



16th September 2022,

Dear Mr Suter,

Thank you very much for your letter of 2nd September. Below I give outline responses to the questions you posed:

1. A brief overview of your qualifications, career history, professional expertise and major publications.

After gaining a degree and doctorate in zoology at the University of Oxford, I spent 16 years as a science and natural history film-maker, mostly with the BBC. Towards the end of 2016 I took up the position of Executive Director at the newly-established Winton Centre for Risk & Evidence Communication at the University of Cambridge. This was a Centre, chaired by Sir David Spiegelhalter, funded by a philanthropic donation from the David & Claudia Harding Foundation.

My expertise until that point had been in science communication. From 2016, at the Centre, I changed to evidence communication, which is the presentation of evidence in a way that supports independent decision-making by others, based on current knowns and unknowns. I lead a multi-disciplinary team including post-doctoral psychologists, professional communicators and software engineers. This allows us both to research how people understand and interpret quantitative evidence and the communication of uncertainty, and to put that knowledge into practice in the production of practical communication aids – such as decision support tools for the NHS (e.g. <https://breast.predict.nhs.uk>).

During the pandemic, we were carrying out regular surveys in the UK and overseas on public risk perception and experiments on different ways to communicate evidence relating to covid; we were working on methods of communicating personalised covid risk in collaboration with the NHS; and we helped the MHRA and EMA communicate the potential risks and benefits of the Astra-Zeneca covid vaccine.

Some publications:

- Blastland, M., Freeman, A. L., van der Linden, S., Marteau, T. M., & Spiegelhalter, D. (2020). Five rules for evidence communication. *Nature* 587, 362-364 <https://www.nature.com/articles/d41586-020-03189-1>
- Anne Marthe van der Bles, Sander van der Linden, Alexandra L. J. Freeman, James Mitchell, Ana B. Galvao, Lisa Zaval, & David J. Spiegelhalter (2019). Communicating uncertainty about facts, numbers and science. *Royal Society Open Science*, 6(5) <https://doi.org/10.1098/rsos.181870>
- Brick, C., Freeman, A. L., Wooding, S., Skylark, W. J., Marteau, T. M., & Spiegelhalter, D. J. (2018). Winners and losers: communicating the potential impacts of policies. *Palgrave Communications*, 4(1), 1-13. <https://doi.org/10.1057/s41599-018-0121-9>



- Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L. J., Recchia, G., Van der Bles, A. M., Spiegelhalter, D. & Van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research*, 1-13. <https://doi.org/10.1080/13669877.2020.1758193>
- Van der Bles, A. M., Van der Linden, S., Freeman, A. L. J., & Spiegelhalter, D. J. (2020). The effects of communicating uncertainty on public trust in facts and numbers. *Proceedings of the National Academy of Sciences*, 117(14), 7672-7683. <https://doi.org/10.1073/pnas.1913678117>
- Roozenbeek, J., Schneider, C. R., Dryhurst, S., Kerr, J., Freeman, A. L. J., Recchia, G., Van der Bles, A. M., & Van der Linden, S. (2020). Susceptibility to misinformation about COVID-19 around the world. *Royal Society Open Science*, 7(10), 201199. <https://royalsocietypublishing.org/doi/10.1098/rsos.201199>
- Kerr, J. R., Freeman, A. L. J., Marteau, T.M., & van der Linden, S. (2021) Effect of information about COVID-19 vaccine effectiveness and side effects on behavioural intentions: two online experiments. *Vaccines* 9(4). <https://doi.org/10.3390/vaccines9040379>
- Schneider, C. R., Dryhurst, S., Kerr, J., Freeman, A. L., Recchia, G., Spiegelhalter, D., & van der Linden, S. (2021). COVID-19 risk perception: a longitudinal analysis of its predictors and associations with health protective behaviours in the United Kingdom. *Journal of Risk Research*, 1-20. <https://doi.org/10.1080/13669877.2021.1890637>
- Freeman, A. L. J., Kerr, J., Recchia, G., Schneider, C. R., Lawrence, A. C. E., Finikarides, L., Luoni, G., Dryhurst, S. and Spiegelhalter, D. (2021). Communicating personalized risks from COVID-19: guidelines from an empirical study. *R. Soc. open sci.* 8201721201721 <http://doi.org/10.1098/rsos.201721>
- Kerr, J. R., Schneider, C. R., Recchia, G., Dryhurst, S., Sahlin, U., Dufouil, C., Arwidson, P., Freeman, A. L. J., & van der Linden, S. (2021). Correlates of intended COVID-19 vaccine acceptance across time and countries: results from a series of cross-sectional surveys. *BMJ Open*. doi: <http://dx.doi.org/10.1136/bmjopen-2020-048025>
- Schneider, C. R., Freeman, A.L.J., Spiegelhalter, D. and van der Linden, S. (2022). The effects of communicating scientific uncertainty on trust and decision making in a public health context. *Judgment and Decision Making*, 17(4), pp. 849-882. doi: <https://journal.sjdm.org/21/210525b/jdm210525b.pdf>
- Freeman, A.L.J., Parker, S., Noakes, C., Fitzgerald, S., Smyth, A., Macbeth, R., Spiegelhalter, D. and Rutter, H. (2021). Expert elicitation on the relative importance of possible SARS-CoV-2 transmission routes and the effectiveness of mitigations. *BMJ open*, 11(12), p.e050869. doi: <https://doi.org/10.1136/bmjopen-2021-050869>
- Rutter, H., Parker, S., Stahl-Timmins, W., Noakes, C., Smyth, A., Macbeth, R., Fitzgerald, S. and Freeman, A.L.J. (2021). Visualising SARS-CoV-2 transmission routes and mitigations. *BMJ*, 375. doi: <https://doi.org/10.1136/bmj-2021-065312>



- Schneider C. R., Freeman A. L. J., Spiegelhalter D., van der Linden S. (2021). The effects of quality of evidence communication on perception of public health information about COVID-19: Two randomised controlled trials. *Plos One*. 16(11): e0259048.
doi: <https://doi.org/10.1371/journal.pone.0259048>

2. A list of the groups (i.e. SAGE and/or any of its sub-groups) in which you have been a participant, and the relevant time periods.

SAGE: EMG systems and visualisation subgroup from 30th July 2020 until completion of the visualisation paper work in 2021.

SAGE: EMG (full group) from 20th November 2020 until the ending of SAGE: EMG

High Risk Aerosol Generating Procedures Panel from 22nd October – 25th November 2020

3. An overview of your involvement with those groups between January 2020 and February 2022, including:
 1. When and how you came to be a participant;

For the SAGE: EMG I was initially invited to the visualisation sub-committee by an email (30th July 2020) from Prof Harry Rutter, and then invited to join full SAGE: EMG by an email (20th November 2020) Prof Catherine Noakes and Prof Harry Rutter as a result of my input into the subgroup

For the AGP panel, I received an invitation letter (20th November) from Viviana Finistrella and subsequently met (online) with Gail Carson.

2. The number of meetings you attended, and your contributions to those meetings;

For SAGE: EMG visualisation group I attended many – at least 8 that I have records of – meetings of a small group, where we discussed how best to construct a diagram to illustrate the known (and possible) pathways of transmission of Covid-19, and then potential mitigations along those pathways, and then later how to turn this visualisation into a more quantitative risk assessment tool.

For SAGE: EMG full group, I attended from meeting 20 (24th November) to the end (meeting 39 I believe). I also attended 3 CO2 monitoring and ventilation subgroup meetings to help write a report on ventilation. We discussed a wide range of matters in SAGE: EMG, and I contributed whenever I felt my expertise could be of use. I also had additional (online) meetings with Dzhordzhio Naldzhiev in BEIS, one of which included a team member from the Winton Centre, to advise on methodology in some public surveys on air cleaning products that they were conducting.

For the AGP panel I think I attended two meetings (07-20 and 08-20), and discussed evidence that had been gathered as part of a review into AGPs. I specifically discussed the difference between absence of evidence and evidence of absence, and I also made suggestions in the draft report of the review between the two meetings.

3. Your role in providing research, information and advice.



My main role was within SAG: EMG to help produce a useful tool to support the public and others who were having to make decisions about the risks of Covid-19 infection in different environments. I led an expert elicitation in order to synthesise knowledge on infection routes and mitigations and help put some numbers on those. This led to the publication of the tool itself, and the underlying work (see references Freeman et al and Rutter et al in BMJ/BMJ Open, above).

In general, across all groups, my advice tends to be about communicating uncertainties (including quality of evidence) and understanding risk perceptions.

4. A summary of any documents to which you contributed for the purpose of advising SAGE and/or its related subgroups on the Covid-19 pandemic. Please include links to those documents where possible.
 - Rutter, H., Parker, S., Stahl-Timmins, W., Noakes, C., Smyth, A., Macbeth, R., Fitzgerald, S. and Freeman, A.L.J. (2021). Visualising SARS-CoV-2 transmission routes and mitigations. *BMJ*, 375. doi: <https://doi.org/10.1136/bmj-2021-065312>
 - <https://www.gov.uk/government/publications/emg-and-spi-b-application-of-co2-monitoring-as-an-approach-to-managing-ventilation-to-mitigate-sars-cov-2-transmission-27-may-2021>
5. A summary of any articles you have written, interviews and/or evidence you have given regarding the work of the above-mentioned groups and/or the UK's response to the Covid-19 pandemic. Please include links to those documents where possible.
 - Freeman, A.L.J., Parker, S., Noakes, C., Fitzgerald, S., Smyth, A., Macbeth, R., Spiegelhalter, D. and Rutter, H. (2021). Expert elicitation on the relative importance of possible SARS-CoV-2 transmission routes and the effectiveness of mitigations. *BMJ open*, 11(12), p.e050869. doi: <https://doi.org/10.1136/bmjopen-2021-050869>
6. Your views as to whether the work of the above-mentioned groups in responding to the Covid-19 pandemic (or the UK's response more generally) succeeded in its aims. This may include, but is not limited to, your views on:
 - a. The composition of the groups and/or their diversity of expertise;

I thought that EMG had a good range of expertise represented on it. It was particularly helpful to have overlap with SPI-B and have the social science and behavioural sciences represented, and I always found it useful that the group were encouraged to reflect on the real-world implications, for diverse publics, of their findings and their recommendations.

- b. The way in which the groups were commissioned to work on the relevant issues;

It was not always clear to me how the groups were commissioned. Some requests to the group were a bit vague or repetitive, and it wasn't clear how the group could use its expertise to suggest issues that hadn't been commissioned 'from above'.

- c. The resources and support that were available;



The secretariat were great – meeting agendas, papers and minutes, as well as zooms, were well-organised. Of course, I and others were working ‘for free’ in addition to our day jobs, so that was a resourcing issue at times. The support given to those who are asked to give their time and expertise should be considered, to ensure that some aren’t deterred or excluded from doing so simply because of their limited resources.

d. The advice given and/or recommendations that were made;

I think EMG gave good, independent and well-discussed advice and recommendations, based on a good understanding of the state of knowledge.

THIS MIGHT BE CONSIDERED SENSITIVE: PLEASE REDACT During the AGP panel discussions I remember feeling that the group seemed concerned about the practical implications of their findings: that if there was an absence of evidence then would a precautionary approach be necessary and if so, would that be simply impractical (i.e. that amount of PPE simply not available).

e. The extent to which the groups worked effectively together;

It was extremely useful to have ‘overlap’ members from other subgroups as part of EMG, and that SPI-B and EMG worked particularly well together.

f. The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness.

I don’t have a view on this.

7. Your views as to any lessons that can be learned from the UK’s response to the Covid-19 pandemic, in particular relating to the work of the above-mentioned groups. Please describe any changes that have already been made, and set out any recommendations for further changes that you think the Inquiry should consider making.

I think that it would be good to have a set of guidelines ‘to hand’ for other emergencies on how best to set up and manage structures like SAGE and its sub-committees: what expertise and diversity is important to aim for, and how to go about finding the right people.

I think it would also be important to separate those tasked with researching and synthesising the research from those tasked with drawing conclusions and policy from those findings, and to ensure that no one feels the pressure of potential policy implications when doing research or summarising the raw evidence.

I think the verbal descriptors of the quality of the evidence or the confidence in the recommendations is very useful and should be codified for future use.

I also think that the expert elicitation process that we undertook was a very useful one, and that this kind of method should be more broadly known about, accepted, and used at times



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where we are needing to summarise, and make decisions in the face of, a limited empirical evidence base.

8. A brief description of documentation relating to these matters that you hold (including soft copy material held electronically). Please retain all such material. I am not asking for you to provide us with this material at this stage, but I may request that you do so in due course.

I have emails, digital meeting agendas, minutes and papers that were sent around for discussion, and some documents with comments and suggested edits that were occasionally sent around whilst being written.

Yours sincerely,

Personal Data

Alexandra Freeman