B alongside Professor James Rubin. We agreed with Sir Patrick Vallance that SPI-B would not focus on crafting public health communication, as communication was beyond SAGE's remit.

2.7. I worked with Professor James Rubin to help shape and develop SPI-B to support the UK Government's Covid-19 response. This included working on the terms of reference (ToR) {**BR/02 – INQ000273329**} for SPI-B; agreeing a list of initial members; and the frequency of meetings {**BR/03 – INQ000281300**}.

2.8. On 19 February 2020, invites were sent to the original members of SPI-B to join and attend the first meeting of SPI-B scheduled for Monday 24 February 2020 {**BR/04 – INQ000281301}**.

2.9. On 24 February 2020, the first SPI-B meeting took place {**BR/05 – INQ000281302**}.

2.10. On 28 February 2020, I was asked to become deputy chair of SPI-B by the SAGE Secretariat. This request was made as a result of the pace and volume of work, and the intention to hold weekly meetings.

2.11. On 11 April 2020, Professor James Rubin asked me to become a SPI-B co-chair in response to our high volume of work and emerging structures. I worked alongside Professor James Rubin and Professor Lucy Yardley, who was also invited to be a co-chair. We worked together to shape the SPI-B strategy and coordination, sign off on consensus statements, represent SPI-B at other sub-group meetings, and to participate in SAGE, and SAGE SCG meetings as needed.

2.12. On 22 June 2021, Professor James Rubin and Professor Lucy Yardley stepped down from the co-chair roles to return to regular duties. I stayed on for consistency, and to

help our new co-chair, Professor Ann John, learn the role and the systems. From 23 June 2021 to 7 March 2022, I continued to co-chair SPI-B with Professor Ann John until the sub-group entered "suspended animation".

2.13. SPI-B is not a permanent group and does not exist outside of an emergency response. SPI-B did not comment on what interventions (e.g., medical, ventilation, social distancing, etc.) are effective in reducing transmission or when they should be triggered (see also paragraph 4.3). My understanding of this was clear from the outset and shared by my co-chairs. Overall, the purpose of SPI-B was to provide the Government with the best possible behavioural and social science advice to enable the use of Non-Pharmaceutical Interventions (NPIs) in responding to the Covid-19 pandemic.

SPI-B's Purpose and Guiding Principles

2.14. The following slides are extracted from SPI-B presentations, as well as from presentations to external audiences hoping to learn more about SPI-B. (e.g., {**BR/06 – INQ000281303**}). The slides illustrate the ways in which our independent, evidence-based advice informed the Covid-19 response. The first provides a summary of SPI-B to help the reader understand our purpose.

Figure 1.

What is SPI-B:

- Not a permanent group – SPI-B does not exist outside of emergency response.
- Independent, voluntary, consensus view.
- Range of expertise - health psychologists, social psychologists and behaviour change specialists, plus anthropology, ethics, and legal/criminology experts, etc.
- Academic rigour – advice founded on behavioural science principles plus incoming data on behaviours and new research
- Fast turn-around – advice regularly produced within 1 week...sometimes within hours.
- Papers produced on a range of Covid-19 topics, including joint papers with other SAGE subgroups (SPI-M, NERVTAG, EMG, Children, Large Events, Testing, etc.)
- SPI-B Secretariat and SAGE Secretariat support are crucial

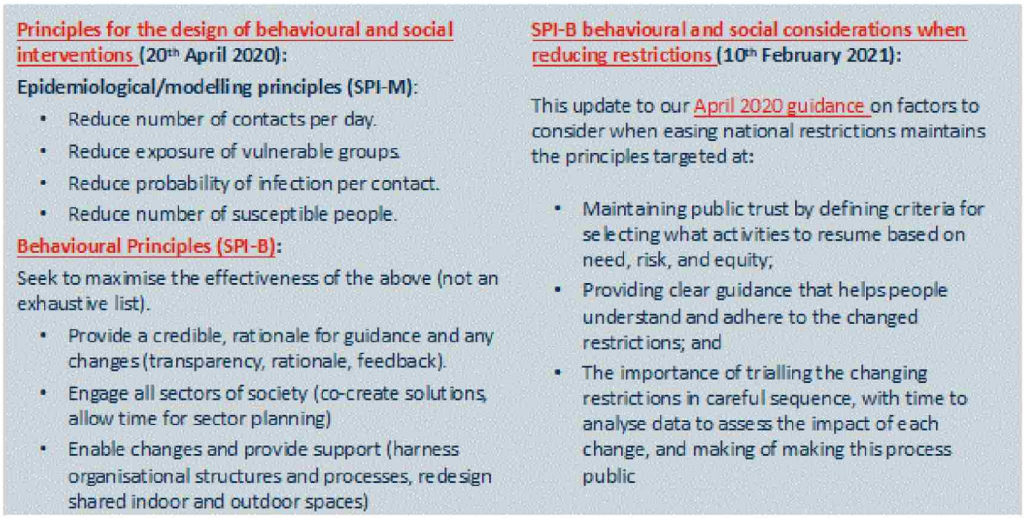
Annex 1

Table 1: Some common behaviours associated with UK celebrations, risk factors, and examples of potential mitigation measures.

Behaviours related to UK celebrations	Risks *Additional risks at community-/population-level (italics)*	Examples of mitigation measures *Elimination and substitution/alternative behaviours*
Increased local mixing and pressure on retail, including days out, travel to events and shopping for gifts	• Prolonged increased mixing in days and weeks prior to celebratory occasion. For Christmas celebrations this may be compounded by the inability for people to do normal seasonal shopping in November. • Gatherings at events, shopping centres, beauty spots, and other popular venues. • *Additional pressure on retail outlets and personal services (e.g. hairdressing) will increase queuing for long periods.* • *Additional pressure on delivery services and availability of items in a timely manner if activity is moved online.*	• Sending and buying presents online. • Making/crafting gifts and decorations at home. • Families can consider still doing some activities at home. • Physical gatherings at events may be supplemented by remote access.
Increased travel to destinations, including journeys over greater distances	• Travel in private and public transport, potentially between or through areas with different levels of restrictions. • Mixing with other travellers outside of household, in some cases for a prolonged duration. • *Mass travel of large numbers of people on the same day will create additional risks for travellers and transport workers.* • *Mixing between individuals in areas with different prevalence can lead to additional risks for those in lower prevalence areas*	• Visiting with friends and family through video calls or in a socially distanced manner. • Celebrate with local community instead of faraway family and friends. • Support community groups (including financial) to organise safe alternative celebrations particularly for vulnerable groups. • Stagger travel to reduce pressure on transport systems and travel risks.
Overnight stays	• Prolonged mixing with friends and family across a number of days. • Prolonged use of shared facilities, including bathrooms. • Extended duration and proximity to others (e.g. room sharing)[1]. • *Multiple small mixing events with different groups over the course of several days leads to larger risk of transmission*	• Avoid repeated and extended overnight stays. • If possible and circumstances allow, self-quarantine for 2 weeks before and after visit • Maintenance of existing 'bubbles' rather than creation of new ones

2.15. The second slide sets out the SPI-B principles that underpinned our work throughout the Covid-19 response.

Figure 2.



Principles for the design of behavioural and social interventions (20th April 2020):

Epidemiological/modelling principles (SPI-M):

- Reduce number of contacts per day.
- Reduce exposure of vulnerable groups.
- Reduce probability of infection per contact.
- Reduce number of susceptible people.

Behavioural Principles (SPI-B):

Seek to maximise the effectiveness of the above (not an exhaustive list).

- Provide a credible, rationale for guidance and any changes (transparency, rationale, feedback).
- Engage all sectors of society (co-create solutions, allow time for sector planning)
- Enable changes and provide support (harness organisational structures and processes, redesign shared indoor and outdoor spaces)

SPI-B behavioural and social considerations when reducing restrictions (10th February 2021):

This update to our April 2020 guidance on factors to consider when easing national restrictions maintains the principles targeted at:

- Maintaining public trust by defining criteria for selecting what activities to resume based on need, risk, and equity;
- Providing clear guidance that helps people understand and adhere to the changed restrictions; and
- The importance of trialling the changing restrictions in careful sequence, with time to analyse data to assess the impact of each change, and making of making this process public

2.16. Many of these evidence-based principles (e.g., transparency, provision of a credible rationale) were evident in the advice that Professor James Rubin and I first shared in SAGE meetings prior to SPI-B being stood up {**BR/07 – INQ000281304**}. These principles form the foundation of SPI-B advice and are present in, amongst others:

2.16.1. the minutes from the first SPI-B meeting {**BR/05 – INQ000281302**}

2.16.2. the 3 March 2020 paper 'SPI-B return to SAGE on the use of Behavioural and Social Interventions on a Covid-19 Epidemic in the UK' {**BR/08 – INQ000129014**}:

2.16.3. the 4 March 2020 paper 'SPI-B Insights on Combined Behavioural and Social Interventions {**BR/09 – INQ000109111**}.

2.17. SPI-B created a table to further clarify their behavioural and social science principles in their 20 April Scientific Pandemic Infections Group on Modelling (SPI-M)/SPI-B paper 'Principles for the Design of Behavioural and Social Interventions' and 20 April 2020 paper 'Behavioural Principles for Updating Guidance to Minimise Population Transmission' {**BR/10 – INQ000188927**}, **BR/11 – INQ000196980**} (both summarised in the first column of figure 2).

2.18. In addition to the above slides {**BR/06 – INQ000281303**}, I have given multiple presentations on the role of behavioural and social sciences and SPI-B to the likes of the Government Social Research profession conference, Behavioural Science Insight Unit for the UK Health Security Agency (UKHSA), the United Nations, academic conferences, and more throughout the pandemic and beyond.

Sub-groups of SPI-B (SPI-Kids, TFC)

2.19. As the Covid-19 response unfolded, SPI-B consistently voiced concerns about the broader repercussions of school closures that extended beyond transmission dynamics. Clear manifestation of this perspective can be found in:

2.20. SPI-B's consensus view in the 4 March 2020 SPI-B Insights on combined behavioural and social interventions report emphasised that school closures would likely exacerbate social disparities and disrupt various segments of the population {**BR/09 – INQ000109111**}:

> "…. school *closures will be highly disruptive and likely to present an unequal burden to different sections of society. Our understanding of reports from Japan is that there is growing discontent around the policy. Isolation of entire households also poses a substantial, and unequal, burden on those affected*." and, "*Almost all strategies will result in reduced, or changed, adult oversight of children. This presents a risk of unintended consequences."*

2.21. The importance of schools during crises was underscored by SPI-B asserting that their significance should not be overlooked. SPI-B argued that schools {**BR/09 – INQ000109111**}:

> *"● Act as a source of emotional support for children;*
>
> *● Provide; education (e.g. on hand hygiene) which is conveyed back to families;*
>
> *● Provide social services (e.g. free school meals, monitoring wellbeing);*
>
> *● Act as a point of leadership and communication within communities"*

2.22. The above sentiment was echoed by SAGE participants who also sat on the Welsh Government Technical Advisory Group (TAG Wales) which highlighted significant concerns from paediatricians and psychologists on the long-term impacts of social

isolation of 2–4-year-olds during a critical phase of social learning (see my handwritten notes from the SAGE 22 {**BR/12 – INQ000281309**}).

2.23. In response to the escalating concerns, on 7 April 2020, SAGE 23 created an action for SPI-M to dedicate focus on the role of children in transmission. The action read, '*Action: SPI-M to produce paper on evidence of role of children in transmission, with clinical input from NERVTAG and behavioural input from SPI-B – paper to include research priorities (for week commencing 13th April). Involving Russell Viner in this discussion may be helpful*' {**BR/13 – INQ000075779**}. While the primary intent of the SAGE 23 Action was to understand the role of children and schools in transmission, this action provided an avenue for SPI-B to delve into the behavioural and social dimensions of school closures. SPI-B argued that pandemic responses must encompass a comprehensive evaluation of the broader impacts of NPIs on children, including areas such as development, mental health, and socialisation. In light of these considerations, I was tasked with exploring this multifaced aspect.

2.24. This led to the establishment of a new SPI-B sub-group, formally called the SPI-B group on Education, which we referred to as SPI-Kids. This sub-group was conceived to explore the evidence surrounding the wider impacts of the Covid-19 pandemic on children's development, encompassing mental health, behaviour, wellbeing, and education. Collaborating with SPI-M, SPI-Kids developed a report on the Role of Children in Transmission {**BR/14 – INQ000074924**, **BR/15 – INQ000281312**, **BR/16 – INQ000281313**, **BR/17 – INQ000281317**, **BR/18 – INQ000281318** & **BR/19 – INQ000281319**} (see also paragraphs 5.18 to 5.23).

2.25. The TFC was created to enable this collaboration around children, schools, and transmission to continue. I worked with the SPI-B Secretariat to recruit key members to SPI-Kids and the TFC, such as Professor Russell Viner {**BR/20 – INQ000281320**, **BR/21 – INQ000281321**, **BR/22 – INQ000281322**, **BR/23 – INQ000281326**, **BR/24 – INQ000281327** & **BR/02 – INQ000273329**}. The TFC was co-chaired by Chief Scientific Advisors, Professor Charlotte Watts, and Mr Osama Rahman. SPI-Kids, SPI-M and Department for Education (DfE) carried on feeding into the TFC, which proved to be extremely valuable engagement.

2.26. This model worked incredibly well, resulting in similar approaches to other topics. For example,

2.26.1. The 5 November 2020 report on Key Evidence and Advice on Celebrations and Observances during Covid-19 {**BR/25 – INQ000074992**};

2.26.2. Re-opening large events including the development of the 16 March 2021 Science framework for opening up large events {**BR/26 – INQ000137650**},

2.26.3. The 27 August 2020 TFMS: Behavioural paper supporting the consensus statement on mass testing {**BR/27 – INQ000062533**}; and more.

2.27. The ability to use multi-disciplinary approaches shape, discuss, challenge, and inform options and scenarios being considered by Government Departments prior to presenting the work at the SAGE meetings for the final consensus process increased our ability to identify evidence and evidence gaps, identify areas of high and low certainty, and to suggest options for increasing certainty where it remained low.

Relationship between SAGE & sub-groups

2.28. The initial engagement process in SPI-Kids was difficult as it was not clear how work would be commissioned. For example, we wanted to explore the evidence around the wider impacts of school closures, but had to do this as part of papers focussed on transmission. This worked very well, overall, as the collaboration between SPI-M, Environmental Modelling Group (EMG), SPI-B and DfE proved to be incredibly effective. However, our more detailed work on the wider impacts was relegated to annexes in some instances.

2.29. The key challenge in this space was finding a "commission owner" (a responsible Department) to commission the wider impacts work. We could not proceed on advising on the wider impacts without a commission. I was relieved when we received a request that allowed us to set out the benefits of staying in school, though we had to engage in a very rapid turnaround for this report once the commission came in {**BR/28 – INQ000073884**} (see also paragraphs 5.24 to 5.25).

2.30. My first TFC arose out of a SPI-B, SPI-M, DfE engagement where DfE wanted to discuss options for school re-opening scenarios under consideration. We discussed the scenarios with DfE and set out capturing the modelling and behavioural and social science implications of each scenario.

2.31. This collaborative effort resulted in our 30 April 2020 publication, The role of children in transmission: Modelling and behavioural science responses to scenarios for relaxing school closures {**BR/29 – INQ000074907**}. The TFC was created on 20 April 2020, and it provided consolidated scientific health advice to Government focused on the

transmission of Covid-19 in children and within schools. The TFC also worked by way of a consensus process with SAGE.

2.32. SPI-Kids also worked with the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG), EMG and SPI-M to consider the risks associated with the reopening of education settings in September for the TFC report of 8 July 2020 {**BR/30 – INQ000281333**}.

Relationship between SPI-B & Government

2.33. During the pandemic, I worked with many individuals and various groups to provide the responses required. As I have mentioned elsewhere in my statement, matters were necessarily fast-paced, and although I reviewed some SPI-B meeting notes to refresh my memory and can recall some individuals I worked with in my capacity as a SPI-B participant, I do not recall to which groups they belonged, each person often holding membership of several groups. We engaged with members of SPI-B for their skills, rather than their affiliation.

2.34. In light of this, I am unable to comment on the relationship between SPI-B and some of the teams working within Government in which the Inquiry has an interest, those particular teams being: The No. 10 Behavioural Insights Team; Government Communications Service; The Department of Health and Social Care (DHSC) communications team; The Public Health England (PHE) UKHSA communications team; The behavioural science team in PHE / UKHSA Emergency Response department; and Various National Health Service (NHS) Test and Trace advisory and working groups. While I am unable to speak to engagement with teams across these organisations, I can speak to engagement with individuals in some instances. For example, Dr Laura de Molière (Government Communication Service (GCS)), Dr Lorna Riddle (Civil Contingencies Secretariat (CCS) Head of Behavioural Science for Covid-19), and Professor Richard Amlöt (PHE Emergency Preparedness, Resilience and Response (EPRR) lead for behavioural science) were all known to me prior to Covid-19. I have engaged with Dr Molière as part of my Cabinet Office Behavioural Science Expert Group (BSEG) UK's National Security Risk Assessment (NSRA) work; with Dr Riddle as part of my BSEG NSRA work and as a PhD supervisor; and Professor Richard Amlöt as a research project partner and fellow member of BSEG. As a result of my previous engagement with these colleagues, we are used to challenging and being challenged by one-another, as well as working to identify or generate evidence

and solutions to extreme events. I would describe this as a relationship of respect that enables frankness and transparency. Knowing their backgrounds, experience, and expertise, I see these colleagues as assets when it comes to translating our advice to ministers and other civil servants, as well as standard-setters who will openly and actively interrogate and challenge our advice. They were also able to create connections and enable access to surveys and studies that we were not aware of and did not have access to. I have seen them navigate NSRA-related behavioural and social science advice through complex political systems and hoped that they would be able to do the same for SPI-B advice during Covid-19.

2.35. During SAGE meetings there were also silent observers from Government Departments in attendance. While this can initially appear daunting for new SAGE participants, I saw the clear benefits of this. The observers faded into the background, but their attendance allowed them to immediately feed back to their individual Departments and the relevant ministers, about the discussions we were having and the advice we were putting forward. This helped circumvent any delay of waiting for SAGE minutes to be written and agreed or for Sir Patrick Vallance and Sir Chris Whitty to provide direct advice/feedback from the SAGE meetings.

2.36. My understanding was that the only instances in which silent observers were able to contribute to SAGE meetings, were upon being asked to clarify matters in respect of their Departments, or where there were difficulties obtaining information. Sir Patrick Vallance or Sir Chris Whitty would then ask who within the respective Department could assist with resolving that particular issue i.e., providing the necessary data members of SAGE were seeking.

Meeting of 11 February 2020

2.37. Professor James Rubin and I attended an 11 February 2020 meeting with Dominic Cummings and his team at No 10. I did not have contact with any high-level decision makers outside of SAGE, insofar as a 'high-level decision maker' is an elected official responsible for making decisions or an official of equivalent status, beyond this meeting. I do not recall recognising or knowing anyone else in attendance, aside from Professor James Rubin, though there is always the possibility that I may have met one or more of the attendees in a different role as I attend many meetings and conferences, with civil servants changing Departments and roles often. I do not know if the meeting was recorded, or minutes prepared.

2.38. An email from the office of Sir Patrick Vallance was received on 7 February 2020 by Professor James Rubin and myself, inviting us to attend a meeting on Friday 11 February 2020 with Dominic Cummings and his team at No. 10 {**BR/31 – INQ000281334**}. The purpose of this meeting was for us to provide insight into an understanding of how to address public awareness in the context of previous health related outbreaks in the UK and elsewhere, and whether any useful literature existed to support this. Sir Patrick Vallance had recommended that we be approached due to our knowledge of behaviours in response to emergencies and perceived risk {**BR/32 – INQ000281335**}.

2.39. As I recall, the meeting was fast-paced and data-centric. Big data sets and access to survey data was the focus of the conversation. The No. 10 team were very interested in the DHSC survey data that Professor James Rubin was able to share, as well as other methods of generating similar information, more so than the types of studies where we mix qualitative (interviews, focus groups) and quantitative (survey) methodologies that I brought to the table. This appeared to stem from their positive experience of using public survey data during the 2019 general election. The focus on and interest in survey data rather than mixed-method approaches (including qualitative data) is not unique to this meeting, partly due to the ability to undertake rapid analysis from the findings.

2.40. On 12th February 2020 I sent an email summary of the meeting to Sir Patrick Vallance at his request {**BR/33 – INQ000281336**}. That email included points on:

2.40.1. The No. 10 team's interest in the DHSC data and their eagerness to put their weight behind future waves of data collection on this front. They suggested the use of additional survey companies to enhance the diversity of the data sets to balance out the fact that the companies use different participant pools.

2.40.2. The No. 10 team was keen on the use of big data sets and social media, overall.

2.40.3. Professor James Rubin and I highlighted that we were more concerned about the percentage of respondents expressing low levels of concern (about coronavirus) as these would be the most difficult audiences to reach if we wished to encourage uptake of protective health behaviours.

2.40.4. Summary documents: James and I agreed to provide summary documents of useful literature, international comparisons, etc. For example, I had fresh data relating to potentially more vulnerable populations (e.g., the elderly; university

students who may see themselves as not at risk), which I believed could be useful as the situation evolved. I also shared 'communication myths' guidance that I was involved in with another Government Department.

2.41. Dominic Cummings and his team were eager to enable anything that we thought we might need on the research front. I recall that I was pleased to have support to access data, but I also expressed concern over the method of obtaining this. For example:

2.41.1. I re-emphasised our roles as independent academics, and our roles that would allow us to feed back into SAGE.

2.41.2. I firmly uphold the view of the fundamental importance of our independence as academics. The trust and respect that our independence fosters are key to our ability to issuing well informed, evidence-based challenge, as well as evidence-based reinforcement of good practice, and to having those views listened to.

2.41.3. I further indicated that, whilst I was aware of the full-scale effort taking place across Government, I was also aware of the challenges of sharing sensitive data across Government systems. Some of the data sets do not translate across, which makes us dependent on the good will of different teams to help translate the information into a coherent whole. Additionally, partnerships and relationships require respect and careful handling to build up and manage long-term interactions with and between departments during pandemics, and beyond. We have built this trust and respect up over many years of honest, open, critical, and collaborative research and engagement with many departments. Demanding data without assessing departmental ability to generate and provide this data, finding ways to enable them to do so where challenges exist, understanding their concerns about their data, or building trust in our responsible use of that data would not encourage long-term sharing and interactions with and between departments.

2.42. Upon reflection, I can see that my response to Sir Patrick Vallance of 12 February 2020 {**BR/33 – INQ000281336**} signalled my concerns as to the approach being taken to obtain data at all costs and the potential damage that could be done not only to the longer-term interactions within and across Government, but also between independent science advisors and the departments with whom they engage. A forceful approach may have allowed for instant access to the data at that point in time, but we risked damaging the foundations of longer-term relationships built upon trust and transparency that enable us to have difficult and challenging conversations.

2.43. I felt that Sir Patrick Vallance understood my concerns about damaging long-term, trusted interactions with and between departments, and emphasised keeping everything joined up. This was significant in making me feel that my concerns were understood and would be addressed.

3. Process ('the How')

Commissioning

3.1. I am asked to comment on what procedures were in place for the commissioning of scientific advice centrally and by Government departments. I am also asked what input departments had into the commissioning of scientific advice beyond COBR and to what extent they commissioned advice directly. SAGE and SPI-B received commissions to provide advice on various aspects of the pandemic response. The commissions for advisory work were channelled through the Secretariat, acting as an intermediary that received these requests from the respective Government departments. I cannot comment on the procedures that existed within Government departments for the commissioning of scientific advice, whether these came directly from Cabinet Office, or whether other departments had to go through the Cabinet Office to access SPI-B and SAGE. My awareness of the procedures surrounding these commissions was primarily centred on our advisory role and the interactions within that context, and the specific intricacies and established protocols for commissioning advice were not within my purview.

3.2. I am further asked to comment on feedback loops within the commissioning process, whether the framing of questions limited us, and whether we could assist on the refining commissions. As independent advisors, we were kept separate from the commissioning process. Initially, in cases where additional clarity or further exploration of interests was required, any queries or requests were directed through the Secretariat to be conveyed to those posing questions. We also discussed collectively within SAGE any areas of concern and topics that we considered merited further exploration through commissions and brought these to the attention of the Secretariat and Sir Patrick Vallance to facilitate further communication with the commissioning departments for clarification and resolution. Thereafter it was a matter for those asking questions to take any further action they considered necessary in commissioning advice. As a result, whilst knowledge of large parts of the commissioning process was

largely outside my personal understanding, I hope my observations on the evolution of the process, as set out below, will nevertheless assist the Inquiry.

Evolution of the commissioning process

3.3. As the pandemic unfolded, our interactions with the commissioning process evolved in response to the unique challenges posed by the dynamic situation. Initially we encountered inquiries that lacked clarity, leaving us uncertain about the Government's specific queries, underlying assumptions, and the range of feasible solutions under consideration. In response, we actively sought clarification and context, but time pressures/the urgency of response meant that we had to push ahead on responding to questions without receiving clarification in some instances in the early days of the response. As we progressed, the SPI-B Secretariat enabled us to provide feedback wherein we conveyed our need for clearer questions and better contextual understanding, and worked to support the departments and SPI-B in ensuring greater understanding from the outset of commissioned projects.

3.4. In this iterative process, we not only provided feedback on unclear questions, but also explained our limitations in responding to them. As our processes evolved, and before we accepted a commission, the SPI-B SCG would meet with those responsible for the commission (see paragraph 3.29). This included either the specific Government Department or other related departments who also had responsibility around the commission. We would take part in a call with the departments, and we would reflect upon what we thought we could bring to the commission.

3.5. Sometimes the commission would change slightly based on our discussions and sometimes the discussion would simply reinforce the direction we wanted to follow. To me, this was an effective way of commissioning, as this led to an improved understanding on the part of:

3.5.1. the Government departments commissioning work;

3.5.2. the SPI-B and SAGE commissioning teams; and

3.5.3. SPI-B, leading to a significant improvement in the way in which questions were framed.

3.6. It also led to the creation of a valuable sense-checking mechanism, facilitated by the Secretariats. The early days of the pandemic were characterised by a rapid pace of

work, where this would not have been feasible as departments learned how to commission, and we learned how to respond, including how to push back on questions that we could not answer, or to respond to questions whilst signalling that there were other, related issues, to consider. The enhanced process allowed for a more considered approach, with the Secretariats becoming adept at drawing out the nuances of the subject matter through dialogue with departments.

3.7. Whilst the quality of the commissions improved, a clear articulation of the Government's specific aims was absent, except for the overarching objective of advising on measures necessary to save lives. This directive underscored a distinctive emphasis on safeguarding public health and devising strategies to curtail virus transmission, thereby alleviating strain on critical care systems like the NHS. The broader ambition encompassed not only maintaining societal functioning but also comprehensively understanding the virus's intricacies to facilitate a return to pre-pandemic normalcy. SPI-B provided evidence-based advice to support members of the public in engaging in the protective health behaviours required to help achieve those aims (see paragraphs 4.1 to 4.44).

3.8. The commissioning process proved to be incredibly valuable in spite of the need to evolve it based on our collective learning. This evolution over time was fuelled by a shared resolved by all those involved to enhance efficacy, positioning it as a reliable toolkit for future responses. I see the final commissioning process as a fundamental part of the science advice tools that needs to remain primed for shaping future effective advisory endeavours.

Effectiveness

3.9. I have been asked to provide insights on a range of critical aspects concerning the commissioning process and its consequential advisory outcomes. These aspects encompass the appropriateness of commission questions, the depth of understanding regarding the nuanced range of options available to decision-makers, and the impact of a "scientific mindset". I understand that these inquiries are directed towards comprehensively assessing the overall effectiveness of the commissioning process and the subsequent advice.

Appropriateness of commissioned questions

3.10. During the initial phases of the pandemic, some of us within SPI-B were concerned that specific topics were not being commissioned for advice. I note that, in a 21 February 2020 e-mail related to the original set-up of SPI-B, I suggested that it was worth, "*…asking SPI-B what topics they think are relevant to this response across the phases" as the "…planning/respond activity can be so focussed (which is needed) that there isn't often a minute to think ahead about what we already have to hand/know will become important OR what we have been worried about and still do not have answers to"* {**BR/34 – INQ000281337**}. SPI-B colleagues would have had topics in mind related to their specific areas of expertise. We are also able to undertake our own studies and publish our own work around topics of interest in our academic roles beyond SAGE.

3.11. I cannot recall the range of topics now, though they would have been raised in discussions in meetings, noted in drafts of papers, and more. Our topics of interest were not ignored. We would raise those concerns to the Secretariat if they fell within the remit of SPI-B or SAGE, and then reiterate those concerns if the issue had not been addressed. The Secretariat, as far as I understood, would engage with the different departments, relay those concerns, and enquire whether they were relevant to anything that the specific Government departments were considering.

3.12. Whilst discussions within SPI-B would often identify areas where advisory input would be valuable, the commissioning of advice was contingent upon the presence of a departmental owner for a particular topic. Science advisors are not in control of the questions that the Government is asking. This dynamic is inherent to the nature of science advice, where commissions are guided by the need for well-defined ownership and responsibility. Consequently, if no departmental entity assumed ownership of a given topic, advice pertaining to that area would not be commissioned.

3.13. The framing of questions within the commissioning process undoubtedly played a crucial role in shaping the advice provided. While this framing did impose certain limitations, it was not inherently detrimental. In the fast-paced and emergency-driven environment of a crisis, such as a pandemic, this approach served as a valuable tool to channel focus and enable us to provide clear evidence-based advice. The commissioning process harnessed the power of collective expertise, honing minds towards a common objective and enabling a more streamlined and effective response to the complex challenges at hand.

Understanding of the nuances of options

3.14. Our advisory role revolved around responding to commissioned questions and, where available, exploring a spectrum of options or scenarios. In doing so we also raised pertinent matters that warranted the Government's attention, even if they were not explicitly posed within the commissions. Our expertise enabled us to adeptly signal considerations that would be valuable yet might not have been immediately evident to those asking questions, simply by virtue of being unfamiliar with the fields of study. We achieved this through our reports, by strategically incorporating relevant literature and highlighting their utility. This nuanced approach aimed to strike a balance between our advisory mandate and the dissemination of valuable evidence-based insights, ensuring decision-makers were equipped with essential considerations beyond the confines of the immediate queries. We worked closely with the Secretariat and SAGE to achieve this delicate balance without overstepping our advisory role.

3.15. As SAGE and SPI-B participants it was not our role to comment on policy or operational aspects. This was at times challenging, as behavioural and social scientists are trained to think through the implications of policies and procedures. Therefore, in my view there needed to be greater thinking about the types of data and evidence that we generated or shared and the ability, based on training, of academics in different fields to share data without communicating about social implications. Given that social and behavioural scientists do think about and evaluate social and behavioural implications, we needed to actively prevent ourselves from going beyond our remit (i.e. moving into policy or operational maters) as SAGE and SPI-B participants in conversation between ourselves, conversations with the Secretariat and even SAGE. Additional training around data presentation within the remit of SAGE would be helpful for the independent science advisory groups, as would additional training and understanding for decision-makers about the value that behavioural and social science approaches can bring to identifying and understanding the potential implications of political decisions, including unintended consequences.

3.16. In my view, the civil servants grasp of the intricate nuances surrounding specific options they were presenting to us for advice, was not fully realised until we were able to engage with one-another through commissioning workshops and teach-ins. These conversations enhanced SPI-B and civil service understandings of complex interactions on both sides. These collaborative sessions proved immensely beneficial.

3.17. Additionally, it was reasonable to anticipate that civil servants, responsible for conveying our advice on these options, would have had access to our nuanced

insights. To demonstrate our work, we produced lengthy reports to assist civil servants in their understanding, and diligently endeavoured to signpost both certainty and uncertainty in our advice. I assume that our lengthy reports where we 'showed our work' were not practical for decision-makers to read, as they were often operating within significant time constraints, though the reports remained available to them. We therefore produced executive summaries of our reports which I assumed decision-makers would read. Accordingly, we entrusted civil servants to read the longer reports and to ensure that decision-makers were appropriately briefed, safeguarding a holistic understanding of the multifaceted considerations underpinning different options.

Whether commissions were influenced by a "scientific mindset"

3.18. The Inquiry has asked me whether those who posed the questions had a "scientific mindset." I am not able to comment, as I do not have any definitive insights into their scientific mindsets. However, I can speak to the behavioural science teams within the Cabinet Office and UKHSA, specifically in the space around risk communication and perception, with whom I engaged and found had a commendable and well-founded scientific mindset. The extent to which this scientific rigor was effectively communicated and understood by decision-makers higher up the hierarchy is unknown to me. Despite witnessing a robust scientific approach within these teams, I cannot ascertain the broader translation of this mindset to those overseeing the commissioning process.

3.19. My experience was that the departmental Chief Scientific Advisors (CSAs) consistently demonstrated a robust scientific mindset, fostering productive discussions. Notably, and by way of example, the DfE CSA exhibited a comprehensive understanding of the situation relating to school closures, effectively leveraging his scientific perspective. However, the interplay of mechanism and political consideration may have influenced decision-makers' varying levels of enthusiasm for incoming evidence. This, in turn, impacted decision-maker engagement with the advice generated by SAGE through SPI-B, SPI-M, and EMG. While I observed that issues were well comprehended at the CSA level, there seemed to be a discrepancy in departmental support that hindered the effective utilisation of evidence by decision-makers. The CSA role is a significant function be protected and taken forward to better enable future responses to emergencies.

Emergency advice structures

3.20. In contrast to SPI-M, SPI-B only stands up when COBR activates SAGE. It does not operate beyond the SAGE emergency response function and this specific collection of individuals and skills did not exist or function as a group prior to the pandemic. This made it necessary to establish the foundational elements in which the sub-group would operate at pace in the early days of the response. For example, we worked with the newly formed SPI-B Secretariat, many of whom were also learning how to operate within the system, to create and agree terms of reference, membership composition, operational protocols, and ways of working in partnership. In spite of this, we were assisted greatly by the efforts of the Secretariat, which contributed significantly to the efficiency of the commissioning process and subsequent reporting. I have personally never before seen such an immense response stood up from across Government and wrapped around science advice systems at speed. The Secretariat function is another invaluable function that must be considered and supported to enable our science response across the board in future emergencies.

3.21. While this experience underscores the importance of honing these skills for future pandemic responses, it is worth considering the value of Secretariat members with relevant scientific backgrounds. As we worked with our SPI-M counterparts, we became aware that they were able to use their Secretariat to author significant portions of SPI-M reports on behalf of their team as the SPI-M Secretariat had topic-based expertise. SPI-B's Secretariat were incredibly adept on the procedural issues, but were initially unable to provide comparable topic-relevant assistance, though this evolved over time:

3.21.1. The SPI-B Secretariat evolved to include behavioural and social scientists with topic-relevant knowledge.

3.21.2. The systems developed across the response and their in-depth engagement with and support during generation of our reports gave them an excellent command of the SPI-B outputs near the end of the response. This enabled them to work across past SPI-B advice, identify advice that was still relevant for new commissions, and target us at addressing areas where gaps existed.

3.21.3. The SPI-B Secretariat became adept at shaping and landing our executive summaries, whilst creating opportunities to share our more nuanced discussions via teach-ins.

3.22. Secretariat capabilities on par with SPI-M members of the Secretariat, who learn by using the system in non-emergency times, rather than learning in the middle of an emergency response would provide invaluable insight and time-saving benefits for SPI-B participants.

3.23. SPI-B members were participating in an entirely voluntary capacity and were having to balance considerable personal and professional responsibilities in the face of contributing to a critical emergency response. These pressures were exacerbated as the pandemic intensified. I do not consider that these challenges, or the absence of the Secretariat's topic-relevant support in drafting early and middle-response reports, compromised the quality of the advice, however the presence of this type of support could have potentially expedited the process of producing advice. We evolved highly effective, impactful ways of working. Maintaining systems to protect this knowledge between emergencies would be of great value.

3.24. Whilst colleagues and I were undoubtedly willing to commit our time to the emergency response, it is essential to acknowledge that the endeavour was notably demanding from a well-being standpoint. Many of us worked long hours to deliver our regular university roles alongside the SAGE and SPI-B Covid response. Similarly, many of us were raising families in the UK, some were separated from our families abroad, and had additional caring duties impacted by the pandemic. In this regard, we were well-supported by the Secretariat who provided personal security and media briefings, in addition to group wellbeing sessions. I found these sessions particularly useful in providing a valuable platform for sharing experiences and challenges, as they fostered a sense of relief and unity in knowing that I was not alone in navigating challenges being similarly experienced by colleagues.

3.25. There was inadequate support in managing our professional obligations within academic institutions, where many participants were in full-time employment. The absence of early remuneration offers to universities, at least during the initial stages of the pandemic, meant that by the time such support was extended, it was already too late to effectively arrange for the necessary staff to cover essential duties. Unfortunately, this situation meant that participants were unable to fully commit their undivided attention to the pandemic response, a missed opportunity that could have yielded more focused contributions, that would have enhanced the overall efficiency and impact of the pandemic response efforts. In any future pandemic this kind of support should be available from the outset. It is also worth exploring whether agreements can be put in place to facilitate academic secondments to this type of role

prior to extreme events taking place. Additionally, thought must be given to the support required for independent academics to respond to inquiries. As it stands, the demands of the inquiry response are similar to the demands of the Covid-19 response.

3.26. The work of SPI-B was continual throughout the pandemic and did not stop at any time. In addition to their work for SPI-B, all participants were engaged in full-time employment and had their own personal lives to manage, which, like everyone else, were already significantly impacted by living through a pandemic. The dedication and commitment of participants stands as a testament to their expertise and resilience, which enabled a consistently high standard of advice even in the face of considerable challenges. There was a resolute effort by all of us to ensure that such challenges would not compromise the quality of advice, and this was successful. Indeed, some of our best work materialised through adeptly navigating tight deadlines and rapid turnaround times, such as SPI-B and DfE's 4 November 2020 report on the Benefits of remaining in education- evidence and considerations {**BR/28 – INQ000073884**} (see paragraphs 5.24 to 5.25).

3.27. These accomplishments demonstrated our ability to thrive under pressure, yet it is undeniable that earlier financial support to academic institutions would have been the key to unlocking further potential, allowing us to channel our dedication into even more impactful contributions. It is essential to recognise that sustaining such an output level in the future could jeopardise our capacity and resilience. Continuing at the pace we did could potentially undermine our ability to respond effectively. I therefore hope that future pandemic planning will include strategic measures to mitigate against potential challenges such as those I have mentioned, ensuring the preservation of our capabilities and long-term effectiveness.

The advisory process

3.28. Initially our advisory process involved convening collective meetings with all SPI-B participants to deliberate on the commissioned topics. A detailed discussion would ensue, and we would task one or two participants with creating a report detailing these discussions. This would then be followed by a broader discussion to further refine insights. A comprehensive report would then be created capturing these further deliberations. We operated on a consensus basis, and therefore consensus statements would be produced and sent to SAGE. When consensus proved elusive, we explained the reasons behind the divergence and highlighted any concerns that

emerged. In the long-term it was not sustainable for everyone to be present on every meeting call. We sought improvements in our structure as detailed below.

3.29. In September 2020, Professor James Rubin, Professor Lucy Yardley and I began to work with the SPI-B Secretariat to consider SPI-B's ways of working in partnership with larger SAGE processes designed to consider our size, shape, and ways of working. This was being considered in the context that many of us who were full-time academics were at the start of a new academic year. This necessitated creating a sustainable model to ensure that we could continue contributing, whilst also managing our full-time employment at universities. An e-mail dated 2 September 2020 sets out the rationale {**BR/35 – INQ000281338**, **BR/36 – INQ000281342**, **BR/37 – INQ000281343** & **BR/38 – INQ000281344**}. Key changes included:

3.29.1. Moving from regular, large meetings of SPI-B to creating smaller working groups around specific tasks. These groups were often cross-disciplinary after our success in collaboration with SPI-M and EMG on Higher Education/Further Education (HE/FE}), Housing, TFC, and Mass Testing. This also decreased pressure on SPI-B participants to dial in to every meeting.

3.29.2. Updating our SPI-B Directory of Experts including all existing SPI-B participants who still wanted to engage, as well as new participants to enable us to expand/add additional expertise and to increase our diversity.

3.29.3. Creating a small SPI-B SCG to review commissions before asking relevant experts to form a working group and to agree the final reports going to SAGE. Some of the working groups were longer-term standing groups, while others were shorter-lived task and finish groups. This had the added benefit of building in additional consensus processes at a sub-group level, prior to SPI-B SCG sign-off before reports went to SAGE for the final consensus process at the SAGE level.

3.29.4. Adopting the SPI-M Secretariat approach to preparing and drafting our reports also made us stronger and more efficient, as did the implementation of teach-ins dealt with below.

3.29.5. Providing regular updates to SPI-B colleagues, agreed by the SPI-B Secretariat and SPI-B co-chairs.

3.30. The SPI-B SCG maintained a direct line between the SPI-B sub-groups and SAGE, with sub-group lead authors on reports invited to SAGE to present and discuss their

reports. This ensured that topic experts were present to explain the reports and advice, and to answer questions as needed. The SPI-B co-chairs formed a feedback link through their SAGE participation/constant presence to translate questions and feedback to the SPI-B SCG and sub-groups in partnership with the SPI-B Secretariat. The entire system evolved into regular updates to SAGE, and regular updates to SPI-B to capture the depth and breadth of our activity.

3.31. The initial SAGE processes involved SPI-M and SPI-B addressing commissions separately and bringing their approaches together for discussion, debate, and consensus around the SAGE table. Our processes evolved, with representatives of SPI-M and, eventually, EMG attending SPI-B meetings, and vice-versa.

3.32. At the start of the pandemic, we did not tend to receive feedback on the advice we produced, and it was not initially known how our advice was implemented, if at all. I looked to the news as any ordinary member of the public, to find out what decisions had been made. Over time, a shift emerged, and we gradually began receiving feedback from some Government departments if they found our advice useful. I remained tempered in my expectations of receiving feedback, as I recognised that the scientific aspect was just one facet among the multitude of considerations the Government was balancing in a rapid response. However, there is clear evidence that feedback played an important role. As feedback began to flow, the advisory process adapted to facilitate a deeper level of engagement. The Secretariat initiated "teach-in" sessions, whereby advisors and commission owners convened in question-and-answer interactions. This dialogue proved pivotal, as it enabled us to gain a more comprehensive understanding of the challenges faced by those responsible for implementing decisions. Additionally, it created space for discussion, questions, and reflections with and from the civil servants responsible for delivering the response. This process fostered a mutually beneficial exchange of insights, contributing to a more robust and well-informed advisory framework.

Mechanism for preparation of advice (consensus)

3.33. I refer to paragraph 3.28, in which I refer to working in a consensus-based approach. Participants were equipped with all the relevant materials, including commissions and inputs from various sub-groups. This ensured that a diverse range of perspectives were brought to the table, which in turn allowed SAGE to distil and synthesise contrasting views into its own consensus report. Sir Patrick Vallance and Sir Chris

Whitty were particularly adept at assimilating and harmonising a multitude of viewpoints. They would then present the resulting consensus report to Government, to assist in their relevant policy and decision-making. This approach was also successful in addressing groupthink and encouraging a holistic exchange of insights.

3.34. Our cohort comprised individuals with varying expertise, each possessing a grasp of the broader field, though not necessarily familiar with the intricacies of every sub-group. This diversity proved invaluable, offering distinctive perspectives that enriched the advisory discourse. As a result, our approach effectively functioned as a form of peer review, generating a dynamic and comprehensive analysis that bolstered the quality and rigor of the advice we provided.

Composition of SAGE/SPI-B – Diversity

3.35. I do not have an exact recollection of the extent of our diversity at the outset of the pandemic, but I refer to Annex B which provides a detailed breakdown of the members of the sub-group at the start of SPI-B. On sight of public records, I can see that by the time SPI-B went into suspended animation there were 48 members from varied areas of expertise. This included 6 experts that also contributed to SPI-Kids.

3.36. Given the rapid pace at which advice was needed by Government, Professor James Rubin and I maintained a keen focus on assembling a team with a robust skills spectrum. Our approach began by thoughtfully considering the diverse array of disciplines necessary for a comprehensive understanding of the complex challenges at hand. This approach led us to seek the guidance of the SAGE Secretariat in identifying and procuring experts from other organisations such as the British Psychological Society (BPS), the British Academy, and the Royal Society, extending beyond the realms of behavioural sciences. We considered the need for an ethicist, and therefore reached out to Professor Michael Parker, who is the Ethox Centre Director and Professor of Bioethics at Oxford University; and Professor Laura Bear an anthropologist from the London School of Economics and Political Science. I approached Professor Russell Viner, a paediatrician, after hearing him speak on Radio 4 and researching his work. We also approached Dr Atiya Kamal, an early career academic (i.e., someone that is still considered to be just starting their career) when her name and profile were shared during a search for colleagues working on public health messaging with Black, Asian, and Minority Ethnic (BAME) communities. Dr Kamal was already conducting research in this area.

3.37. We did not specifically seek out experts with international awareness, but we remained cognisant that many of the experts we enlisted into SPI-B were actively engaged in their own international networks. University Professors must demonstrate that, in addition to undertaking impactful research and teaching, and university leadership, they also have international standing and impact, and are part of international networks over a significant period of time to obtain their professorship.

3.38. Once SPI-B had reached a point where we were satisfied that we had recruited the necessary skill set to advise Government, we began reviewing its structure. It was at this point in September 2020 that I recall discussing recruitment of *"…a) the spread of expertise and whether it suits the ToR, and b) any thoughts on suggested participants*" with a reminder to make sure *"…we are going to bring in a few new voices from a range of backgrounds*" {**BR/35 – INQ000281338, BR/36 – INQ000281342, BR/37 – INQ000281343 & BR/38 – INQ000281344**}. I recall planning conversations with my co-chairs and the SPI-B Secretariat, where we reflected on finding the balance between new voices, voices with diverse experience, and voices with suitable expertise/qualifications.

3.39. I tried to ease the transition of new SPI-B members when they joined the group. Where possible, I did this by having a separate welcome meeting to make sure that new members understood the remit of the group, to make each participant aware that their voice was important, that they are expected to speak out and that they would be supported when they did this (e.g., Atiya Kamal, Russell Viner, Gavin Morgan, etc.).

3.40. While I cannot comment on whether there was a degree of "groupthink" within other sub-groups/committees, I can decidedly say that we took sufficient steps to ensure such things did not happen in SPI-B by, amongst other things, having these inaugural conversations in which I emphasised the importance of our independence and challenge function with new members when they joined. This was especially important, particularly given how intense such environments can be. I also recall SAGE bringing in Professor Ian Boyd to undertake sessions with the participants, where he reflected upon our practices and ensured we did not engage in Groupthink.

Impact of diversity on advice

3.41. At the inception of SPI-B, I do not distinctly recall explicit conversations about the imperative of ensuring sufficient representation from those with protected

characteristics such as vulnerable, marginalised or minoritised groups. Whilst there may not have been a deliberate emphasis during the group's formation, the principle of fair and inclusive treatment was inherently woven into our advisory approach from the outset. We were committed to addressing matters of equity and ensuring that the advice we provided considered the needs of all segments of society. This can be seen throughout our SPI-B reports. For example,

3.41.1. We emphasise the difficulties placed on people in our 4 March SPI-B Insights on combined behavioural and social interventions report {**BR/09** – **INQ000109111**}, "*…in terms of their ability to adhere to isolation. For single parents, adherence may become impossible. For poorer families, loss of income and increased household bills (heating, electricity, food delivery, etc.), will occur concurrently with loss of social services provided through school (free school meals, after school clubs etc)"*.

3.41.2. We argue that, *"Community Champions reflect their local communities and vary by socio-demographic factors including age, ethnicity, gender, health status and education, etc."* in our 22 October 2022 report on The Role of Community Champion networks to increase engagement in the context of Covid-19: Evidence and best practice {**BR/39 – INQ000197209**}; and advise decision makers to "*Use local networks to ensure Community Champions reflect their local communications which go beyond traditional 'community leaders' and include more marginalised community members or those that belong to multiple communities at the same time*" (p. 2).

3.41.3. Finally, our 8 July 2020 report on SPI-B: Principles for co-production of guidance relating to the control of Covid-19 {**BR/40 – INQ000273376**} where we argue that effective co-production leads to socio-culturally competent outputs capable of overcoming "*…structural inequalities and inequities in public and social services…"*, creating outputs that are "*relevant to all members of a community beyond those who are most heard*" and "*reflect an understanding of the diversity of communities within which they will need to be applied, and of gender, age and other distinctions within communities"*.

3.42. Over the course of our engagement, however, we proactively endeavoured to enhance the diversity of voices contributing to our advisory efforts. It remains paramount to emphasise that the engagement of diverse voices from all sectors of society held integral importance in shaping the advice we provided. In this context, SAGE

established the BAME working group within the advisory framework, which was significant. This was initiated to ensure that the perspectives, concerns, and considerations specific to these communities were properly addressed and accounted for in our advisory discourse. By incorporating this dedicated focus, we aimed to bridge potential disparities and ensure that our advice was well-informed, equitable, and sensitive to the diverse needs of the population.

Institute for Government findings: Advice of SPI-B/sub-groups

3.43. The Inquiry has asked me to consider the Institute for Government's findings that the desire of ministers to avoid a lockdown framed the advice commissioned from SAGE and contributed to the delay in considering and implementing these measures {**BR/41 – INQ000062549**}. I am asked also to refer to views expressed by some SAGE participants that the delay in recommending the first lockdown was influenced by a belief amongst scientists that this would be "politically unpalatable" {**BR/42 – INQ000075385**}. SPI-B addressed this assertion in paper dated 14 March 2020, the role of behavioural science in the coronavirus outbreak {**BR/43 – INQ000196749**} (see also paragraphs 4.1 to 4.5}.

3.44. While I cannot directly comment on others' perspectives, I firmly believe that political considerations did not impact the advice we provided. For example, at the outset of our engagement, the Government's concerns extended beyond purely political factors. There was a genuine apprehension about potential social unrest stemming from the pandemic's effects. Professor James Rubin and I addressed this with point 30 in our initial SAGE Minutes where we argued, "*Civil unrest usually relates to underlying social issues, rather than to the specific crisis; the crisis itself tends to be the flashpoint which exposes the underlying issues*" {**BR/01 – INQ000106109**}. Our first SPI-B report in response to the request to provide advice to COBR on the risk of public disorder in the Covid-19 RCWS, 25 February 2020 advised, *"…. that large scale rioting is unlikely. It is rarely seen in these circumstances. Acts of altruism are far more likely and there is an opportunity for HMG to promote and guide these"*. We suggested that the Government should, "*Provide clear and transparent reasons for different strategies"*; and *"Promote a sense of collectivism: All messaging should reinforce a sense of community, that 'we are all in this together'"* {**BR/44 – INQ000137961**}.

3.45. Throughout the progression of the pandemic, our advisory role was focused on providing insights that were data-driven and objective. Our guidance aimed to equip

decision-makers with the necessary narrative to effectively communicate new measures and/or restrictions to the public. The evolving nature of the pandemic also had a tangible impact on our advice. Initially, we believed that UK transmission rates lagged Italy by three to four weeks. However, as our understanding of the data shifted, so did our perspectives and conversations.

3.46. In summary, our advice process was rooted in data, scientific insights, evidence-based principles, and the overarching goal of safeguarding public health. The core focus of our advice remained steadfast in providing sound guidance to inform the Government's responses to the challenges posed by the pandemic. I would like to underscore the well-known principle within Whitehall, that advisors offer advice, while ministers ultimately make decisions.

3.47. The Inquiry again refers me to a quote from the Institute for Government that 'decision-making at the centre of Government was too often chaotic and ministers failed to clearly communicate their priorities to science advisors' {**BR/42 – INQ000075385**}. The Institute for Government further goes on to assert that 'Ministers' lack of clarity about strategy delayed decisions and made it harder for scientific advisers to provide useful advice' {**BR/42 – INQ000075385**}.

3.48. I cannot definitively comment on the inner workings of decision-making processes or whether they were chaotic. My role as an independent science advisor and my remit primarily focused on providing impartial and evidence-based guidance. In this capacity, I did not engage directly with ministers to ascertain their priorities; rather, our representatives Sir Patrick Vallance and Sir Chris Whitty served as intermediaries in this regard.

3.49. The constantly shifting landscape of the pandemic inherently contributed to a certain level of uncertainty in terms of priorities and strategies among decision-makers. This fluctuating environment was such that seeking advice when priorities were not entirely clear was not an unreasonable scenario. In fact, in some instances, having explicitly defined priorities at the time of seeking advice could potentially risk devaluing the independent advisory process. Clear-cut priorities might inadvertently lead to advisors tailoring their recommendations solely to those pre-established objectives, rather than providing the holistic and unbiased insight required for a comprehensive pandemic response.

Role of SPI-B and SPI-Kids

3.50. I cannot say with certainty if the decision makers always correctly understood the role of SPI-B and SPI-Kids. Sir Patrick Vallance and Sir Chris Whitty served as our conduits of communication with ministers, entrusted with the responsibility of ensuring that the essence and significance of SAGE and its sub-groups were accurately conveyed. Whilst SAGE has had a long-standing presence, the nature of ministerial dynamics entails that the awareness and comprehension of how these groups function might vary over time. The rotation of ministerial personnel underscores the reasonable expectation that not all ministers may possess a comprehensive understanding of SAGE's operations. One of the ways we aimed to educate those supporting the decision makers about SPI-B and its sub-groups, was using teach-in sessions as referred to in paragraph 3.32. These educational sessions aimed to provide the civil servants supporting ministers with insight into the nuances of our advice, and to create opportunities for discussion. Looking ahead there is potential to further develop and expand these to provide a more comprehensive understanding of our advisory mandate, and the nuances of our advice. There is room for training and education: for the independent science advisors engaging in science advisory systems; for the civil servants supporting the science advisory process; and for all ministers accepting decision-making roles to ensure that key stakeholders are better equipped to engage with and make the most effective use of evidence flowing through the science advice systems.

3.51. The Inquiry refers me to a quote from the Institute for Government that 'in the initial months, ministers put too much weight on SAGE - relying on it to fill the gap in Government strategy and decision-making that was not its role to fill' {**BR/42 – INQ000075385**}. The observation that SAGE bore a substantial burden in providing evidence-based advice used to shaping Government strategy and inform decision-making during the initial months is understandable. We were acutely aware that we were providing advice in areas that revealed a need for Government to cultivate its own expertise in these realms. It was our strategic intent to give the Government time to establish the necessary tools, functions, and insights to bolster its long-term preparedness for future emergencies.

3.52. As the pandemic progressed, we witnessed a decline in the number of commissions we received, which I interpreted as an encouraging sign that our advisory role was becoming less essential due to the burgeoning capabilities within Government. This sentiment was not universally shared by all members of SPI-B as some may not have

fully comprehended the rationale behind reduced commissions, believing that there was still more work to be done. On the 22 June 2021, the SPI-B meeting also communicated to SPI-B colleagues that the Government had been building up capability and that some of the work that had been coming to SPI-B would be undertaken 'in house' considering the new capability.

3.53. While we endeavoured to elucidate the exact role and process to all SAGE and SPI-B participants or expert pool members, training and additional explanations about our roles and processes would be beneficial. This could be extended to communication with ministers, the media, and the public. Our presence is intended to enhance Government capabilities within specific domains, and the ultimate aspiration is to gradually transition our role out, as the Government strengthens its in-house expertise, thereby ensuring a self-sustaining and proficient approach to handling future emergencies.

The advice of sub-groups

3.54. We had confidence in the expertise and knowledge of the participants of the sub-groups; their establishment was a direct response to identified needs. As elaborated in paragraph 3.29.3, the commissioning process ensured that mandates were clearly disseminated and understood, cascading down to the various sub-groups. This robust approach effectively fostered a three-tier peer review system, encompassing the production of consensus statements, first as sub-group level, then SPI-B SCG, and then SAGE, culminating in the generation of a comprehensive advisory statement. This was the right approach and ensured the integrity of the advice.

3.55. Nonetheless, there were instances where certain aspects of the work did not receive the prioritisation they warranted. For instance, within the technical structure of the main report produced by SAGE, annexed information sometimes risked being overshadowed by the main report. An illustration of this was in the context of SPI-Kid's work produced with the TFC, where essential insights related to the various options for school openings were attached as annexes rather than integrated into the main report, whereby other data such as modelling were included in the main report (e.g., {**BR/14 – INQ000074924**, **BR/29 – INQ000074907**), **BR/45 – INQ000197030**}.

3.56. I am of the view that the challenges in presentation and prioritisation were not reflective of SAGE's processes, but rather a broader systemic bias and uncertainty in how

different types of data and evidence are perceived and valued in evidence-based policy-making processes. This might reflect a certain discipline-based bias in the perceived significance and prioritisation of data. This is a familiar landscape for behavioural and social scientists. It did not occur all of the time, and we learned how to navigate the processes more effectively alongside finding ways to give clear signalling to important issues. There was also clear evidence of respect and appreciation between the SAGE sub-groups (SPI-M, SPI-B, and EMG) as we learned to work together, and a clear sense of duty of understanding from Sir Professor Chris Whitty and Sir Patrick Vallance, who would follow up with additional questions if they felt that they were not 100% clear about our concerns. However, it is crucial that we address this discipline-based bias across our evidence systems holistically, recognising its implications for the placement, visibility, and utilisation of diverse evidence streams to ensure a more effective and inclusive advisory process.

Scope, language, and references to policy

3.57. I am asked whether in my capacity as Chair/Co-Chair, I was directed on what was and was not acceptable in terms of scope, messages, language, and reference to policy. As a starting point, I was of course only able to comment on what was within the scope of my role as a participant of SAGE, and its sub-groups. In terms of shaping messaging, the comprehensive reports mentioned previously demonstrated our methodology; however, we learned to distil our insights into succinct and impactful executive statements within SAGE outputs. Some colleagues may have strayed towards advocating specific courses of action in other roles and media engagements, but the advice provided through SAGE and SAGE sub-group processes sat within clear boundaries. Our primary objective was to present decision-makers with well-founded reflections on various options, backed by evidence and assessments of certainty. Our role revolved around enhancing their understanding, not dictating their decisions. Such a departure from our ToR would have compromised our essential independence and eroded trust in the advisory system.

3.58. When it came to matters of policy, the considerations intersected both with the scope and remit of our role within SPI-B. Should our insights venture too close to policy matters, we exercised due diligence by consulting with the Secretariat and colleagues in SAGE. This was a crucial safeguard to prevent unintentional overreach. Should we discern that our advice encroached on policy territory, we exercised restraint and excluded such content from our main reports. Our approach was underpinned by a

conscientious commitment to uphold the integrity of our role and remit. The process often involved thorough reviews of our reports, accompanied by candid conversations to ensure that every topic and point remained well within our prescribed boundaries. This reflective and proactive approach reinforced our dedication to maintaining a constructive and principled stance in delivering advice that aligned precisely with our designated mandate.

Devolved Nations (Factual description of named individuals' roles)

3.59. I have actively participated in various formulations of SAGE since 2014 (e.g., exercises, workshops, etc.), providing behavioural science insights as an independent expert. My involvement in scientific advisory groups specifically formed to address Covid-19 extends to membership of TAG Wales since 2021. My primary focus during the pandemic, however, was on the UK Government's response, though TAG Wales provided me with a first-hand view of the significant contrasting approaches.

3.60. Dr Rob Orford and Fliss Bennée as Co-Chairs of TAG Wales, would dial into SAGE meetings. Both were extremely helpful and insightful, in bringing in studies and evidence that SPI-B would be interested in. Professor Stephen Reicher was advising the Scottish Government, and he advised that there was a very direct translation to the top leaders. He gave the impression that the Scottish Government cared a lot about the work that SPI-B was doing, and that they had an easier time conveying SPI-B's concerns.

3.61. SPI-B were effective when communicating with the Welsh and Scottish Governments. This is not surprising, as I have found that my Cabinet Office BSEG work with the Scottish NSRA is more nimble in respect to informing changes. My sense is that the comparatively smaller populations and geographic scale, and comparatively smaller Government structures foster a more intimate connection. This translates to a greater ability to tailor research and messages ensuring they resonated with local contexts and needs.

3.62. In my view, the devolved Governments exhibited a particular proficiency in elucidating their decision-making processes and showing that there were a range of decisions that could be taken. They adeptly communicated the perceived risk, benefits, trade-offs, and the rationale behind departing from the broader UK directions. This transparency

allowed for an informed understanding of their strategic approach and contributed to engendering public trust.

4. Behavioural and Social Science Input

Behavioural Science

4.1. The role of behavioural science was often misinterpreted or misunderstood by the media and, as a result, by the public. Professor James Rubin helpfully explained this in an email dated 14 March 2020 to Ben Warner, Sir Patrick Vallance and Sir Chris Whitty {**BR/46 – INQ000281352**}, where he explicitly states:

> *"To be clear, from our perspective, the modelling tells us what interventions will work. Behavioural science simply tells us how to make it as easy as possible for people to adhere to those interventions, and our social psychology colleagues have been helping in telling us possible unintended consequences that policy makers need to be aware of."*

4.2. Sir Patrick Valance replied within five minutes to say:

> *"…I want to make it clear that measures will not be delayed and have not been, because of behavioural science. We need to get onto the front foot on this. Unfortunately, I think some of the questions about timing have been interpreted as being based on behavioural science assumptions (eg "fatigue" comment)"*

4.3. In addition, and in response to assertions made by the media about the role of SPI-B and behavioural science in delaying the pandemic response, SPI-B produced a paper titled '*The Role of behavioural science in the coronavirus outbreak*' dated 14 March 2020 {**BR/43 – INQ000196749**}, which provided an early insight on the role of behavioural science during the pandemic. A key point to note from that paper is:

> *"SPI-B is not asked to comment, and has not commented, on what interventions are effective or when they should be triggered. Instead, the group is asked to provide advice aimed at anticipating and helping people adhere to interventions that are recommended by medical or epidemiological experts."*

4.4. SPI-B's overall recommendation:

> *"…was a need for Government to provide clear advice that takes account of public concerns and suggests behaviours that reduce risk. Transparency will*

help people understand the risk and build trust. People should be treated with respect, capable of taking decisions for themselves and managing personal risk" (p. 2).

4.5. By way of further context, the ToR of SPI-B dated October 2020 also detail the scope of SPI-B {**BR/02 – INQ000273329**}:

"• Behavioural and sociological drivers of the Covid-19 epidemic, and how this impacts different sociodemographic groups;

• Understanding of the range of public responses to the epidemic and associated Government policy in this context;

• Best practice in monitoring and evaluation of social and behavioural interventions in response to the Covid-19 epidemic;

• Strategies for behaviour change, to support control of and recovery from the epidemic and associated Government policy"

4.6. Further consideration of the roles and principles of SPI-B is considered above in paragraphs 2.14 to 2.18.

Ethical considerations

4.7. Understanding the role of behavioural science input is pivotal to appreciating the ethical framework that underpinned our work, providing insight into the intersection of science, ethics, and decision-making.

4.8. The Inquiry have asked me to confirm whether SPI-B/SPI-Kids operated within an ethical framework and what involvement the Moral and Ethical Advisory Group (MEAG) had with our work.

4.9. I am not aware of any contact with MEAG, however in terms of our own ethical framework, we took important steps. Professor Michael Parker was brought in at my request, to ensure a strong ethical foundation to our work. His extensive expertise and knowledge gained from his personal network greatly contributed to the work of SPI-B as well as SAGE.

4.10. Although we didn't adhere to a bespoke SPI-B ethical framework, we operated under a set of principles, which I detail in paragraph 2.15, and which were reinforced through

numerous papers we produced for SAGE. These principles encompassed ethics, equality, diversity and inclusion. We actively engaged experts in ethics and legal ethics to provide valuable insights. Additionally, we adhered to our own ethics codes including those from our academic and professional roles. For example, in my role at KCL, any research I undertake requires ethical approval, and the terms of reference and the Civil Service Code for the work conducted in SAGE, also played a significant role in shaping our approach.

Nudge Theory

4.11. I have been asked to express a view on my understanding of the so-called 'nudge theory,' its ethical implications, use and effectiveness as it relates to the pandemic response. The Inquiry has also referred me to the assertion being made that SPI-B was SAGE's 'nudge' unit and encouraged the use of fear and unethical psychological techniques.

4.12. 'Nudge theory' is not a 'theory' as I understand it. Instead, it is a collection of approaches that involve shaping the environment around individuals to encourage certain behavioural choices. This entails manipulating behaviour through changes in the environment to steer people towards desired actions. My understanding of this approach sets it in sharp contrast to the principles that have defined my entire career. My work, and the work of SPI-B has revolved around:

4.12.1. transparency,

4.12.2. co-design,

4.12.3. trust-building, and

4.12.4. providing information to enhance understanding, enabling individuals to make informed choices.

4.13. Accordingly, I confirm that 'nudge theory' was not a factor within the work of SPI-B.

4.14. A significant issue with the nudge theory approach, is that it falls short of achieving lasting behavioural change, often by limiting informed decision-making. In contrast, SPI-B was committed to ensuring that individuals fully comprehended the context in which they made decisions and took action in the full knowledge of the potential outcomes associated with various choices. When behavioural scientists address risk

and engage in risk communication, our objective is to identify existing understandings of risk, perceptions of risk, levels of trust, relevant trusted sources that people turn to for information, and enablers and obstacles to engaging in protective health behaviours. Understanding these factors helps us understand how to increase the likelihood of protective health-related behavioural intentions translating into actual protective health behaviours.

4.15. SPI-B participants contributed a diverse range of approaches, experiences, knowledge and skills to our collective effort. Upon becoming part of this group, individual identities, including any nudge-related perspectives, were set aside and our singular focus became evidence. Whilst we each brought our preferred theoretical and methodological viewpoints, it is fair to say that no single approach dominated our activities. Instead, we operated based on evidence-based principles, engaging in discussions and supporting approaches through consensus or rejecting them in line with the principles of transparency that underpinned the entire SAGE/SPI-B response. Our interactions were grounded in a commitment to uncovering and scrutinising evidence in pursuit of the questions at hand, transcending any particular theoretical or methodological lens.

4.16. My work, and the work of many of my colleagues recognises that individual behaviour choices occur on a spectrum ranging from under-response to over-response. Both ends of this spectrum have implications for public health and the effectiveness of our emergency response systems. The goal isn't to manipulate people into specific choices, but rather to provide information in a meaningful manner, simplify communication around options, and foster mutual support in decision-making, as well as support for the desired protective behaviours. While some may opt to adhere to protective health advice and engage in behaviours that safeguard their well-being or the well-being of those they care about, others may either ignore or consider our information and engage in behaviours that create additional risk for themselves, and for others.

4.17. Finally, others may simply not be able to engage with or to follow the advice. While behavioural change cannot be achieved across the board, understanding variations in, as well as obstacles and enablers of behaviour change can lead to more effective policy, practice, and support. If a sufficient number of individuals engage in desired protective health behaviours, this can create a critical mass that results in a positive impact on public health, and ultimately saves lives.

4.18. A recurring theme of discussion revolved around whether individuals, even if willing to follow the advice, possessed the means to do so. We deliberated on how best to support them, such as through financial assistance or collaboration with organisations to secure sick leave without risking job security. Our focus lay in facilitating informed decisions and fostering an environment that empowers individuals to act in their best interests.

4.19. The Inquiry has also asked me to provide views on when nudge strategies cross into the realm of coercion or manipulation. However, from the perspective of the SAGE response to the pandemic, this holds little relevance, as our approach was grounded in evidence-based principles that did not encompass nudge strategies. Our emphasis on co-designing interventions involved engaging with relevant communities to cultivate shared understanding, address challenges and jointly develop solutions. Whilst our approach did not align with nudging, it is essential to recognise that my awareness is confined to the information and methodologies within SPI-B and SAGE, making it necessary to clarify that I was not privy to any other advice or analyses which could have influenced decision-makers. As set out elsewhere in my statement, my only awareness of decision-making was derived from the daily media briefings.

Fear and Protection Motivation Theory

4.20. The Inquiry has asked the extent to which I consider fear was used as a driver to compliance.

4.21. A complaint that SPI-B advised Government to use "fear-based" messages to promote compliance with lockdown was submitted to the Ethics Committee of the BPS in January 2021. This complaint was dismissed.

4.22. The Chair of the Committee noted that "*the contributions of the psychologists in responding to the pandemic were entirely consistent with the BPS Code of Ethics and Conduct, demonstrating social responsibility and the competent and responsible employment of psychological expertise*" {**BR/47 – INQ000197159**}.

4.23. The basis of this complaint and subsequent allegations against SPI-B is often linked to a section of a SPI-B paper reviewed by SAGE on 22 March 2020 (Options Paper) {**BR/48 – INQ000119485**}.

4.24. SPI-B was asked to lay out all evidence-based options (10 in total) that were available for ministers to improve adherence to the voluntary protective measures in place at that time of unprecedented crisis.

4.25. The options were "*…canvassed considering what other countries have done, analysis of the problems encountered in the UK and suggestions for mitigation. These were evaluated using a set of criteria specifically developed to evaluate behaviour change interventions. The criteria go under the acronym, APEASE (Acceptability, Practicability, Effectiveness, Affordability, Spill-over effects, Equity"*

4.26. SPI-B identified, *"…nine broad ways of achieving behaviour change: Education, Persuasion, Incentivisation, Coercion, Enablement, Training, Restriction, Environmental restructuring, and Modelling*" (p. 1). They focussed on those that were relevant to the task where there was evidence to draw upon.

4.27. The Persuasion option that has been (partially/selectively) cited the most, states: "*Perceived threat: A substantial number of people still do not feel sufficiently personally threatened; it could be that they are reassured by the low death rate in their demographic group, although levels of concern may be rising. Having a good understanding of the risk has been found to be positively associated with adoption of COVID-19 social distancing measures in Hong Kong. The perceived level of personal threat needs to be increased among those who are complacent, using hard-hitting emotional messaging. To be effective this must also empower people by making clear the actions they can take to reduce the threat*."

4.27.1. The option is evidence-based: a higher perceived likelihood or severity of a risk tends to be associated with greater motivation to take action (see paragraphs 4.31 to 4.39).

4.27.2. The paper warns about the possible negative effects of this particular option, including equity.

4.27.3. The passage is clear that the option applies to "those who are complacent" and that what is required is "a good understanding of the risk."

4.28. I understand that this quote, if taken in isolation from its context and edited to only include components of the entire statement, could give rise to ethical concerns, as it appears to advocate the use of fear as a driver to compliance. SPI-B did not advocate the use of fear tactics. Throughout the Options Paper, we cautioned that perceived

threat, and the use of fear can result in negative effects, as we continued to advise throughout the pandemic.

4.29. SPI-B warned, multiple times, about the risk of using fear as a mechanism for changing behaviour. The very first bullet point of our paper to the Cabinet Office on messaging on 3 April 2020 said that fear would not work.

4.30. I would like to reiterate that SPI-B did not create and was not responsible for Government communications, as this fell outside of the SAGE remit. In spite of this, it is important to interrogate the claims of fear-based messaging further. Evidence suggests that:

4.30.1. The launch of supposedly fear-inducing campaigns such as "Anyone can get it, anyone can spread it" (March 2020) and "Look into my eyes" (January 2021) had no discernible impact on population worry or perceived risk {**BR/49 – INQ000281355**, **BR/50 – INQ000281356**}.

4.30.2. YouGov data showing levels of COVID-related fear in the UK compared to 27 other countries (through to 28 July 2022) indicated that the UK has consistently been among the least fearful populations in this dataset {**BR/51 – INQ000281357**}.

4.30.3. These lower levels of Covid-related fear appraisal in the UK have potentially negative implications for public uptake of protective health behaviours, a relationship that can be further explained through Protection Motivation Theory (PMT).

4.31. PMT is one theoretical approach that provides interesting insights into the relationship between fear and protective health behaviours. Figure 3 provides a diagram of PMT.

4.32. PMT is a useful theoretical framework for understanding and informing intended public preventative/protective responses to official health advice during a public health incident.

4.33. PMT can be applied to any threat for which there is a recommended response. "*According to PMT, the extent to which individuals are motivated to protect themselves from a health threat is influenced by two factors: threat appraisal and coping appraisal. Threat appraisal involves assessing the severity of the threat and personal risk, as well as the emotional response associated with the threat (fear arousal)*".

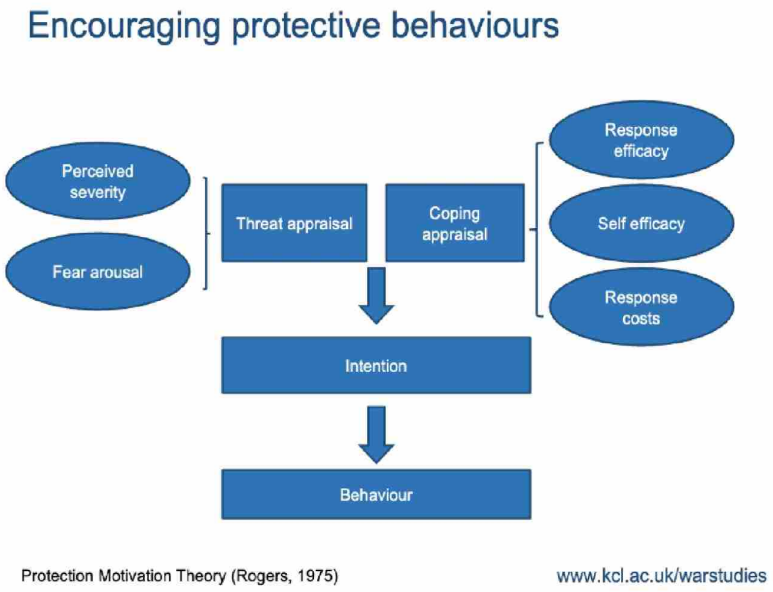
4.34. Coping appraisal consists of response efficacy (belief that carrying out recommendations will be effective), self-efficacy (extent of belief that you are capable of carrying out the recommendations), and response costs (costs of carrying out recommendations (emotional, financial, physical, etc.)).

4.35. Protective behaviours are more likely to be adopted when there are high levels of threat appraisal, high levels of response and self-efficacy, and low levels of perceived response costs.

4.36. Coping appraisal is recognised as having a stronger influence on protective health behaviours than threat appraisal (including fear appraisal).

4.37. In fact, perceived threat is associated with non-compliant behaviour in other emergency response scenarios. As such, greater emphasis should be given to addressing coping appraisals, in crisis communication.

Figure 3



4.38. "Threat perception" in the sense in which it appeared in the Options Paper has a specific, technical meaning as per the PMT, explained above. The excerpt above simply refers to the fact that individuals are more likely to engage in protective behaviours when the level of perceived threat is higher or more personal, as the protective behaviour is then more relevant to them.

4.39. Thirdly, the PMT is ethically sound due to its focus on empowering individuals to make informed decisions about their health and well-being. It emphasises the importance of providing accurate information and promoting a sense of self-efficacy, enabling individuals to assess threats and choose protective behaviours based on their own understanding. PMT avoids manipulative tactics and encourages open communication, fostering autonomy and informed decision-making. This ethical approach aligns with principles of transparency respect or individual choices, and the promotion of positive health outcomes. The media and public narrative around this Options Paper ignores the many times that SPI-B advised against the use of fear in Covid-19 communications. Figure 4 includes a 1 April 2022 Private Eye article presenting the same selectively cut quote from the SPI-B Options paper, alongside the 13 April 2022 SPI-B response indicating the numerous times they advised against the use of fear in Covid-19 messaging. I and my co-chairs Professor Ann John, Professor James Rubin and Professor Lucy Yardley felt it necessary to provide a response to clarify the context of the 22 March Paper's content and that SPI-B were not advocating the use of fear tactics Figure 5.

Figure 4

9

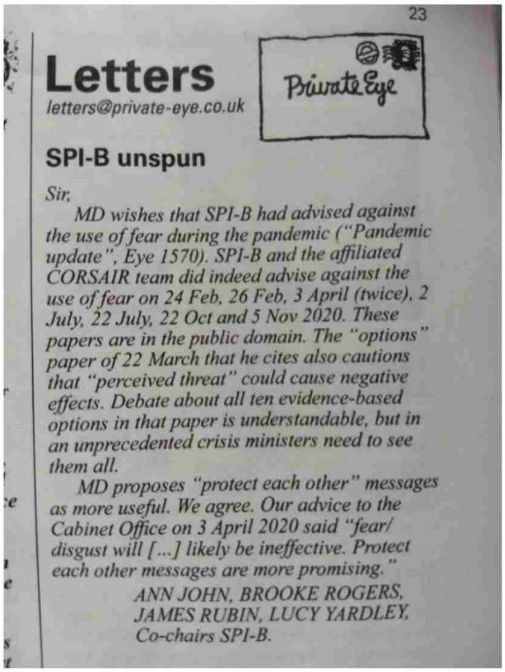
RIGHT QUESTIONS

Most people would likely have rallied around a simple "protect each other" message, even if their personal risk from the virus was low. Most would willingly make sacrifices for others without themselves living in fear. This, alas, was seen as insufficient by the SAGE subgroup SPI-B, which advised on behavioural science. In minutes of a meeting on 22 March 2020, first revealed on *Newsnight*, it argued: "A substantial number of people still do not feel sufficiently personally threatened; it could be that they are reassured by the low death rate in their demographic group… The perceived level of personal threat needs to be increased among those who are complacent, using hard-hitting emotional messaging."

Deliberately scaring people into isolation by exaggerating their personal risk is the antithesis of good public health. With less fear circulating we might (or might not) have reduced waves of infection by calmly and consistently asking people to keep indoor contacts to an essential minimum, while promoting the safety and benefits of fresh air. People could work from home where possible but enjoy unlimited activity outdoors. Indoor environments could have been made safer through ventilation and air filtration. Designated relatives could have been present with the dying, visited care homes and attended funerals, if this was deemed essential. People could have been "tested to attend". All this became impossible once the fear card was played.

PANDEMIC POLITICS: The government didn't need to act on SPI-B's advice but did, producing scary adverts and messaging to justify legally enforced lockdowns, while many in Whitehall invented their own rules and partied on. Whether this was illegal or not may never be established, but it has severed the trust many people had in the government's response and has

Figure 5



23

Letters

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Private Eye

SPI-B unspun

Sir,

MD wishes that SPI-B had advised against the use of fear during the pandemic ("Pandemic update", Eye 1570). SPI-B and the affiliated CORSAIR team did indeed advise against the use of fear on 24 Feb, 26 Feb, 3 April (twice), 2 July, 22 July, 22 Oct and 5 Nov 2020. These papers are in the public domain. The "options" paper of 22 March that he cites also cautions that "perceived threat" could cause negative effects. Debate about all ten evidence-based options in that paper is understandable, but in an unprecedented crisis ministers need to see them all.

MD proposes "protect each other" messages as more useful. We agree. Our advice to the Cabinet Office on 3 April 2020 said "fear/ disgust will [...] likely be ineffective. Protect each other messages are more promising."

ANN JOHN, BROOKE ROGERS, JAMES RUBIN, LUCY YARDLEY, Co-chairs SPI-B.

4.40. SPI-B was not responsible for designing Government communication about Covid-19. SPI-B produced a large number of reports which touched on communications. This is inevitable given that communications are a key driver of behaviour during a public health crisis, though not the only one. However, SPI-B stressed repeatedly that many factors unrelated to communication affect behaviour (e.g., personal financial circumstances, social norms, if an intervention is seen as legitimate).

4.41. SPI-B's inputs into communications were mainly based on principles, which appear in more than 100 documents from SPI-B/SAGE. We do not see or sign-off public messaging.

4.42. The main principles were identified early on and sent to the Cabinet Office communications team in a paper on 3 April 2020, harnessing behavioural science to maintain social distancing {**BR/52 – INQ000196805**} and then published in Journal of Epidemiology and Community Health {**BR/53 – INQ000267970**}.

4.42.1. The core principles include: use clear and specific guidance; use positive messages ("protect each other", "stand together"); co-design messaging.

4.42.2. The core principles also include: avoid messages based on fear/disgust, and focus on support available to enable behaviours, not on punishments for breaching guidance.

4.43. Throughout the pandemic, our advice to the Government consistently emphasised that whilst fear can be used to encourage compliance, its historical application has often resulted in a sense of fatalism among the population. This sense of being overwhelmed can lead individuals to believe that they have no control over the situation, potentially negating any desired protective behavioural changes. Thus, using fear as a motivator may inadvertently yield the opposite effect intended. Put simply, whilst fear might prompt an immediate response, its impact on long-term behaviour change may be limited. To summarise SPI-B's approach to the use of fear:

4.43.1. Fear was not a particular focus of SPI-B – though it did, in March 2020 (before lockdown, when all measures were voluntary) advise that it was possible to increase perceived risk among people who were complacent.

4.43.2. To do this, SPI-B advised that people needed to be empowered to take action and that it could result in possible negative impacts.

4.43.3. Evidence from the pandemic has shown that graphic Government advertising campaigns had little if any impact on levels of public concern.

4.43.4. Public concern increased as infections spread and decreased as Government took action.

4.43.5. Public fear in the face of a global pandemic – and a novel, mutating infectious disease with the power to kill millions of people – is natural: it does not need to be manufactured.

4.44. I have been asked to what extent, if any, the Options Paper gave SPI-B a charter to exaggerate risks. There was no charter whatsoever for SPI-B to exaggerate risks. Quite apart from the ethical implications of such an approach, it would simply be ineffective to exaggerate risk for the reasons I have detailed at paragraph 4.14.

4.45. Indeed, the sentence in the Options Paper immediately following the above excerpt reads as follows: '*To be effective this must also empower people by making clear the actions they can take to reduce the threat'*. This underscores the importance of considering the content of the paper in its entirety, rather than selectively, to truly appreciate its significance and implications.

5. Application of Behavioural and Social Science

5.1. In the context of the pandemic, our approach centred on applying behavioural science to comprehensively research and formulate advice, in accordance with the principles on which SPI-B was established, as outlined in the group's ToR.

5.2. While SPI-M was focused on developing a model to reduce infections by decreasing daily contacts and exposure for vulnerable groups, SPI-B's emphasis revolved around optimising the efficacy of this model through behaviour-related interventions.

5.3. SPI-B utilised several of its "behavioural principles" to assist in this {**BR/10 – INQ000188927**}, for instance:

5.3.1. providing a credible rationale for guidance and any changes, which includes transparency rationale and feedback;

5.3.2. engaging all sectors of society, such as co-creating solutions and allowing time for sector planning to avoid announcing changes at the last minute;

5.3.3. enabling changes and providing support, such as looking at the organisational structures that are already in place, as well as considering re-designing indoor and outdoor spaces, exploring shift working and bubble working; and

5.3.4. other considerations can be seen in a SPI-B paper titled 'Behavioural and social considerations when reducing restrictions', 10 February 2021 {**BR/54 – INQ000214011**} which was an update of our April 2020 guidance.

5.3.5. Our April 2020 guidance was titled 'Easing restrictions on activity and social distancing' {**BR/55 – INQ000074899**}, which maintained our principles targeted at:

5.3.6. maintaining public trust by defining criteria for selecting what activities to resume based on need, risk, and equality;

5.3.7. providing clear guidance that helps people understand and adhere to the changed restrictions; and

5.3.8. the importance of trialling the changing restrictions in careful sequence, with time to analyse data to assess the impact of each change, and of making this process public.

5.4. These principles underpinned all work that SPI-B undertook, serving as a guiding force in our approach. They illustrated our unwavering commitment to comprehensively assess the diverse experiences and capacities of various segments of the population when it came to their response to and management of risks. By considering these intricacies, we endeavoured to provide advice that not only recognised the individual impacts, but also accounted for the challenges individuals and communities might encounter while implementing recommended measures. Our aim was to ensure that the strategies and interventions we proposed were not only scientifically sound, but also tailored to address the unique needs and circumstances of different population segments.

Work of SPI-B

5.5. The Inquiry has asked for details of all the work and advice that was given by SPI-B and SPI-Kids during the pandemic. Annex C includes a full list of all the papers produced by SPI-B and SPI-Kids. As this information is publicly available, I do not

intend to burden the Inquiry with full detail of all of it here. However, to offer a comprehensive view, I will refer to select papers that are of specific focus to the Inquiry.

5.6. I begin with our consideration for existing inequalities, and the needs of vulnerable and marginalised groups. This will be followed by insights into our approach to addressing the unique circumstances surrounding children in this challenging context.

BAME

5.7. Within the realm of SPI-B and SAGE meetings, a significant portion of our discussions revolved around the profound disparities arising from the implementation of the pandemic-related policies on various diverse groups. SPI-B was resolute in its commitment to comprehending the intricate social dynamics and contexts influencing the transmission of Covid-19. In this endeavour, our focus extended to several groups, including BAME populations.

5.8. Notably, a dedicated BAME working group was established, a testament to the Government's acknowledgement of the disproportionate impact of Covid-19 on these communities. I believe that the concerns and insights shared by SPI-B were key to informing the Government's decision to create this working group. Our collective effort within SPI-B produced a number of papers specifically addressing the intricate challenges faced by BAME communities during the pandemic, which are summarised below.

5.8.1. The paper '*Public Health Messaging for Communities from Different Cultural Backgrounds*' took into consideration public health messaging for communities from diverse cultural backgrounds {**BR/56 – INQ000213990**}. The comprehensive analysis underscored the significance of tailoring risk communication to align with the nuances of different cultures. The central conclusion drawn, was that culturally sensitive risk communication has the potential to foster health-protective behaviours within BAME communities, thereby mitigating the risk of Covid-19 spread. Importantly, the paper cautioned against employing fear-inducing messages, as such an approach could inadvertently trigger panic, anxiety, or other behavioural responses that might impede individuals from making well-informed decisions or undertaking appropriate actions. The findings from this paper provided invaluable insights

into the development of effective culturally resonant public health messages for BAME communities during the pandemic.

5.8.2. The paper *'SPI-B Evidence Review for MHCLG Housing Impacts Paper'* emphasised a crucial perspective, highlighting the significance of conducting our work in a manner that avoids reinforcing stigmas and stereotypes associated with different types of 'risky' community households. By 'risky,' I refer to households or communities that may face higher vulnerabilities due to socio-economic factors, living conditions, or existing health disparities. This insight underscores the ethical imperative to ensure that our recommendations and strategies were not inadvertently contributing to the perpetuation of negative biases, but rather fostering a more inclusive and supportive environment for all members of society {**BR/57 – INQ000281363**}.

5.8.3. The paper *'Consensus Statement on Local Interventions'* concluded that marginalised and/or ethnic minority communities which are already more susceptible to coronavirus due to wider structural inequalities, may also be particularly vulnerable to the effects of local restrictions {**BR/58 – INQ000137944**}.

Vulnerable groups

5.9. Throughout SPI-B's engagement, a particular emphasis was placed on understanding and addressing the challenges faced by vulnerable groups, particularly the elderly living in multi-generational households, due to their heightened vulnerability to Covid-19. This consideration aligned with our commitment to ensuring that policies and recommendations were well-informed and inclusive.

5.10. It is important to acknowledge that the decision-making process regarding policy implementation rests with policymakers. I am unable to comment on whether these considerations were fully taken into account during the formulation of policies. My focus, along with SPI-B, was on offering scientifically grounded insights to aid informed decision-making.

5.11. As part of our efforts, we examined the intricate dynamics of multi-generational households and the risks they posed in terms of transmission. The paper '*MHCLG Housing Impacts Summary Paper*' explored how to better understand the role of transmission and how it might be mitigated {**BR/59 – INQ000188929**}. The paper noted

that there was some evidence of initial high case fatality rates in multi-generational households in several countries. Mortality rates are likely to be higher in households containing both people who are vulnerable to severe consequences of infection (due to age or co-morbidity), and people who are "highly networked" and so are likely to be exposed to infection outside the home. SPI-B considered childcare arrangements within households and against cultural contexts, where a prevalent expectation involved grandparents playing a significant role in caregiving. This aspect posed unique challenges and complexities as we examined how such dynamics influenced family interactions and responsibilities.

5.12. Our paper on the '*Principles for the design of behaviour social interventions*' (20 April 2020) {**BR/10 – INQ000188927**} is another example of our work on larger households (i.e., living arrangements that involve multiple generations, or individuals from extended family units residing together under a single roof). Specifically, we held conversations around the potential outcomes if children were allowed to return to school and the implications this would have for elderly members or those with immune system challenges. This and the previously mentioned paper at paragraph 5.11 were a careful examination of the necessity for tailored interventions to mitigate risks within such vulnerable contexts.

5.13. SPI-B engaged in extensive work centred around the concept of "social bubbles," a framework that originated in New Zealand. Social bubbles entail the formation of small, consistent groups of individuals who have exclusive and regular interactions, thereby reducing exposure to a broader range of contacts. In our discussions, we delved into the intricacies of lockdown regulations and transmission dynamics concerning the operation of these bubbles. A central focus was placed on recognising the considerable variation in risk levels across the population. We diligently examined the dynamics of social bubbles, seeking ways to leverage their potential while ensuring equitable protection for vulnerable members. In our paper titled '*Well-being and Household Connection – the behavioural considerations of 'Bubbles"* {**BR/60 – INQ000213985**}, we recommended adopting the options that most benefit vulnerable households who are already disadvantaged by the economic, social, and epidemiological effects of Covid-19.

5.14. I believe that the public were adequately informed about the variations in risk within the population as a result of SPI-B's advice on the disproportionate impacts of Covid-19 on the elderly, vulnerable groups, and individuals facing inequalities. Whilst much of the public discourse focused on promoting pro-social behaviour rather than

individual perspectives, SPI-B's work, and the messaging to the public did take these variations into careful consideration. This is further aligned with the point highlighted in paragraph 5.3, where SPI-M's aim of reducing infection by targeting contact reduction particularly for vulnerable groups, was complemented by SPI-B's collaborative efforts to enhance the effectiveness of this approach through the application of our behaviour principles. This comprehensive approach aimed to safeguard those most susceptible to the adverse effects of the virus and reduce disparities in the risk landscape.

5.15. SPI-B saw several achievements in the realm of addressing disparities, particularly in ensuring ongoing support payments for individuals in isolation, fostering collaboration between policymakers and local communities, and supporting initiatives like the Community champions programme, which facilitated outreach to underrepresented voices {**BR/61 – INQ000281367**}. Furthermore, our efforts underscored the significance of Government comprehending the broader implications of the pandemic, emphasising the importance of collaborative approaches with communities for swift and effective responses. These successes exemplified our commitment to promoting inclusivity, equity, and a comprehensive understanding of the multifaceted impacts of the crisis.

Children

5.16. I have been asked to provide details of the works undertaken specifically in relation to children (under 18's) by summarising key papers, reports and research as well as providing details regarding impacts on children's rights and interests.

5.17. When establishing SPI-Kids, I recruited Professor Russel Viner, a paediatrician; and Professor Chris Bonell, a Professor of Public Health and Sociology both of whom were particularly well connected across the World Health Organisation (WHO) community. I also drew upon existing SPI-B colleagues, such as Professor Laura Bear, a Professor of Anthropology specialising in unequal effects and vulnerable communities; Dr. Atiya Kamal, a Lecturer in Health Psychology specialising in research with diverse communities; and G. J. Melendez-Torres, a Professor of Clinical and Social Epidemiology specialising in health aspects of child and adolescent social development with a special focus on health in schools. Finally, the BPS recommended Dr Gavin Morgan, a Senior Educational Psychologist, who was also recruited. Professor Russell Viner and Professor Chris Bonell were extremely helpful in

undertaking SPI-B work with regards to children. I detail below the key areas we worked upon and our findings:

Role of children in transmission

5.18. I have been asked to provide a summary of a report titled '*The Role of Children in Transmission*' {**BR/14 – INQ000074924**}. This report noted that there was a consensus that evidence on the role of children in transmission of Covid-19 was unclear, with a number of gaps in understanding,

5.19. We were able to make 'wider impacts of current and possible interventions on children' (1e of Summary), one of the five angles considered in this report. We were also able to identify an evidence gap around this by stating, "*There is a lack of information on current experiences for children and parents–for example, in terms of: variation in the extent and quality of home or distance learning; attendance by vulnerable children and changes on child protection / safeguarding services; impact on parental mental health etc. There is an evidence gap around the longer-term impacts for children, particularly around mental health and child development*" (Point 2 in the Summary).

5.20. Section E of this report (Paragraphs 55 to 61) highlighted the need *"…to consider the wider social and developmental impacts of interventions on children – looking at the whole child and their experience, rather than solely on direct epidemiological impacts or issues in isolation*" and the importance of acknowledging different impacts across age and other characteristics, including vulnerable children than those with special educational needs and disabilities (SEND) (Section E, Paragraph 55).

5.21. We went on to say, that this includes, but is not limited to *"…the impact of interventions on the physical and mental health of children and parents, and consequences for the socialisation and development of children (particularly in early years). The medium and longer-term impact on educational attainment, health outcomes and productivity, as well as increasing educational and societal inequalities, is also critical*" (Paragraph 55), lifelong impacts (Paragraph 56 to 57), and potential increases in adverse childhood experiences (ACEs), including domestic violence, child neglect or abuse, potential long-term health outcomes, and exacerbate existing societal inequalities (Paragraph 57).

5.22. We concluded this section with, "*Consideration of wider and long-term impacts should serve as a "reality check" of candidate interventions prior to detailed modelling – if a*

proposed intervention will be highly disruptive to children and parents, then it may not be worth pursuing. Any consideration of options for relaxing school closures should also bear in mind the practical challenges and implications for schools (for example: additional support or equipment needed; maintenance of childcare ratios whilst social distancing and so on) and public perception" (Paragraph 61).

5.23. Our more detailed discussion of evidence and gaps in evidence, as well as recommendations for addressing these gaps appeared in Annex A: 'The Wider Impacts of School Closures on Children' in which we explored existing evidence and evidence gaps for:

5.23.1. Variability of impacts (age, stage, vulnerability) (Annex A: Paragraphs 4 to 19)

5.23.2. Education (outcomes) (Annex A: Paragraphs 20 to 28)

5.23.3. Social and emotional development (mental health, physical health, emotional development) (Annex A: Paragraphs 29 to 38)

5.23.4. Impacts on teachers, parents and caregivers (Annex A: Paragraphs 39 to 44)

5.23.5. Practicalities (re-opening schools, social distancing, access to services such as child protection) (Paragraphs 45 to 60)

5.23.6. We provided proposals to address these issues (Annex A: Paragraphs 61 to 71).

Benefits of remaining in education: evidence and considerations

5.24. SPI-B revisited many of the points that they raised in their initial contribution to The role of children in transmission {**BR/14 – INQ000074924**} and the accompanying Annex A in their 4 November 2020 SPI-B (via SPI-Kids)/DfE report 'Benefits of remaining in education: evidence and consideration' {**BR/28 – INQ000073884**}. SPI-Kids and DfE outlined the key evidence and considerations associated with the closure of schools across four themes: Educational Outcomes; Health, Wellbeing and Development; Vulnerable Children and Socioeconomic Inequalities; and Classroom Learning Outcomes vs Remote Learning (p. 1). A summary of our conclusions includes:

5.24.1. School closures put educational outcomes at risk, especially for disadvantaged students (High Confidence). Existing inequalities (High Confidence) and

attainment gaps (Low/Medium Confidence) are already being exacerbated. Opportunities for early identification of emerging learning problems are also missed during school closures (High Confidence).

5.24.2. School closures cause impairment to the physical and mental health of children. Evidence suggests that the mental health of adolescents is particularly affected (High Confidence). Cognitive, social, and emotional developmental outcomes are also at risk (Medium Confidence) as is physical health (Low Confidence).

5.24.3. School closures have a particularly adverse impact on vulnerable children due to reduced access to essential services (High Confidence). Other lockdown-related stressors for children and parents, such as economic uncertainty, are also likely to be exacerbated (Medium Confidence).

5.24.4. Extended periods of remote learning can lead to poorer educational outcomes, although some sources suggest that in the short-term adverse outcomes may be limited (Low Confidence).

5.25. This report was requested at very short notice. It was noted as strongly reinforcing "*…the argument for schools remaining open where possible at SAGE yesterday*" {**BR/62 – INQ000281368**}. It was well-received, with Sir Patrick Vallance pushing to have the report released as soon as possible.

Risks associated with reopening of education settings in September

5.26. In this TFC report we were able to highlight the importance of differentiating between different types of risks that may result from sending children to school including {**BR/58 – INQ000137944**}:

"1. The COVID-19 related health risks to students associated with attending educational settings;

2. The COVID-19 related health risks for staff, who are older and have a different physiology;

3. The impact increased attendance in reopened education settings will have on transmission in the wider community, including to household members of children in school.

…

And to balance these with the risks associated with continuing to keep schools closed:

4. *The risks to student mental health, wellbeing, welfare, socialisation and development associated with children not being in school.*

5. *The medium and longer-term impact on educational attainment, health outcomes and productivity, as well as increasing educational and societal inequalities, associated with lost education" (p. 1).*

5.27. This built upon previous TFC work of 20 May 2020 in our Children's Task and Finish Group: Comments on sequencing of social distancing measures (schools) where we encouraged co-design and transparency {**BR/63 – INQ000194026**}. For example, we advised, "*Prior to any further relaxation of school closures, there needs to be clear messaging and communication developed in partnership with parents and carers, children and education professionals* (…)" (p. 5). We also advised that, "*School openings cannot be understood solely in terms of the risk of infection and transmission. Sprang et al (2013) report that children isolated or quarantined during pandemic diseases were more likely to develop acute stress disorder, attachment disorder and grief. Around 30% of the children who were isolated or quarantined met the clinical criteria for post-traumatic stress disorder. Time is an important issue – the longer this goes on, the more profound the difficulties will be and the greater the cost and challenge to overcome them – it is a fine balance and secondary impacts need to be carefully considered. As it stands, educational outcomes are seriously at risk, especially for disadvantaged pupils (DfE, 2020, p.1). School closures can also impact emotional attachment and a failure to positively support psychological wellbeing are likely to have longer term negative implications for child development* (WHO, 2004; Norredam et al, 2018)" (p. 6).

5.28. The report goes on to discuss uneven impacts across age and different social groups, including vulnerable children

Children's Task and Finish Group update to 4th November 2020 paper on children, schools, and transmission

5.29. Papers from the task and finish group were signalling that we were worried about the impact of school closures on children. In this paper {**BR/64 – INQ000074951**}, we concluded that:

5.29.1. There was clear evidence of the negative educational impact of missing school, particularly for younger children, as investments in children's learning tend to accumulate and consolidate over time.

5.29.2. There was evidence that the pandemic negatively impacted the mental health of children and young people, and that school closures cause impairment to the physical and mental health of children. Evidence suggested that the mental health of adolescents was particularly affected.

5.30. These conclusions were highlighted again in the paper 'Children's Task and Finish Group: update to 17th December 2020 paper on children, schools and transmission' {**BR/65 – INQ000073882**}.

Consideration of vulnerable Children

5.31. I have been asked to provide detail as to the extent to which regard was paid to children of various vulnerabilities. Aside from the impacts on society and children in general, SPI-B were particularly concerned about the impact of school closures on vulnerable children. I recall discussions on this topic, and some of our reports focused on the impact that lockdown had on these children, which I have already expanded on above.

5.32. I recall taking part in an event on 11 August 2020 organised by the various UK Children's Commissioner's Offices where we met with children and answered their questions about Covid-19 and any other concerns that they had. This event was a positive result in making sure that children's voices were heard {**BR/66 – INQ000281373**}.

5.33. I shall now turn to the extent that regard was paid to specific categories of vulnerable children.

Children in need and in poverty

5.34. The paper 'The role of children in transmission' {**BR/14 – INQ000074924**} concluded that:

5.34.1. There was clear evidence of the negative educational impact of missing school, particularly for younger children and disadvantaged students.

5.34.2. Educational outcomes were seriously at risk as a result of school closures, particularly for disadvantaged pupils.

5.34.3. Vulnerable children were most likely to be affected, with risk of harm and abuse higher due to isolation and financial stress.

5.34.4. A period of learning at home was likely to reinforce inequalities between children.

Children from minoritised groups

5.35. In 'Benefits of remaining in education: evidence and considerations', {**BR/28 – INQ000073884**} it was recorded that school closures caused deterioration in children's mental health. A number of studies reported that increases in anxiety and depression symptoms were greater amongst BAME heritage young people.

5.36. Further, in 'The Role of Children and Transmission (Annex G: A full account of SPI-B input on the scenarios)', {**BR/45 – INQ000197030**} it was noted that children in BAME households may have greater susceptibility to the virus because of the greater prevalence of frontline medical and care work by members of the BAME community.

Children at risk of harm and the ability of children's services and the state to monitor and protect

5.37. In relation to children's services, we had concerns that these were already under strain prior to the pandemic. We were worried that if schools locked down, this would cut off a primary contact. I do not recall specifically how much we talked about the ability of children's services and the state to monitor and protect children.

Children with limited access to activities, the outdoors or to play

5.38. I recall discussing this area, specifically children who lived in flats and who did not have outside access. I cannot comment further on this as others were leading the discussion, which included the argument that sports fields be opened for communities to use.

Children with special educational needs and disabled children

5.39. 'The Role of Children in Transmission (Annex G: A full account of SPI-B input on the scenarios)' {**BR/45 – INQ000197030**} specifically took into consideration 'More vulnerable children and key worker groups.' The paper concluded that:

5.39.1. Children with special educational needs and disabilities (SEND) may find expectation around social distancing exceedingly difficult to follow.

5.39.2. SEND children could need intimate/close care from teachers/staff which makes social distancing difficult or impossible.

5.40. There were further discussions about the impact on disabled children. We specifically discussed the infection risks in school settings, and scenarios where children needed help attending the bathroom, i.e., SEND children could need care from staff which makes social distancing impossible.

Those in the care of the state (social care or places of detention)

5.41. The Inquiry has asked me about vulnerable children in the care of the state, Unfortunately, I do not recollect discussions on those in state care.

Consideration of the impact of NPIs on children

5.42. I have been asked to provide insight into whether the wider impacts of NPI's were adequately considered in relation to children. I recall a time, around "Eat Out to Help Out" (July/August 2020), where we were concerned that schools were not going to be able to open in September due to the risk of returning to higher transmission rates. SAGE alarm bells were ringing at this point. In short, we were concerned that using up all of our 'wiggle room' on infection rates now would lead to schools not opening in

September if infection rates increased due activities/engagements taking place over the summer months.

5.43. An NPI table was prepared to outline the non-Covid impacts of various proposed lockdown interventions, including a 'Measures aimed at educational settings' section {**BR/67 – INQ000281374**}. In relation to children, the following conclusions were drawn:

5.43.1. A stay-at-home order would erode social development and harm general wellbeing, and mental health of children and parents.

5.43.2. A circuit breaker would have a moderate negative impact on health due to mental health impacts on adults and children.

5.43.3. Mass school closure to prevent community transmission would cause disruption of education, wellbeing of children and parents. School closures were associated with possible increases in school drop-out, child injury, domestic violence, child abuse, and a reduction in welfare referrals. This was likely to have a higher adverse impact on vulnerable children and low income and BAME communities (e.g., less access to online learning).

5.43.4. Reactive school closures would cause the disruption of education and impact on wellbeing of affected children.

5.43.5. Alternating week-on, week-off school closures with half class sizes would cause the disruption of education and impact the wellbeing of children and parents.

5.43.6. Closure of childcare would have developmental, educational and well-being impacts on children. There would be missed opportunities to spot child injury, domestic violence, child abuse. Reductions in social interaction erode social development and harm general wellbeing, and mental health of children and parents.

5.43.7. Extending the requirement for use of face coverings indoors may result in probable harms if implemented in primary schools, given their role in promoting spoken language and social skills. It would cause additional difficulties for children with speech or hearing difficulties.

5.43.8. We considered this a crucial moment in terms of science advice due to the balance between the impact of taking short, sharp action (e.g., a circuit breaker)

or letting rates rise enough to require longer term, more restrictive action (e.g., lockdown).

Balance between NPIs and children

5.44. I have been asked to give my opinion as to whether the "right balance was struck" in regard to children and NPIs. I detail my viewpoints in both the early phase and the later stages of the pandemic, offering insights from different temporal perspectives.

5.45. In the early stages of the pandemic, we understood schools to be the "bridges" connecting transmission between families, thus the prompt response to close schools was needed. The role of schools in transmission was not a new concept, and my colleagues in epidemiology can provide examples of literature that demonstrates the effectiveness of school closures in decreasing transmission, as there is historic evidence that suggest that school closures are effective in the control of infectious diseases.

5.46. It was important to all of us that we kept CNI running, including hospitals, electricity, and other key pieces of infrastructure. In the early days there was less of a focus on the impact on children, our focus being on reducing transmission rates for the entire population. Despite this, I personally was always concerned about the broader impacts on children. I highlighted the need to understand the wider impacts of NPIs on children in SAGE meetings alongside the need to understand the role of children in transmission. SPI-Kids and the TFC were established in response.

5.47. As the pandemic progressed, it seems to me that the balance between balancing NPIs and the wellbeing of children was not effectively achieved. During the discussions regarding circuit breakers various NPI options were presented, and the prevailing sentiment within SAGE was that we could implement these measures while keeping schools open. However, it appears that a shift in the Government's approach occurred thereafter. The rhetoric shifted towards schools being the last to close, and the first to reopen. This approach was rewarding as it felt like our message about the important role that schools play in the lives of children was being recognised. However, it seemed that this prioritisation could have been implemented earlier to inform the selection of and implementation of NPIs in the summer months.

5.48. By the time this prioritisation took place, it was already too late, as the Government had introduced campaigns such as "Eat Out to Help Out", allowed indoor gatherings

(e.g., theatres), and more. I believed that the combination of factors encouraging social gatherings would ultimately lead to an increase in infection rates, culminating in another full lockdown.

5.49. I have been asked to indicate my awareness as to whether any Children's Rights Impact Assessment were undertaken. I was not aware of any formal impact assessments on children's rights. Whilst I was part of one of the WHO working groups on children in schools and education, and there was constant data coming from my colleagues at SPI-Kids, I was not aware of any impact assessments undertaken in either of these spaces.

5.50. I was aware of and supporting the commissioning of Mitigating Harms research funded by DfE {**BR/68 – INQ000281375**}. They commissioned six reports targeted at understanding and mitigating harms of extended school closures., I was asked to help shape the research calls. I encouraged them to not just focus on the children, but the learning environments that they were in (i.e., teachers, other school staff, parents and carers).

6. Government decision making

Utilising scientific expertise and advice

6.1. I have been requested to provide insights into the efficacy of the UK Government's utilisation of expert guidance and advice as well as whether it adequately communicated the boundaries between scientific advice and decision making to the public.

6.2. SAGE participants had no involvement in the policy-making sphere. Our engagements revolved around maintaining a clear distinction between the realms of scientific advice and policy decisions. This was consistently evident in discussions held during out meetings, and we were appreciative of how effectively Sir Patrick Vallance and Sir Chris Whitty were able to convey this during the daily Covid-19 public briefings.

6.3. The boundaries between scientific advice and decision-making were well-communicated within our advisory context. However, there was ambiguity in terms of conveying these boundaries to the public. While Sir Patrick Vallance and Sir Chris Whitty were adept at articulating and explaining the scientific aspects due to their depth of knowledge and political impartiality, the optics of their presence alongside

Government ministers during briefings without a more detailed explanation of their roles may have blurred the distinction to the public. Clarity may have been better achieved, by having ministers make announcements, and allowing Sir Patrick Vallance and Sir Chris Whitty to engage in question-and-answer sessions, thereby reinforcing the division between scientific insight, and policy decisions. Another option which would lend itself to the united appearance which may, in turn, be beneficial in enhancing consistency of messages, could include scientists appearing at the podium announcements, and then hosting their own briefings and Q&A sessions. We see this in counter-terror (CT) response, where senior Police or CT responses can show a united front with political leaders, whilst having time and space to provide their own briefings. In fact, evidence supports this with members of the public wanting to hear health advice from medical experts, security advice from security experts etc. The key is allowing time and space for the experts to speak openly and independently about the science processes, evidence, and advice. Both approaches will foster a more distinct delineation and enhance public understanding of the roles and responsibilities of both scientific advisors and decision makers.

6.4. I have spoken about the challenges of providing independent science advice whilst delivering in other roles and navigating life during a pandemic (see paragraphs 3.23 to 3.27). In purely scientific terms, the Covid-19 science response was one of the most exciting times to be a scientist, as the public were aware of the science and interested in what it had to say. This was a key time for the Government to engage the public in a meaningful way around science, evidence, and uncertainty. Science is exciting and messy, with knowledge and understandings changing as new data comes in. This openness to change as data comes in across the science landscape does not, in my opinion, merge seamlessly with political systems or cycles where decision-makers are used to setting a goal and adapting or creating policies to help them reach that goal. In spite of my understanding of the clash between evidence-based change and policy goals, I was conscious that the boundaries were not being communicated very clearly.

6.5. A constant worry to SAGE was the public's grasp of the process by which scientific evidence informed policy and practical measures. We deliberated over ways to enhance public understanding of the science advisory process. Exploring avenues to illuminate this process, we contemplated different options, including:

6.5.1. The possibility of granting media access to a meeting to demystify our discussions, providing the public with insight into the nuanced debates and

conversations that underpinned the formulation of science-based recommendations.

6.5.2. Sir Patrick Vallance also published a piece titled *'It's not true Covid-19 modellers look only at worst outcomes'* in The Times on 24 December 2021 to explain the modelling input into SAGE in greater detail {**BR/69 – INQ000064538**}.

6.5.3. We ran a Q&A with SAGE Scientists for Children in partnership with The Children's Commissioner, which was one of the most rewarding engagement of the response. {**BR/66 – INQ000281373**}.

6.6. Greater clarity over and emphasis of the clearly defined and maintained boundaries between the independent science advisory processes and political decisions has the potential to lead to a more effective response. Greater political engagement with the SPI-B principles (e.g. transparency, discussing rationale for choosing options, etc.) will better enable politicians to be more candid about the decisions, underlying rationale and trade-offs they face when making choices in future responses. This, in turn, would create clear processes and mechanisms for reviewing progress, sharing updates, and enabling political discussions about changes to advice as evidence evolved. Greater transparency about other types of advice under consideration would also be beneficial. This, in turn, would create greater consistency in the scientific advisory processes and advice, political decision-making, and communication of advice and decisions.

6.7. In terms of how our advice was used and to what extent, I do not know what other expert advice the Government were receiving other than from SAGE. Therefore, I cannot definitively ascertain whether our advice was prioritised over others or amalgamated to shape decision-making.

6.8. Regarding the role of SPI-B advice, it appears that the Government did take heed of our advice during the initial stages of the pandemic. For example, our advice on the risk of public disorder led the Government to shift from a focus on public disorder, to a focus on collective response. This was evident in the evolution of messaging, which transitioned to emphasising protection of the NHS and urging individuals to take responsibility for their actions and be mindful of the potential risks posed to others. Additionally, our advice concerning the concept of "bubbles" inspired by a model originating in New Zealand, was well-received by the Government. We were particularly enthusiastic about this approach as it offered individuals the opportunity to derive social and mental health benefits instead of enduring complete isolation {**BR/60**

– INQ000213985 }. However, it is worth noting that the specific numerical restrictions imposed on these bubbles did not originate from our advice. I also believe that our advice on the wider impacts of school closures led to the policy prioritisation of schools being the first to open and the last to close, though the timing of this was later than I expected.

6.9. There were instances where it seemed the Government selectively adopted certain elements of our advice while disregarding others. For example:

6.9.1. I recall feeling concerned over the February 2021 roadmap out of the third lockdown {**BR/70 – INQ000281377**}. Five-week gaps between reopening stages 'felt' quite logical to give our systems time to understand the impact of the easing of restrictions on infection rates. The Prime Minister spoke about 'data, not dates'. Unfortunately, they assigned dates for easings before the data supported these dates. This sets public expectations in a manner that can be difficult to change.

6.9.2. I had similar concerns over the mixed signals sent over public gatherings in the run-up to Christmas 2020. We shared evidence around increased infections and identified strategies around alternative forms of celebration and observance in our 29 October 2020 report entitled 'SPI-B: Insights on celebrations and observances during Covid-19' and the follow-up SAGE Task and Finish Group: Key Evidence and Advice on Celebrations and Observances during Covid-19 (5 November 2020) {**BR/71 – INQ000281378**, **BR/25 – INQ000074992**}. I am not certain that this advice informed the decisions made around holiday mixing in December 2020.

6.10. These disjoints might have been influenced by the receipt of advice from other sources. Nevertheless, I felt that there could have been a more robust dialogue surrounding the consideration of different options, and subsequently weighing the trade-offs, perhaps even in conjunction with economic reports. From my observations, the Government did follow our advice or aspects of our advice, albeit at times with delays, perhaps resulting in prolonged and more stringent lockdown measures.

Uncertainty

6.11. The Inquiry has asked for my views on whether uncertainties in scientific evidence were successfully communicated to Government, and in turn to the public. SPI-M, as

a standing committee has guidance and rules on how to represent uncertainty. I do not specifically recall this as being something we were doing in SPI-B. However, I can recall a SPI-B session where we began discussing likelihoods and realising that it was in fact uncertainty that we needed to signal. To this end we adopted an approach of assigning High/Medium/Low confidence, as illustrated by the 4 November 2020 report on the Benefits of remaining in education: evidence and considerations {**BR/28 – INQ000073884**}.

6.12. In our efforts to communicate uncertainty, we made conscious efforts to signal within our papers where evidence existed or was needed (e.g., see The role of children in transmission from 16 April 2020 {**BR/14 – INQ000074924**}), as well as engaging with international studies and, where possible, drawing insights from behaviours observed in other cultures or historical events such as the Spanish Flu and Ebola outbreaks. Even in cases of uncertainty, we carefully framed our messages and highlighted parallels with previous infectious diseases. We emphasised that certain behaviours repeatedly emerged as important for encouraging individuals to adopt protective measures. It is important to note that our analysis was not always specific/limited to the British public. We were able to draw up general human behaviour in similar circumstances, to identify UK-specific data where possible, and to design studies and programmes capable of generating UK-specific data to address gaps.

6.13. I cannot speak to whether the uncertainty from our papers was successfully communicated to Government, however I would say that the silent observers were regularly dialling into our meetings and to feed back on the information that we had discussed in greater detail in SPI-B meetings. Further, Sir Patrick Vallance and Sir Chris Whitty were continually explaining uncertainty, and I had confidence in their communication of this. I cannot however comment on whether it was understood, regardless of how well it was communicated.

6.14. As to whether the uncertainty was successfully communicated to the public, from memory I do not recall the Government speaking in detail about this. The Government seemed to adhere more closely to the advice we provided during the early phase of the pandemic, particularly as uncertainty levels were higher. However, as the pandemic progressed, we observed a decrease in the extent to which our advice was followed possibly as uncertainty began to gradually recede, although it never entirely disappeared.

7. Messaging and Communication (45 – 63)

Messaging

7.1. An important part of the Covid-19 response was Government strategies and public messaging. I have been asked to set out the role of behavioural management in this process, however I am not aware of how Government strategy plays out, and therefore cannot comment as to the role behavioural management has, if any, within it.

7.2. I am asked to comment as to the extent to which SPI-B/SPI-Kids were involved in public messaging, and I can confirm that neither SPI-B nor SPI-Kids had a role. I personally did not have involvement in designing public health messaging, though I agreed to engage in a public health messaging campaign around 'Hands, Face, Space and Fresh Air' in September 2021. This involved talking about the SAGE advice for keeping safe when restrictions eased {**BR/72 – INQ000281379**}, but I did not design the campaign. My involvement was in a strictly personal capacity and not on behalf of SPI-B, SPI-Kids or SAGE.

7.3. It is difficult for me to comment on whether and to what extent advice was taken on board by those responsible for public messaging. I believe I can say with confidence that advice was well-understood within the mechanisms and specialists in our space. We were speaking from a shared and well-understood evidence base. I cannot however speak to how well this was translated to, understood by, or desired by policy makers. I must base my understanding on the decisions communicated via the No 10 podium, and I do not know what other evidence may have fed into that. I do recall that there were some instances of high-ranking officials making statements and remarks that suggested that our advice had either not been received or had not been understood.

7.4. It is important to bear in mind that the audience for our advice was far larger than just decision-makers in Government. Civil servants and those implementing decisions also needed the advice, though I am not able to comment on the efficacy of that process beyond the discussions in teach-ins.

7.5. Throughout the response, the UK Government adopted a number of different communications strategies at different times, so it is difficult to reach an overall verdict as to their effectiveness particularly given that logical, staged approaches were then accompanied by seemingly arbitrary deadline. Perhaps such deadlines were based on an economic analysis, but this was not set out or explained.

7.6. In any event, it is important to bear in mind that communication is larger than words alone. Actions also communicate to the public, and messages about caution were at times undermined by an apparent lack of nuance in decision-making, for example the full opening of society being followed by sweeping restrictions, and then subsequent full reopening. Communication also occurred when the behaviour of leaders did not match up with the rules set in place (e.g., "Partygate"; travelling when symptomatic or testing positive).

7.7. I have been asked whether the UK Government based its response to Covid-19 on assumptions about the nature of human behaviour. I have already referred to my work disabusing policymakers of the myth of the panic-prone public (see Annex A). There was initially a perception that rioting, or unrest would follow from lockdown. We were successful however in challenging this perception and instead asked Government how they would manage all the volunteers and deal with the weight of pro-social behaviours. We also moved discussion to consider those who would not be able to follow the rules, and people who would want to report perceived rule breaking without being aware of circumstance. We pointed out the need for engagement with the different duties that people have, such as caring obligations. We were concerned about stigma and emphasised the need for understanding and for "we're all in this together" messaging. This was clearly successful as even we were surprised by the scale of pro-social behaviour and levels of adherence. Over time however, this became patchier as messaging became more confused, for example the incident when two women were fined by police after going for a walk **{BR/73 – INQ000281380}**.

7.8. My opinion has been sought on whether the Government utilised proper channels of communication. Although the Government utilised numerous modes, the podium worked particularly well. In my experience, a multi-modal approach can be highly effective provided that the messaging is consistent across the different channels of communication. A substantial concern though was the fact that I did not initially see a lot of support for the different layers of communication required within communities. Community leaders are essential channels of communication, and in my view, there was a missed opportunity to utilise these more personal and local channels. The Community Champions work helped to address this issue, but the need to support local level, community leaders and responders in building and maintaining these relationships is ongoing.

7.9. The Government's public health messaging was, again, a mixed bag. It started strong, being open about uncertainty and explaining the scientific basis of the actions and

decisions being taken. As the situation developed however, the messaging was not always clear. For example, on the one hand messaging urged the public to be careful but this came into tension with policies such as "Eat Out to Help Out".

7.10. Sir Patrick Vallance and Sir Chris Whitty were a consistent source of reliable messaging. They set out everything very clearly and having them as trusted voices worked incredibly well.

7.11. In respect of messaging accessibility to vulnerable and minority groups, overall, the messaging was accessible but not always understood. As an example, the messaging to pregnant women was accessible but, with clear explanations that they were being asked to isolate because there was uncertainty about the level of risk they faced. Unfortunately, changes that were made to guidance around both the level of threat they faced, and about the potential risks of vaccination did not always filter through. Targeted work was required with health workers at that point as many were still sharing the initial advice.

7.12. Communication with minority groups was something that took a while to get right but efforts were made in this area. SPI-B produced a paper on larger households {**BR/57 – INQ000281363**, **BR/59 – INQ000188929**}, we had the Community champions programme {**BR/61 – INQ000281367**}, and a sub-group on ethnicity was established on 1 October 2020 {**BR/74 – INQ000211974**}. It is impossible to get everything exactly right from the outset, but we made a compelling case that there was a need to be addressed and the Government began putting things into place.

7.13. I have been asked to describe how the clarity, consistency and rationale of Government messaging changed over the course of the pandemic with reference to the UK Government's change in messaging from "Stay at Home" to "Stay Alert". There was not much for the Government to say in the beginning of the pandemic other than to note the uncertainty that existed, to set out what the public needed to do and why they needed to do it. In that sense, from a communications perspective, it was in many ways easier when we knew less.

7.14. Over 50 year of risk perception and risk communication research across a broad range of risks indicates a fairly simple formula for effective risk communication:

7.14.1. identify the risk,

7.14.2. identify the implications of the risk,

7.14.3. tell people:

7.14.3.1. what you know,

7.14.3.2. the options that you are considering

7.14.3.3. what you are asking them to do,

7.14.3.4. why it is effective, and

7.14.3.5. that you recognise the effect it will have on their lives.

7.14.3.6. Set out clearly when you will revisit the issue and update the public as to changes in the relevant evidence and the implications that this has for your previous advice and any advice/approaches evolving from the changes in evidence.

7.15. The Government did some of the risk communications well. However, they struggled in the final stage of communicating changes in evidence, particularly the significance of changes in the guidance that was given. What appeared to be randomly chosen deadlines for changing restrictions also made a staged approach to data monitoring challenging if the results did not support the next step. The Government placed itself under a certain amount of pressure to be able to reopen society, and once a timeline, however arbitrary, has been committed to, it creates a challenging situation when the movements in data do not correspond to that timeline.

7.16. As to the change from the "Stay at Home" to "Stay Alert" messaging, I do not know where that came from. SPI-B were not consulted on this, we were in fact somewhat confused by it. The objection that we had to the "Stay Alert" slogan is that, when you ask people to do something, that "something" should be a specific behaviour. Alertness is a state, not a behaviour, and alertness may look differently to different people.

7.17. That said, I mentioned above paragraph 7.15 that the Government did some of the risk communications well. For example, the "Protect the NHS" messaging was a noticeably clear and effective communication.

Transparency

7.18. I am not able to discuss the UK Government's position on transparency, but I can speak to my first-hand knowledge of my interaction with Sir Patrick Vallance, Sir Chris Whitty, and input into SAGE on the subject.

7.19. I recall that SAGE was adamant that the work and evidence be published, and that we would be transparent with the public on the topics of our discussions, as well as the research that was being conducted. It was recognised that the response to the pandemic was going to be a long one and that we could not operate in regard to transparency in the same way that we had done in previous incidents, such as during the Salisbury Novichok incident or the Ebola crisis. My rule of thumb when working with Government has always been to openly state and obtain agreement to support my desire to publish research that I am conducting, except where it could create a security risk by, for example, giving away our response capabilities.

7.20. SAGE operated from the position that everything would be published, and we would reverse the onus, so to speak, and require a special case to be made for information not to be published.

7.21. There were some hurdles to this approach initially, and I understand that the reasons for any initial lack of transparency were due to the mechanisms that were already in place at the outset of the pandemic for historical reasons. The SAGE team put extensive work into ensuring that the work and research would be made available and that we were being as transparent as possible, however we had to work within the confines of the Government's existing machinery to achieve this.

7.22. It took some time to obtain the necessary authorisation to be able to publish the work and research. Prior to achieving this, some of the SPI-B work that I contributed to, which was feeding into the wider SAGE advice was not published. It finally ended up being published on the KCL website for our Health Protection Research unit, since it was not immediately obvious where this could be published within the Government systems. Despite significant strides to have SAGE papers published to increase transparency and public understanding, there were inevitable delays in publication and issues arose surrounding ownership of documents. The system evolved over time, which decreased delays and increased knowledge/understanding of pathways for publication.

7.23. Sir Patrick Vallance and Professor Sir Chris Whitty also had to work within the Government mechanisms to challenge the rules around the publication of SAGE advice and membership, which took time. I was aware of comments made by Independent SAGE and others who were questioning the membership of the SAGE committee. I continue to question the quality of media reporting when I have had my SAGE engagement posted on LinkedIn since 2014 and have had to declare this affiliation in my other public roles. My participation in SAGE was easy to find if anyone took the time to look.

7.24. Transparency regarding scientific advice is absolutely fundamental to future pandemic planning and pandemic response. The automatic reaction is often to restrict conversations that could inadvertently reveal areas of vulnerability and for that reason compromise national security. The decision to publish all SAGE material unless a strong case can be made against this, enabled many of us to step up to the task with confidence in light of the public-facing nature of our work

7.25. While this transparency did have a positive effect on the wider public, as they were able to engage with the reports that we were publishing, it also opened SAGE up to criticism by those who wanted to comment on parts of the advice without looking at the wider context (see paragraphs 4.20 to 4.45).

7.26. SAGE publications also create opportunities for healthy scientific debate and discussion. We should consider how to accommodate evidence that other academics want to bring to our outputs and how to manage that in a productive way. During the pandemic, we lacked an outlet whereby, if some individual or organisation had valuable information or a useful study, they could feed that into the system with ease.

7.27. Providing platforms for greater engagement with the public would also be useful. Additional explanations or question and answer sessions with the wider scientific community, and the public at large would aid with the overall response; encourage and enable more effective sharing of valuable information from and with other scientists and stakeholder groups, and make it easier to address concerns before they build momentum through social media.

7.28. Regarding the public trust aspect of transparency, I believe that a combination of forces including the media and Independent SAGE, among others, must accept that some of their actions undermined public trust in science and science advisory processes needlessly. While I have a great deal of respect for colleagues volunteering their time

to Independent SAGE, the similarity in name, alone, caused confusion for the public and created a needlessly difficult paradigm for the SAGE response.

7.29. I have been asked to comment on points from the fourth SAGE meeting on 4 February 2020 regarding a lack of data sharing hampering understanding of Coronavirus. From my recollection, the conversation held at the fourth SAGE meeting was predominately around data sharing agreements and processes {**BR/75 – INQ000051925** }.

7.30. Eventually, a shared folder was created for SPI-B, where relevant Government reports (primary surveys) from the Cabinet Office and other offices were being shared which I would use as the foundation of my updates to SAGE, as well as looking more broadly at information that was coming in from journals and other studies.

7.31. That being said however, an issue for me was that the reports in the shared folder were not always updated in a timely manner or without request. On other occasions we conducted work, only to find that another Government Department had already done a piece on that subject. This was a frustrating waste of voluntary time and resources.

7.32. One of the lessons that we have learned from this pandemic within SAGE, is that data sharing systems need to be in place prior to another emergency. I do believe that our systems improved throughout the pandemic. While at the time I generally had the data that I needed, I know that my colleagues, such as Professor James Rubin, pushed for significant improvements in data sharing.

"Following the Science"

7.33. The phrase "following the science" has been used since the start of the pandemic response, and I have been asked to express my views on it as well as on an Institute for Government finding that 'ministers' insistence that they were "following the science" was inaccurate and damaging {**BR/41 – INQ000062549 }.** Throughout the pandemic, Sir Patrick Vallance and Sir Chris Whitty would go directly from SAGE meetings into meetings with the ministers. The conversations we had in SAGE were often conveyed directly to the public during podium briefings within minutes of our conversation ending. The ministers were deeply dependent on the science early in the pandemic because they had little else to go on. I would say that this is the closest they came to "following the science".

7.34. I initially felt very hopeful for science and the role it could play in protecting and saving lives, as at the beginning following the science was the easiest thing for the Government to do in a moment of great uncertainty. While I was initially very hopeful, I have already mentioned that I struggled to connect the advice that we had given to aspects of the decisions being made (e.g. timings).

7.35. In an ideal world Ministers should have been able to speak about the diverse types of advice that they were bringing together, tell people why they were making decisions, acknowledge the trade-offs, and show that the decisions being made were evidence-based. Instead, it often seemed to appear as though SAGE was the only source of advice, however, I do not believe this to be correct.

7.36. SAGE protected its own space. Politics did not come into SAGE meetings. We discussed solutions and options to be considered and the effectiveness of these options. As far as SAGE was concerned the operational parts were not our business, for example, how testing was to be carried out. It would have been easy for SAGE advice to move into these policy spaces, but we worked hard to make sure that those lines were not blurred, and that our advice remained objective and independent.

7.37. Greater understanding of SAGE and Government decision-making processes could have avoided some confusion and negative media framing:

7.37.1. I recall that there was confusion among the media at one point as two high ranking Government officials (Dominic Cummings and Ben Warner) attended a SAGE meeting. A well-informed understanding of SAGE processes would not have led this to be framed as scandalous as Government representatives have from Government had a right to be in SAGE meetings as observers and enablers. They were not allowed to speak unless called upon by the Chairs (see paragraphs 2.35 to 2.36).

7.37.2. In SAGE meetings we were told that commissioning and science advisory processes created a safe place for policymaking. In short, the ministers needed to have confidence in the systems to ask any questions that they may have. One thing that the media seemed to be unaware of was that SAGE advice could not be released until ministers made a decision on the advice. This could take a prolonged period, sometimes months, to be decided, by which time the evidence had changed. When we would then publish the advice in accordance with our protocol, the initial advice sometimes appeared to be contrary to the decision that was ultimately taken. The media painted this as SAGE being

irritated whereas the reality was that SAGE provided the advice when it was requested and then carried on monitoring the situation and responding to new commissions. The timing of the release without clear understanding of the processes fuelled inaccurate media framings of a discord between SAGE and decision-makers.

7.38. SAGE should also be a safe place for science advisors to provide advice. We were occasionally put in an awkward position when information was leaked ahead of political decisions being made. This was never to my knowledge by SAGE or SAGE sub-group participants. We could not divulge that we knew Government had yet to decide, and that information from SAGE meetings was being leaked to the press. This undermined the notion of SAGE meetings being a protected space.

Consistency of Communication

7.39. I am informed that the Institute for Government has found the Government's communication of risk to be *'confusing…ministers have switched back and forth between alarm and reassurance, while failing to drive home key messages, such as the risk of gathering in indoor and poorly ventilated settings'* {**BR/42 – INQ000075385**}. Without detailed reference to a timeline of communications made throughout the pandemic response, it is difficult to point out specific examples of Government's communication of risk. However, overall, I would say that when there was greater uncertainty, the messaging about what people had to do was delivered with greater clarity. As I have already indicated however, when the rationale of the communication was generally sound, it would on occasion be accompanied by an arbitrary guidance (e.g., timeline) which detracted from its overall efficiency.

7.40. Many of our public conversations about NPIs focused on what is known as the "Swiss Cheese Model" which presupposes thinking of layers of protection - social distancing, wearing a mask, ventilation, and vaccination all amounting to such layers. Layers provided options. Rather than protection being guaranteed by any single "layer," the combined interventions offered protection. For example, if you were in a situation where there was unavoidably poor social distancing, ensuring good ventilation would be a step towards mitigating risk of transmission. I am not convinced that the nuance of this approach filtered through to members of the public, or to decision makers despite the extensive and impressive work of the EMG, who can elaborate further.

7.41. Additionally, I do not believe that on occasion ministers adequately communicated changes in approach as scientific understanding evolved.

Campaigns

7.42. I have been asked to comment on several of the campaigns introduced by the Government during the pandemic response.

7.43. I remember being unimpressed with the "Freedom Day" slogan. It had the potential to create a divide between those who wished to continue engaging in protective behaviours and those who did not. I am not sure what drove this slogan, or the motivation to have a specific day on which all restrictions would end. Economic considerations may have been behind it.

7.44. SPI-B advice, if sought, would have been to give more thought to this campaign. Our initial advice highlighted the importance of building in and removing NPIs in a logical manner {**BR/29 – INQ000074907**}. Additionally, we were in the process of preparing a paper exploring the dynamics of public willingness to engage with an approach whereby NPIs were introduced and removed periodically on a rolling basis. The initial results of this were encouraging and showed signs of positive engagement. We then discovered society was going to be completely reopened before we had the opportunity to provide our findings.

7.45. In respect of the Test and Trace strategy, within SPI-B, areas of focus were often split and allocated between the three chairs. Whilst I am aware of conversations around testing having taken place and I engaged with SPI-B and SAGE discussions and reports in this topic area, Professor James Rubin led on this front. Similarly, Professor Lucy Yardley had her specific areas of focus. I tended to focus primarily on children, security, celebrations and large events and I therefore cannot speak about this in a well-informed way as I was not heavily involved, and it would be remiss to express an opinion.

7.46. To my knowledge, SAGE and/or SPI-B were never consulted about the "Eat Out to Help Out" scheme.

7.47. At the time "Eat Out to Help Out" was introduced in around August 2020, from memory, we were worried that this approach had the potential to drive infection rates upwards, and to use up the 'wiggle room' that we had available for school openings and return

to work in September (see paragraph 5.47). The scheme was encouraging mixing with others, and if it involved mixing with alcohol, it would have been exceedingly difficult to avoid being in proximity with others, especially friends and family.

7.48. "Eat Out to Help Out" sent mixed messages and contradicted the types of protective behaviours that people should have been implementing to prevent a resurgence of infection even if restrictions were being eased.

7.49. In and around this time, there were conversations about a potential "circuit breaker." We were very worried. We spent a lot of time populating a table around whether there should be a circuit breaker {**BR/76 – INQ000281383**}. I recall that we were genuinely concerned about this scheme causing the infection rate to increase, which could result in shutting down schools and the re-introduction of a full lockdown.

7.50. In terms of whether the scheme increased the transmission of the virus, I am aware of academic research reports indicating that the scheme did increase infection rates {**BR/67 – INQ000281374**}.

Breach of Covid Rules

7.51. As was indicated previously (see paragraph 7.6) the wrong message is sent when leaders are caught or suspected of not adhering to their own policies which they are subjecting the public to, and this naturally had an impact on public trust.

7.52. I am aware that there was a body of research conducted on the subject of the reduction of public trust after alleged breaches of rules (e.g. {**BR/77 – INQ000281384**}), though I admit I have not had time to thoroughly delve into the subject. Aside from this I am aware that the public's confidence in Government strategy was shaken by breaches of protocols by those who were setting it. The Barnard Castle incident was damaging too.

8. Public Engagement

8.1. On considering the Inquiry's questions around increasing public engagement and working in partnership with communities on the ground in developing pandemic policy, my view is that we need to look at the local authority connection.

8.2. This kind of community engagement would have a day-to-day value far beyond emergency preparedness. We were too slow to engage with local communities during

the pandemic response. For example, the Community champions programme {**BR/61 – INQ000281367**}, while welcome, started later than it should have.

8.3. Public trust in the science was and remains high. I would reiterate my suggestion at paragraph 7.27 of having question and answer sessions with the public. Sir Chris Whitty and Sir Patrick Vallance played an essential role either side of the podium but there may be value in having them engage with the public without a political presence.

9. Lessons Learned

9.1. I have been asked to provide feedback, comment, and opinion on various aspects of the UK's pandemic response, and what lessons were and could have been learned to assist in strengthening pandemic preparedness. I will follow this with some detail on the challenges experienced as a SAGE participant during the pandemic response, which I hope will be of future assistance.

9.2. My opinion has been sought on what can be learned from the different international approaches to the incorporation of behavioural science into epidemiological modelling. In relation to this:

9.2.1. I regret that I cannot recall specific models that we were looking at during the pandemic in relation to different international approaches and accordingly do not feel I would be best-placed to comment on the lessons that can be learned.

9.2.2. What did stand out to me, as it was a particular focus of mine, were those countries that kept schools open throughout the pandemic, especially those that did not change the way their schools looked and operated as much as we did. There are significant benefits to children being able to access school in terms of building individual resilience. Considering and testing ways in which future responses can reduce risk to children and staff in educational settings (e.g., ventilation; staggering of classes, etc.) will better enable us to protect this important societal and resilience function in the future.

9.2.3. Collaboration between the sub-groups and disciplines should be the norm. We engaged with the SAGE-related epidemiological modellers incredibly well. We were able to ask about the assumptions underpinning models, we attempted to help bring data to these assumptions if there were high levels of uncertainty,

and we challenged modelling assumptions when we had evidence to do so. SPI-M colleagues were receptive to this, and actively encouraged SPI-B participation in modelling meetings (i.e., I became a member of the Isaac Newton Institute (INI) Modelling working group on Covid-19 and higher education; Friends of Juniper, and presented at modelling conferences). They, in turn, helped us understand the evidence underpinning NPIs, and the potential impact of different options on infection rates. We recognise the importance of these connections across the sub-groups. In fact, it was notable that the end of many modelling presentations could be summed up as "it is really all down to behaviour". The challenge came in identifying when and where behavioural science advice was being used holistically with the modelling advice, or when it was seen as a separate, detached stream of advice. We have the opportunity to address this challenge upstream of SAGE meetings, and to create clear processes of engagement that take us beyond the enabling environment created by temporary task and finish groups.

9.3. I have been asked to comment on how effective I consider the structures of SAGE and its sub-groups were in informing decision making.

9.4. As per paragraph 2.2 the role and remit of SAGE is to provide independent scientific advice to support decision-making in the COBR in the event of a national emergency. As discussed elsewhere in this statement a commission to provide advice would be received. On completion we would submit advice to the commissioning group where it was then up to the individuals or groups making policy decisions as to whether and to what extent they chose to listen to or implement that advice.

9.5. In terms of its role and remit, SAGE was incredibly effective, and I am aware that internationally the SAGE process was, and remains, admired amongst many of those working in this sector outside of the UK.

9.6. The creation of the necessary structures and resources in and around SAGE to facilitate its effective working was one of the most impressive evolutions I have experienced in my career to date. I do not think there has ever been a response of that nature across the science world in Government previously.

9.7. As indicated in paragraph 3.3 there was a clear learning curve which took place in relation to the way in which commissions were brought to and understood by SAGE. Accordingly, as the pandemic progressed, SAGE participants and members of the Secretariat individually and collectively became highly effective at providing the types

of information urgently needed by decision makers. However, it remained outside of SAGE's remit to venture into policy making or communications.

9.8. The evolution of SAGE and SAGE sub-group processes are a testament to the critical, sense-checking approach that we applied to our processes. As time progressed, the systems and structures around SAGE changed to enable SAGE to continue to provide advice as required. Although we felt and saw the improvement of SAGE's role and output, we remained self-aware and continued to learn lessons throughout. For example, there were several SAGE reflection sessions including an external individual were brought in to review the work and workings of SAGE. In those sessions we reflected on what was working well and those areas where change was required. Changes which were made within SAGE were as a direct result of these reflection sessions and the outcomes resulted in lessons learned, not only for our response at the time, but for future responses. For example, our conversations around the difficulties in obtaining data led to a view that it will be beneficial to have existing data sharing agreements in place to inform future responses. Additionally, changes to the system that allowed SAGE to publish advice should be protected. Beyond this, our reflection sessions enabled us to identify a number of challenges and, in some instances, develop solutions to ensure that any future SAGE responses should be even more robust.

9.9. As SAGE did not venture into policy making, I am unable to comment on how well-informed or otherwise decision-making was. I did not participate in, and have had not been exposed to the process whereby SAGE outputs were delivered to decision-makers. I cannot speak to what other advice or analysis fed into the decision-making process besides SAGE and its sub-groups. As I have said elsewhere (see paragraph 7.3), often my only real awareness of decision-making was derived from that information that came out of the Government press briefings.

9.10. I would agree with the finding of the Institute for Government that SAGE was not designed for the semi-permanent role that it had for the extended period of time, and without relief from other duties/full-time jobs for the independent science advisors. Please note that this agreement is due to the cognitive and physical demands of delivering evidence into an emergency response system whilst simultaneously delivering our other full-time roles during a pandemic. As per the definition of SAGE provided in paragraph 2.2. SAGE is convened to provide independent scientific advice to support decision-making in the event of a national emergency. In my view, the advice of SAGE assisted in filling potential gaps in policy advice, thereby granting time

to the Government to build up its capabilities. To build capabilities however there needs to be an understanding of what the capability needs are. That would allow the science-policy advisory mechanisms to move to a long-term or semi-permanent footing rapidly.

9.11. In spite of the cognitive and physical demands noted above, it was my experience that SAGE participants stood up in an extraordinary way and were visibly galvanised by a spirit of public service. We were cognisant of the fact that, as recipients of public funding for our work, we had a duty to help ensure our work best served the public interest. GO-Science wrapped the structural, procedural, and well-being support that we needed around us to allow us to focus on our research and advice. They were fiercely protective of our wellbeing and our independence. I cannot overstate the importance of the SAGE, SPI-B, SPI-M, and EMG Secretariats. Whilst it is true that we were not designed for the long-term role we had, we nevertheless fulfilled it well.

9.12. I would suggest that similar to SPI-M, the SPI-B and EMG sub-groups should each be made into a permanent independent science advisory group. This would allow participants to accumulate experience and confidence in articulating their research in a science policy-advisory setting, and enable the inclusion of early career researchers who can engage with and shape the processes that they will lead and inform during future events. It would also signal clearly the value placed on the independent science advice produced by these systems. Saying that behavioural science advice is important, but recognising this is different to formally committing to sustainable structures that enable behavioural and social scientists delivering advice, and the Secretariat members supporting the advisory processes to develop advisory skills, experience, and systems knowledge in peacetime as well as during emergency response.

9.13. I also think further that thought could be given to the structure of SAGE meetings. Professor James Rubin and I were often presenting SPI-B's findings towards the end of SAGE meetings, meaning we were inevitably rushed. There was perhaps an excessive emphasis on modelling, which was clearly important as a fundamental tool for understanding, but at times risked diminishing time to engage with other key areas. Ensuring an appropriate balance between skills and voices is something that could be thought about in advance of a future emergency.

9.14. It would also be important to retain the improved ways of working we arrived at during the pandemic response, including the improvements that were made to the commissioning process that I mentioned previously (see paragraphs 3.3 to 3.8) and in obtaining necessary data (see paragraph 9.8).

9.15. I would encourage the creation of a role of Chief Behavioural and Social Science Officer. Sir Patrick Vallance and Sir Chris Whitty fulfilled their roles exceptionally well. A third, equally powerful voice that can speak specifically to the behavioural and social sciences, who can set standards, issue challenges, and who can advocate for quality of approaches and evidence within and across Government would only serve to increase the UK Government capability and wider science ecosystem capability in this space. This, in turn, will enhance our ability to prepare for, respond to, and recover from extreme events.

9.16. One of the issues created by running SAGE long-term is the personal strain it placed on its individual members. Participating in SAGE was a highly demanding process, which was exhausting when balanced with, for example, the existing demands associated with conducting research, running university departments and faculties, and supporting undergraduate and postgraduate students. Funding was eventually made available to effectively buy us out of our university posts, but this was around a year after the pandemic response began, at which point it was too late to gain approval for, advertise, hire, and appoint replacement posts. In the future, this should be rolled out much faster when and if it becomes apparent that science policy advice is likely to be required on an ongoing basis. It may be possible to create agreements with Higher Education Institutes upstream of an event to better enable this in the future.

9.17. The wellbeing and security sessions that were offered by GO-Science were also extremely useful and something that should be continued and made available at the outset of the next deployment of SAGE.

9.18. In respect to looking abroad for alternative models for SAGE, there may be value in doing so, however I am not familiar with any suitable alternative models. It is worth noting that other countries around the world are looking at the UK's systematic approaches to risk and scientific advisory models with interest. An example of similar UK leadership can be seen in the European Union's Counter Terror Strategy {**BR/78 – INQ000281385**}, which was founded upon the UK CONTEST approach {**BR/79 – INQ000281386**}.

9.19. One alternative approach to consider is that of the Scottish Government, which involves more direct participation by policymakers. That said, I am not convinced this is a viable and/or practical option for the UK Government considering the vastness of Whitehall and the additional responsibilities held by the UK Government in contrast to the devolved administrations.

9.20. I have witnessed a similar sense of nimbleness in translating evidence into practice when engaging with the Scottish Government around their National Security Risk Assessment process indicates that the scale of their governance structures and responsibilities makes translation of independent science advice faster and easier to identify. While my experience on TAG Wales did not involve engagement with policymakers, their size and shape also enabled them to demonstrate a more nimble and direct input and translation system.

9.21. On reflection, SAGE benefited from the evidence and advice flowing from the Devolved Governments. It was enough to have their representatives or delegates of policymakers present. Indeed, I personally appreciated having a gap or buffer between ourselves and policymakers.

9.22. We tried to invite challenge by publicising our evidence and findings, and there is perhaps scope to embed a challenge function within the SAGE system itself. I do not think this would have been feasible for Covid-19 however, given the number of scientific experts and advisors who were drawn in and accordingly the substantial variety of views already around the table. As a further word of caution, Independent SAGE carried out a challenge function, but this was not necessarily helpful. It was not clear who they were answerable to, and they blurred the lines between science advice and advocacy. Further the lines between Independent SAGE and SAGE itself became unhelpfully blurred with some participants sitting on both SAGE and Independent SAGE.

9.23. I have been asked whether the UK's science policy advisory mechanisms should be re-evaluated, but I would point out that these are constantly being evaluated by GO-Science, and many other science advisory mechanisms across Government.

9.24. I have already demonstrated throughout my statement that SAGE grew and evolved throughout its deployment during the Covid-19 response.

9.25. We have more to do to better enable our cross-disciplinary planning, response, and recovery capabilities for future events.

9.25.1. The 2011 Blackett Review of High Impact Low Probability Risks found that "*For many high impact risks we do not understand what the public actually expects in a situation, or how tolerant they may be of 'abnormal' risks during a crisis*" (Government Office for Science, 2011, p. 24) {**BR/80 – INQ000281387**}.

9.25.2. Eight years later, the Science Capability Review identified areas where there is a need for more capability in future areas of policy that cut across Government, with behavioural science, data science, and health issues, demographic issues, and the environment at the top of the list (p. 29) {**BR/81 – INQ000281388**}. Behavioural science uptake and coverage was noted as being strong, but patchy.

9.26. The science advisory processes during future emergencies would be more effective with:

9.26.1. Improved policy-level understanding of robust, well-tested theory and methodological procedures underpinning the behavioral and social sciences.

9.26.2. Adoption of a whole-system approaches recognising behavioural and social science as relevant throughout the lifecycle of preparedness, response, and recovery.

9.26.3. Regular (not just emergency) engagement with practitioners and policy-makers to understand their challenges.

9.26.4. Development of shared understandings, approaches, and standards across the independent science advice systems and professions.

9.26.5. Transparency around evidence and evidence-based systems informing our planning, response, and recover is key to enabling effective scientific debate and building trust.

9.27. Participation in SAGE throughout the pandemic response took a toll on its members who were still required to fulfil their personal and professional commitments while participating in SAGE without compensation. Whilst debates take place around the impact of paying experts for advice and the impact of payment on independent advice, we cannot ignore the importance of prioritising Government funding to institutions to 'buy out' SAGE participants to guarantee institutional support as expanded on in paragraph 3.25 during the next event. Aside from emergencies, this is also something that should be considered on an ongoing basis where scientists such as myself engage regularly with policy advisory mechanisms. This could be carried out via the UK Research Institute or through secondments to formalise and build the appropriate job descriptions, structures, support, and training around these independent science advice roles.

9.28. Finally, feedback from decision makers should also be formally integrated into the system. Additional insights into whether and how their advice is applied, and, where it has not been applied should be provided with reasons to help independent science advisors develop impactful advice in future. This, in turn, will build in an additional opportunity to consider and reflect upon options and trade-offs which, in turn, will make it easier to communicate when sharing decisions with members of the public.

Challenges

9.29. I was particularly impressed at the atmosphere and culture of respect that existed within SAGE as a group, which was working in times of intense pressure and uncertainty and trying to combine many different pieces of information. Sir Patrick Vallance and Sir Chris Whitty set the tone. I cannot envisage how SAGE would function as effectively without input and leadership of this nature.

9.30. As a SAGE participant I understood fully what was expected of me, and I felt my SAGE colleagues were of a similar opinion. In addition to our role in identifying, analysing, and translating evidence, we were encouraged and very much expected to state when we did not know the answer to questions and when we were uncomfortable with and / or disagreed with a particular position. In my opinion, if we were not comfortable in sharing those views, we should not have been participating.

9.31. My experience of SAGE has not been pleasant in terms of the media focus, especially social media. Additionally, I have seen other colleagues suffer a significant abuse on social media. In my personal experience, the negative media experience was not due to being a SAGE participant per se. Rather, I believe that the wider media framing of SAGE being 'at odds' with policymakers had a negative impact on the effectiveness of the science advice. This framing was fuelled by misunderstandings of the science advice process (see paragraphs 7.33 to 7.38). Additionally, the inconsistent use of, or lack of explanations of decisions around the sequencing and timing of NPIs further also enabled the media to frame independent science advisors and policy-makers as 'at odds'. Future briefings to the media must clarify the processes through which the advice is commissioned and provided to ensure that they are able to understand and communicate this clearly, and to maintain the safe space for decision-makers to ask questions, and for independent science advisors to advise.

9.32. I also believe that we can make the provision of independent behavioural and social science advice more effective, and more impactful in Government science advisory roles. The impact and effectiveness of behavioural and social science (SPI-B in this instance) could be further enhanced if science advisors in this area benefited from and rose to the challenges set by a science leader with the vision, understanding, advocacy, and leadership skills of Sir Patrick Vallance and Sir Chris Whitty, but from a leader with a behavioural and/or social science background (see Paragraph 9.15). It is my belief that the lack of a clear and consistent, eminent voice setting standards, ensuring that our methods, theories, and advice are understood, and identifying opportunities for public engagement, is detrimental to SPI-B. For example, a Government Chief Behavioural and Social Scientist would be well-placed to address public and media misconceptions of behavioural and social science in a similar manner to Sir Patrick Valance's 'It's not true Covid-19 modellers look only at worst case outcomes' article **{BR/69 – INQ000064538 }**.

9.33. The level of scientific collaboration during the pandemic was extraordinary. I have a long history of collaborative research, but the collaboration required to enable the SAGE and SAGE sub-group response was on a level I have never previously experienced. In spite of this, there remains room for improvement. Training on science advisory roles, processes and systems, further refinements to commissioning processes, and greater clarity over the rules of media engagement are fairly low-hanging fruit, while we set our sights on the more demanding task of creating shared understandings, approaches, and standards within and across disciplines, as well as within and across the UK Government science advisory and evidence eco-system.

Statement of Truth

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Signed: **Personal Data**

Dated: 6 October 2023

Annex A

1. Background and Experience:

1.1. As requested, and in addition to the information provided in the previous questionnaire response dated 1 December 2022, I set out below my academic and qualifications background, and my expertise.

2. Qualifications:

2.1. The following table outlines my qualification and professional accreditation:

Table 1 – Qualification and professional accreditation

1998	BA Psychology (Cum Laude), Rollings College, Winter Park, Florida (USA)
01/2003	PhD in Psychology, Royal Holloway University
03/2011	Post-graduate Certificate of Academic Practice (PGCAP), King's College London (KCL)
04/2012	Fellow, Higher Education Authority (HEA)

3. Career History:

3.1. The following table outlines my selected career history:

Table 2 – Career History

Professional experience:	
08/2007 – 08/2011	Lecturer in Risk and Terror, Department of Geography/War Studies, KCL
09/2011 – 02/2013	Senior Lecturer in Risk and Terror, Department of War Studies, KCL
02/2014 – 08/2018	Reader in Risk and Terror, Department of War Studies, KCL

09/2018 – Present	Professor of Behavioural Science and Security, Dept. of War Studies, KCL
09/2019 – 08/2021	Deputy Head of the Department of War Studies, KCL
05/2021 – 06/2022	Academic Lead for the KCL Safe Campus Opening Team (SCOT) (Operational)
09/2022 – Present	Vice Dean (People & Planning) in the Faculty of Social Science and Public Policy (SSPP), KCL
Advisory Roles:	
2013 – Present	UK Cabinet Office Communities Prepared National Group (CPNG)
2013 – Present	Chair: UK Cabinet Office Behavioural Science Expert Group (BSEG)
2014 – Present	UK Cabinet Office Infrastructure Security and Resilience Industry Forum (ISRIF)
2018	National Academies of Sciences, Engineering, and Medicine Workshop Committee on Epidemiological Surveillance following a Nuclear or Radiological Incident (USA)
2019 – Present	Chair: Home Office Science Advisory Council (HOSAC) (member since 2017)
2020 – Present	National Preparedness Commission
2020 – 2022	International Olympic Committee Independent Expert Panel (IEP)
2020 – Present	Defra Recovery Science Advisory Group (RSAG)
2020 – Present	The Prime Minister's Council for Science and Technology (CST)

2020 – Present	Co-chair of the Scientific Advisory Group for Emergencies (SAGE) Independent Scientific Pandemic Influenza Group on Behaviours (SPI-B) during the COVID-19 pandemic
2020 – Present	SAGE participant throughout COVID-19 (SAGE participant since 2014)
2021 – 2022	Department for Education (DfE)/Department for Health and Social Care (DHSC)/UK Covid Measures Higher Education Expert Group (COVID-19)
2021 – Present	Digital Security by Design Social Science Hub+ (Discribe Hub) Advisory Board
2021 – Present	PHE (now UK Health Security Agency (UKHSA)) Behavioural Science Insights Unit (BSIU) External Advisory Group
2021	Swedish Research Council Interdisciplinary Expert Panel on Society Security
2021 – Present	The Welsh Government Technical Advisory Group (TAG) (COVID-19)
2021 – Present	The ONS Covid Infection Survey Advisory Board Sub-group (strategic forward look)

4. Experience:

4.1. I am a Professor of Behavioural Science and Security and Vice-Dean (People & Planning) in the Faculty of Social Science and Public Policy (SSPP) at KCL.

4.2. I am a social psychologist specialising in understanding how attitudes and beliefs are formed, and how these attitudes and beliefs inform human behaviour. I use theories of risk perception, risk communication, and health psychology to investigate the behavioural science aspects of risks and threats traditionally addressed with physical, technological, or medical science approaches. My expertise in understanding how public and critical national infrastructure (CNI) organisations understand, perceive, communicate about, prepare for, respond to, and recover from low-likelihood, high-

impact extreme events has developed across over 25 years of research, teaching, and independent science advisory roles.

4.3. My career is built upon a commitment to undertake high quality, empirically driven, translational research to guide and inform organisations in their planning, response, and recovery efforts. My collaborative research into public and practitioner understandings and perceptions of, and behavioural responses to extreme events has generated evidence across a broad range of risks and threats.

4.4. My work examining public understanding, perceptions of, and behavioural responses to extreme events:

4.4.1. shows that the public are largely resilient to extreme events;

4.4.2. challenges the long-held misconception of the panic prone public;

4.4.3. identifies and emphasises the importance of planning for a range of behavioural responses (e.g., under-response to over-response) during a crisis; and

4.4.4. demonstrates the importance of evidence-based public communication to inform protective health behaviours before, during, and after an event.

4.5. For example, my initial collaborative work in this space was funded by the UK Home Office. We used this study to create and test theories and methodologies to engage UK members of the public in discussing low-likelihood, high-impact events such as chemical, biological, radiological, and nuclear (CBRN) terrorism. This project gave us the opportunity to develop evidence-based risk communication via focus groups and surveys with members of the UK public. It also enabled us to demonstrate the risk communication could be developed in collaboration with members of the public, and to challenge government concerns about causing panic if they communicate about low-likelihood, high-impact events. Publications included:

4.5.1. Rogers, M. B., Amlôt, R. & Rubin, J. (2013). *Investigating the impact of communication materials on public responses to a radiological dispersal device (RDD) attack. Biosecurity and Bioterrorism-Biodefense Strategy Practice and Science*, 11(1), 49-58.

4.5.2. Acton, J., Rogers, M. B. & Zimmerman, P. (2007). *Beyond the dirty bomb: Re-thinking radiological terror. SURVIVAL*, 49(3), 151-168.

4.5.3. Rogers, M. B., Amlôt, R., Rubin, G. J., Wessely, S. & Krieger, K. (2007). *Mediating the social and psychological impacts of terrorist attacks: The role of risk perception and risk communication. International Review of Psychiatry*, 19(3), 279-288.

4.5.4. Rubin, G. J., Amlôt, R., Rogers, M. B., Hall, I., Leach, S., Simpson, J., & Wessely, S. (2010). *Perceptions and Reactions with Regard to Pneumonic Plague. Emerging Infectious Diseases*, 16(1), 120 – 122.

4.6. We extended this work with European partners to enable cross-cultural comparisons of public understandings and perceptions of, trusted sources, and intended behavioural responses to and communications (e.g., shelter in place; attend an assessment centre) about CBRN events. Specifically, our Public Information Requirements After Terrorist Events (PIRATE) project provided additional opportunities to test theories and methodologies for engaging UK members of the public in discussing low-likelihood, high-impact events such CBRN terrorism. PIRATE project publications included:

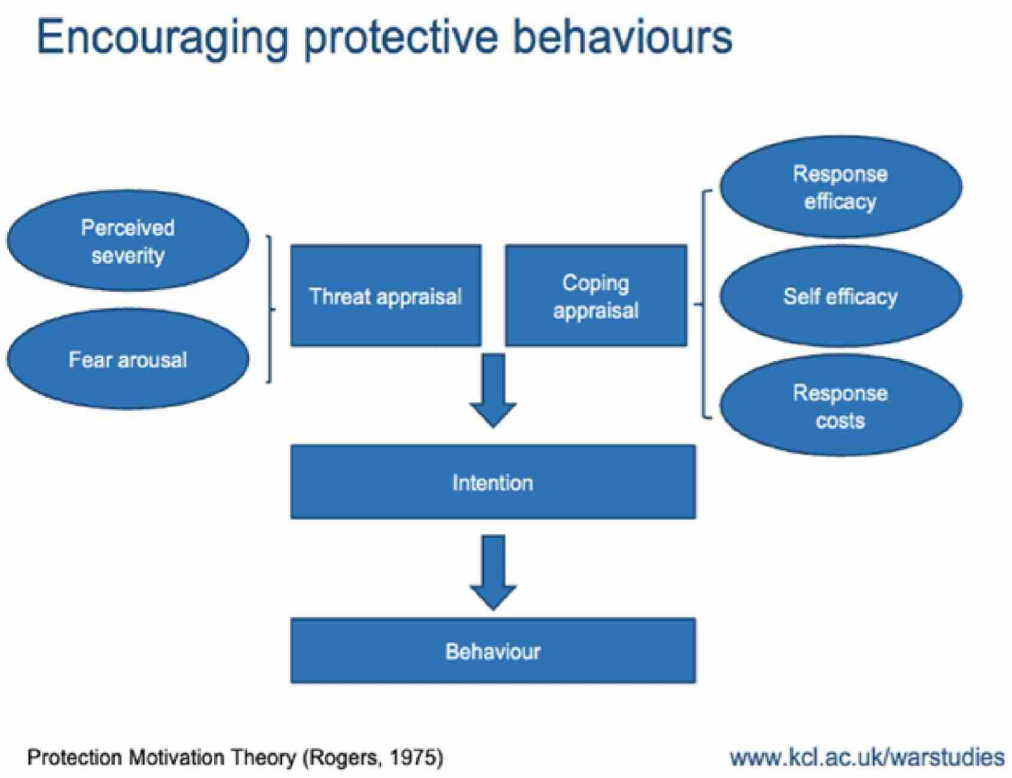
4.6.1. Pearce, J., Rubin, G. J., Selke, P., Amlôt, R., Mowbray, F. & Rogers, M. B. (2013). *Communicating with the public following radiological terrorism: Results from a series of focus groups and national surveys in Britain and Germany*. *Prehospital and Disaster Medicine*, 28(2), 1-10.

4.6.2. Rogers, M. B. & Pearce, J. M. (2013). *Risk communication, risk perception and behaviour as foundations of effective national security practices*. In B. Akhgar, & S. Yates (Eds.), Strategic intelligence management (pp. 66-74). Oxford: Elsevier Butterworth-Heinemann.

4.7. Our Chemical Incident Emergencies (CIE) Toolkit project extended this work, yet again {**BR/82 – INQ000281389** }. We responded to repeated finding that, when it comes to contamination, the idea of the agent (i.e., belief of exposure to the agent) has the potential to be as harmful as the agent, itself. We also noted a lack of public engagement in this space, with the majority of information designed for military or health settings in spite of a recognised need for public communication. We conducted focus groups with emergency response organisations in the UK and Poland to identify their planning, response, and recovery processes, as well as their understandings, expectations, and approaches to public communications and public responses to chemical incidents. We used these findings to design an online survey with members of the public in the UK and Poland (N = 1,200) where we explored the impact and

uptake of health care responder procedures and messages (e.g., shelter in place guidance). Our project methods and findings can be seen in our *Communicating public health advice after a chemical spill: Results from national surveys in the United Kingdom and Poland* journal article. This study enabled us to test the role of the long-established Protection Motivation Theory (PMT) in shaping protective health behaviours. PMT is explained more fully in paragraphs 4.31 to 4.39 of my statement.

Figure 1



4.8. We explain PMT on Page 66 of our Pearce et al, 2013 article:

> *A potentially useful theoretical framework for understanding public responses to official advice during a public health incident is protection motivation theory (PMT). PMT was originally developed as a mode of preventative health behavior to examine the effects of fear appeals on persuasion, but it can be applied to any threat for which there is an effective recommended response. According to PMT, the extent to which individuals are motivated to protect themselves from a health threat is influenced by two key factors: threat appraisal and coping appraisal. Threat appraisal involves assessing the*

severity of the threat and the personal risk involved, as well as the emotional response associated with the threat (fear arousal). Coping appraisal consists of response efficacy, self-efficacy, and response costs. Response efficacy is the belief that carrying out recommendations will be effective. Self-efficacy is the extent to which individuals believe that they are capable of carrying out the recommendations. Response costs are the perceived costs of carrying out the recommendations. According to PMT, protective behaviors are more likely to be adopted when there are high levels of threat appraisal, when response efficacy and self-efficacy are also high, and when response costs are low. Coping appraisal is typically seen as having a greater influence on behavioural intentions than threat appraisal.

4.9. Our CIE Toolkit project tested the strength of association of threat and coping appraisals, anxiety, and trust in authorities with public intention to comply with official advice to stay in place and shelter following a hypothetical chemical spill. Our data identified some ways that communication strategies can be enhanced. In particular, we provided further evidence that coping appraisals are a key predictor of intentions and behaviour. Threat was associated with noncompliant behaviour in our scenarios. We argued that using threat-based messages may be counterproductive. As such, greater emphasis should be given to addressing coping appraisals in crisis communications. Finally, trust continued to be an important factor in determining likelihood of compliance. We argued that it is imperative that credible sources are used to communicate official guidance during a major public health incident.

4.10. Additionally, the European Commission (EC) funded Preparedness and Resilience against CBRN Terrorism using Integrated Concepts and Equipment (PRACTICE) {**BR/83 – INQ000281390**} (WP8 Lead: Human and Societal Factors) project enabled us to extend this work to include additional European partners, and to include members of the public in creating and testing the communications that may be issued during an event requiring decontamination. The evidence generated during PRACTICE led to the design of evidence-based user guides to help emergency responders and planners understand public information needs during CBRN events {**BR/84 – INQ000281391**}, and to help explain CBRN processes, procedures, and effectiveness to members of the public {**BR/85 – INQ000281392**}. The PRACTICE project also led to the following peer-reviewed publications:

4.10.1. Krieger, K., Amlôt, R. & Rogers, M. B. (2014). *Understanding public responses to chemical, biological, radiological and nuclear incidents - Driving factors, emerging themes and research gaps. Environment International*, 72, 66-74.

4.10.2. Rogers, M. B. & Pearce, J. M. (2016). *The Psychology of Crisis Communication.* In M. Löffelholz, A. Schwarz, & M. W. Seeger (Eds.), The Handbook of International Crisis Communication Research (pp.34-44). New Jersey: Wiley Blackwell.

4.11. We extended this work further to include other risks and threats relevant to protecting crowded places {**BR/86 – INQ000281393**} (i.e., Run, Hide, Tell; See It, Say It, Sorted; Run, Hide, Fight) through projects such as the EU Preventing, Interdicting and Mitigating Extremist Events (PRIME):

4.11.1. Defending against lone actor extremism PRIME project (WP8 Lead: Communication Measures Requirements) {**BR/87 – INQ000281394**}. Peer-reviewed outputs include:

4.11.1.1. Lindekilde, L., Pearce, J., Parker, D. & Rogers, M. B. (2021). *"Run, Hide, Tell" or "Run, Hide, Fight"? The impact of diverse public guidance about marauding terrorist firearms attacks on behavioural intentions during a scenario-based experiment in the United Kingdom and Denmark. International Journal of Disaster Risk Reduction*, 60, 1-9.

4.11.1.2. Pearce, J. M., Lindekilde, L., Parker, D. J., & Rogers, M. B. (2019). *Communicating with the public about marauding terrorist firearms attacks: Results from a survey experiment on factors influencing intention to 'Run, Hide, Tell' in the UK and Denmark.* 20th March 2019. *Risk Analysis*, 39(8), 1675-1694.

4.11.1.3. Pearce, M., Parker, D., Lindekilde, L., Bouhana, N., and Rogers, M. B. (2019). *Encouraging public reporting of suspicious behaviour on rail networks. Policing and Society: An International Journal of Research and Policy*.

4.11.1.4. Parker, D., Pearce, J. M., Lindekilde, L. & Rogers, M. B. (2018). *Press coverage of lone-actor terrorism in the UK and Denmark: Shaping the reactions of the public, affected communities and copycat attackers. Critical Studies in Terrorism*, 110-131.

4.11.1.5. Parker, D., Pearce, J. M., Lindekilde, L. & Rogers, M. B. (2017). *Challenges for effective counterterrorism communication: Practitioner insights and policy implications for preventing radicalization, disrupting attack planning, and mitigating terrorist attacks. Studies in Conflict and Terrorism*, 264-291.

4.11.1.6. PhD work with a student: Aplin, D. and Rogers, M. B. (2019). *'Alert not alarm': The UK experience of public counter-terrorism awareness and training with explicit reference to Project Argus. Police Journal: Theory, Practice and Principles*, 2020, Vol. 93(3) 167–182.

4.11.2. CNI resilience with a focus on staff behaviour during low-likelihood, high-impact events (i.e., pneumonic plague scenario through Willing and Able: Building a Crisis Resilient Workforce) {**BR/88 – INQ000040287**}.

4.12. My research has also focussed on community resilience, risk communication with vulnerable populations, and understanding the wider impacts of extreme events (e.g., secondary stressors), as demonstrated by my research across a range of risks including CBRN, flooding, widespread power outages, and more. I was active in researching vulnerable populations, public delivery of first aid, and wider impacts (secondary stressors) prior to and during the Covid-19 response. This is demonstrated by such publications as:

4.12.1. Lock, S., Rubin, G. J., Murray, V., Rogers, M. B., Amlôt, R., & Williams, R. (2012). *Secondary Stressors and Extreme Events and Disasters: A Systematic Review of Primary Research from 2010-2011. PL o S Currents: Disasters*, 4, 1-19.

4.12.2. Patel, S., Rogers, M. B., Amlôt, R., & Rubin, G. J. (2017). *What Do We Mean by 'Community Resilience'? A Systematic Literature Review of How It Is Defined in the Literature. PLOS Currents: Disasters*, 9, 1-36.

4.12.3. McClelland, E. A., Amlôt, R., Rogers, M. B., Rubin, G. J., Tesh, J., & Pearce, J. M. (2016). *Psychological and Physical Impacts of Extreme Events on Older Adults: Implications for Communications.* Disaster Medicine and Public Health Preparedness, 11(1), 127-134.

4.12.4. Heard, C.L., Pearce, J. M. & Rogers, M. B. (2019). *Mapping the public first-aid training landscape: Uptake, knowledge, confidence and willingness to deliver*

first aid in disasters and emergencies – A Scoping Review. Disasters, 44 (1), 205-228.

4.12.5. Bonell, C., Melendez-Torres, G. J., Viner, R., Rogers, M. B., Whitworth, M., Rutter, H., Rubin, J., and Patton, G. (2020). *An evidence-based theory of change for reducing SARS-CoV-2 transmission in reopened schools*. Health and Place, 64, 1-6.

4.12.6. Rubin, G. J. and Rogers, M. B. (2019). *Behavioural and psychological responses of the public during a major power outage: A literature review*. International Journal of Disaster Reduction, 38, 1-13.

4.13. I am also the Preparedness workstream lead for the National Institute of Health Research (NIHR) Health Protection Research Unit (HPRU) for Emergency Preparedness and Response where several of our projects focus on the impact of extreme events on vulnerable populations (i.e., older adults; children and schools {**BR/89 – INQ000281396**, **BR/90 – INQ000281397**, **BR/91 – INQ000281398**, **BR/92 – INQ000281399**}). The Bonell et al article referred to in paragraph 4.12.5 above was written via my role in the HPRU.

4.14. My collective body of work includes cross-cultural comparisons (i.e., PRACTICE, CIE Toolkit, PIRATE, PRIME). Results from my collaborative studies encourage government and industry organisations to engage in proactive, transparent, evidence-based risk communication (i.e., CBRN publications from PIRATE, CIE Toolkit; book chapters about risk communication, the PRACTICE public and practitioner-facing user guides, and more). My collaborative work adds support to the body of evidence challenging the long-held misconception of the panic prone public and provides insights into communication about protective health behaviour interventions before, during, and after extreme events. My colleagues and I highlight the need to take account of perceptions about the event, the efficacy of recommended behaviours, the ease of recommended behaviours, the cost of recommended behaviours, and those who are communicating about protective health behaviours (i.e., trust). We also argue that effective health communication must provide reassurance but not at the cost of detailed, actionable guidance; provide guidance via multiple modes; be explicit about protective behaviours and behaviours to avoid; and address perceived response costs associated with following advice.

4.15. My work is impactful (see e.g. REF 2021 *Impact Case Study: Incorporating Behavioural Science into Policy Making, Planning and Response for Emergencies*

BR/xx and *Transforming policy making, planning and response for emergencies* (4 May 2022) {**BR/93 – INQ000281400**, **BR/94 – INQ000281401**}. Evidence has informed communication campaigns {**BR/86 – INQ000281393**}, enhanced counter-terror (CT) training programmes (i.e., SERVATOR), improved the understanding of public impacts across the National Security Risk Assessment (NSRA) {**BR/95 – INQ000102946**}, underpinned development of new NSRA public impact scales, and led to evidence-based public communication plans for NSRA risks and threats (see paragraph 4.5).

4.16. In respect to teaching, I co-designed and co-directed the MA in Terrorism, Security, and Society (2009–2018); the MA in National Security Studies (2022–ongoing); MA modules including Responding to Terrorism (2012–2018); and BA modules including Disasters and Extreme Events (2019–2021). I contribute to many other courses, including lectures on research methods, community, and organisational resilience, and more. I have also designed and delivered continued professional development training courses for several national and international government organisations and departments over the years, as well as contributing to pre-existing programmes organised by other academic colleagues (see paragraph 4.9 for example).

4.17. My independent science advisory council (SAC) roles have given me significant insight into government planning and response for a broad range of risks and threats. For example, I have chaired the Cabinet Office BSEG for the NSRA since 2013. I was asked to establish this group as the first independent group invited to engage with, score, and inform the then separate National Risk Assessment (NRA) and NSRA processes. This enabled us to explore the evidence underpinning government thinking about public impacts and responses to extreme events. Our feedback changed the ways in which public responses and capabilities were represented in the scoring process, informed the development of new public impact measures, and transformed the process into a dialogue with the risk owners. As a result, 11 independent expert groups have been established. The 2023 National Risk Register (NRR) notes the role of expert challenge and indicates that the groups cover '*individual risk themes (for example, cyber, chemical, biological, radiological or nuclear risks), along with the calculated impacts of different risks (for example, impacts on essential services or the environment) and a group to look specifically at the disproportionate impacts of the risk scenarios on vulnerable individuals and groups*' (Page 13) {**BR/96 – INQ000269540**}.

4.18. We also made the case that members of the public must be given additional resources to learn more/obtain more information if the government is making them aware of a

risk. As a result, we were able to co-author the preparedness section and initial inclusion of where to go for more information in the 'Useful Information and Advice' section of *Risk Summaries* during the 2020 iteration of the NRR. I also advise the Scottish Government on their NSRA processes and scenarios.

4.19. I have also been a member of HOSAC since 2017 {**BR/97 – INQ000281404**}. I became Chair of HOSAC through a competitive process in 2019. HOSAC provides the Home Office Chief Scientific Advisor (CSA) with independent advice on maximising the quality of the science and the research that informs strategic delivery and policy development. Since taking on the role, I have led on a restructure of HOSAC designed to create clarity around our purpose, ways of working, expectations of members, TORs, commissioning pathways, engagement activities, and membership composition with a focus on diversity of skills, backgrounds, and career stages. We are the first government SAC to adapt our recruitment processes to give greater weighting to early careers researchers, and to factor in parental leave (i.e., stop the clock on participation and time in post while colleagues are away). I worked alongside the Home Office CSA to identify skill gaps, led recruitment, and engaged senior managers to develop the first HOSAC workplan which we aligned with the Home Office Operational Delivery Programme. Requests for our input have increased significantly, leading to full-time Secretariat support, recruitment of a co-chair and several new council members.

4.20. Other roles include, but are not limited to, the Defence Science and Technology Laboratory (DSTL) External Review College process across three capability areas, Blackett Reviews, the Defra RSAG, the Policing Science Advisory Group (PSAC), the CST, and contributions to multiple workshops exploring evidence, policy, and practice across a broad range of risks and threats. Internationally, I engage in high-level expert groups, training courses, and create guidelines for local, national, and international organisations (e.g., the International Atomic Energy Agency, Organisation for Economic Co-operation and Development (OECD), UN Office of Counter Terrorism, and International Olympic Committee).

List of SPI-B Members on 24 February 2020

1. Dr James Rubin, King's College London (Chair)
2. Prof. Brooke Rogers, King's College London
3. Prof. Susan Michie, University College London
4. Prof. Val Curtis, London School of Hygiene and Tropical Medicine
5. Prof. Lucy Yardley, University of Bristol
6. Prof. Clifford Stott, University of Keele
7. Prof. Mark Harrison, University of Oxford
8. Prof. Stephen Reicher, University of St Andrew
9. Dr Louise Smith, King's College London
10. Prof. Charlotte Watts, Chief Scientific Advisor, Department for International Development
11. DCC Paul Netherton, National Police lead for Civil Contingencies
12. Eleanor Prince, Government Communication Service
13. Lorna Riddle, Civil Contingencies Secretariat
14. NR, PHE Senior Communications Manager
15. Richard Amlôt, Public Health England
16. NR, Department of Health and Social Care

Annex 1

List SPI-B and SPI-Kids Papers

No.	Paper title	Date
1	SPI-B return to CCS on risk of public disorder	25/02/2020
2	Potential effect of non-pharmaceutical interventions (NPIs) on a Covid-19 epidemic in the UK	26/02/2020
3	SPI-B return to SAGE on the use of behavioural and social interventions on a Covid-19 epidemic in the UK	03/03/2020
4	SPI-B insights on combined behavioural and social interventions	04/03/2020
5	SPI-B insights on self-isolation and household isolation	09/03/2020
6	Potential impact of behavioural and social interventions on an epidemic of Covid-19 in the UK	09/03/2020
7	SPI-B insights on public gatherings	12/03/2020
8	School closures, note from SPI-B	17/03/2020
9	Options for increasing adherence to social distancing measures	22/03/2020
10	Current Adherence to Behavioural and Social interventions in the UK: Comments from SPI-B	22/03/2020
11	Easing restrictions on activity and social distancing: comments and suggestions from SPI-B	01/04/2020
12	Antibody Tests: Note on Misclassification, Misunderstanding, and Mitigation to Realise Benefits and Minimize Harms	01/04/2020
13	Implementation and communications: harnessing behavioural science to maintain social distancing	03/04/2020
14	SPI-B Consensus on Social Distancing Review	13/04/2020
15	Social Distancing Review - SAGE Advice	13/04/2020
16	Pre-empting possible negative behavioural responses to COVID-19 antibody testing to realise their potential benefits: SPI-B Note	13/04/2020
17	The role of children in transmission	16/04/2020
18	SPI-B return to CMO on the use of facemasks in a community setting	20/04/2020

19	Principles for the design of behavioural and social interventions	21/04/2020
20	SPI-B return to SAGE on the impact of an exit strategy on crime and public order	21/04/2020
21	Neighbourhood-level release	21/04/2020
22	Policing the Coronavirus Outbreak: Processes and Prospects for Collective Disorder	21/04/2020
23	What can we say about how behaviour may change following testing? Initial response from SPI-B	22/04/2020
24	SPI-B initial view on behaviours required for a suppress and control route	23/04/2020
25	Theory and evidence base for initial SPI-B recommendations for phased changes in activity restrictions	24/04/2020
26	Behavioural principles for updating guidance to minimise population transmission	25/04/2020
27	SPI-B behavioural science notes on symptom vs test based approaches	27/04/2020
28	The role of children in transmission: Modelling and behavioural science responses to scenarios for relaxing school closures	30/04/2020
29	The role of children in transmission (Annex G: A full account of SPI-B input on the scenarios)	30/04/2020
30	Consolidated return to SAGE commission on easing social distancing measures	05/05/2020
31	Policing, protest and changes to COVID-19 control measures in the UK	07/05/2020
32	SPI-B Summary: Key behavioural issues relevant to test, trace, track and isolate	07/05/2020
33	Well-being and household connection - the behavioural considerations of bubbles	13/05/2020
34	Communicating behaviours to reduce transmissions between social networks	27/05/2020
35	Principles for updating Covid-19 guidance final	03/06/2020
36	Suggestions for next phase messaging	03/06/2020
37	Reducing transmission in highly-connected occupations	05/06/2020
38	Managing infection risk in high contact occupations	15/06/2020

39	Behavioural considerations around communicating changes to the 2m social distancing guidance	17/06/2020
40	SPI-B recommendations to increase adherence by healthcare workers	24/06/2020
41	SPI-B consensus on reintroduction of measures and their impact on rate of infection	24/06/2020
42	High connectivity situations outside the occupational/workplace context	29/06/2020
43	Public disorder and public health: contemporary threats and risks	01/07/2020
44	SPI-B Principles for the development of co-creation	08/07/2020
45	Risks associated with the reopening of education settings in September	10/07/2020
46	Public Health Messaging for Communities from Different Cultural Backgrounds	22/07/2020
47	SPI-B Consensus Statement on Local Interventions	29/07/2020
48	Areas of intervention ('local lockdown') measures to control outbreaks of COVID during the national release phase	29/07/2020
49	Possible consequences of interventions in localities (formerly 'localised lockdowns') for public disorder	29/07/2020
50	SPI-B consensus on the reopening of large events and venues	19/08/2020
51	SPI-B extended paper - behavioural evidence on reopening of large events and venues	21/08/2020
52	TFMS Consensus Statement for SAGE	26/08/2020
53	TFMS Behavioural Considerations	26/08/2020
54	MHCLG Housing Impacts Summary Paper	09/09/2020
55	SPI-B Evidence for MHCLG Housing Impacts Paper	09/09/2020
56	The impact of financial and other targeted support on rates of self-isolation or quarantine	17/09/2020
57	Summary of the effectiveness and harms of different non-pharmaceutical interventions	20/09/2020
58	NPIs table	20/09/2020

59	Assessing the value of an enforcement-based approach to Covid	21/09/2020
60	Security and policing challenges - horizon scanning	21/09/2020
61	Key issues that may arise regarding a technological approach to enforcement	14/10/2020
62	SPI-B: Increasing adherence to COVID-19 preventative behaviours among young people	21/10/2020
63	The role of Community Champion networks to increase engagement in the context of COVID-19: Evidence and best practice	23/10/2020
64	Positive strategies for sustaining adherence to infection control behaviours	26/10/2020
65	Executive Summary – SPI-B Insights on Celebrations and Observances during COVID-19	28/10/2020
66	SPI-B Insights on Celebrations and Observances during COVID-19	28/10/2020
67	Children and transmission	03/11/2020
68	Benefits of remaining in education: Evidence and considerations	03/11/2020
69	Key Evidence and Advice on Celebrations and Observances during COVID-19	05/11/2020
70	What are the potential behavioural effects of reducing the duration of quarantine for contacts?	12/11/2020
71	Testing for initiation of quarantine in contacts	15/11/2020
72	SPI-B: Briefing Note: Behavioural Considerations of Health Certificates in Population Mass Testing	24/11/2020
73	EMG and SPI-B: Mitigating risks of SARS-CoV-2 transmission associated with household social interactions	26/11/2020
74	How important is symptom recognition in leading people to seek a test for COVID-19?	01/12/2020
75	SPI-B: Health status certification in relation to COVID-19 - Behavioural and Social considerations	09/12/2020
76	Heath status certification in relation to COVID-18 - Legitimacy and enforcement considerations	09/12/2020

77	SPI-B: Possible impact of the COVID-19 vaccination programme on adherence to rules and guidance about personal protective behaviours aimed at preventing spread of the virus	16/12/2020
78	Children's Task and Finish Group: update to 4th Nov 2020 paper on children, schools and transmission	17/12/2020
79	Mitigations to Reduce Transmission of the new variant SARS-CoV-2 virus	23/12/2020
80	Reducing within-and between-household transmission in light of new variant SARS-CoV-2	15/01/2021
81	Return to campus for Spring term: risk of increased transmission from student migration	18/01/2021
82	Behavioural aspects of international importation	20/01/2021
83	Children's Task and Finish Group: update to 17th December 2020 paper on children, schools and transmission	10/02/2021
84	Children's Task and finish Group: Paper on Higher Education Settings	10/02/2021
85	Behavioural and social considerations when reducing restrictions	10/02/2021
86	Lifting restrictions - Security and Policing implications	10/02/2021
87	Severe mental illness and COVID-19 vaccination	01/03/2021
88	Behavioural considerations for vaccine uptake in Phase 2 and beyond	10/03/2021
89	SPI-B - Sustaining behaviours to reduce SARS-CoV-2 transmission- Post-SAGE	30/04/2021
90	SPI-B: Behavioural considerations for maintaining or reintroducing behavioural interventions and introducing new measures in Autumn 2021	14/10/2022
91	EMG and SPI-B: Non-pharmaceutical interventions (NPIs) in the context of Omicron	15/12/2021
92	SPI-B: Social and behavioural impacts for lifting restrictions	10/02/2022