Response to Covid Inquiry

Martyn Fyles

Overview of qualifications, career history, professional expertise and major publications:

- MSci in Mathematics with Statistics, first class. The University of Bristol, Bristol, United Kingdom, Aug 2014 - 2018
- Technical Business Analyst, Acturis Ltd, August 2018 - August 2019
- PhD studies in Statistics, University of Manchester, August 2019 – present. Thesis title: "Modelling interactions between heterogeneity and interventions for network epidemics". Studies expected to conclude in March 2023. Funded by the Alan Turing Institute. Jointly co-supervised by Prof. Ian Hall, Prof. Thomas House and Dr Lorenzo Pellis.
- Infectious disease modelling internship, UKHSA, Feb 2022 – May 2022
- Infectious disease modeller, part time contractor, UKHSA, May 2022-present

My major publications are as follows.

- CE Overton et al., Using statistics and mathematical modelling to understand infectious disease outbreaks: COVID-19 as an example. https://doi.org/10.1016/j.idm.2020.06.008, Infectious Disease Modelling.
- M. Fyles et al., Using a household-structured branching process to analyse contact tracing in the SARS-CoV-2 pandemic; https://doi.org/10.1098/rstb.2020.0267, Philosophical Transactions of the Royal Society B
- M. Fyles et al. Diversity of symptom phenotypes in SARS-CoV-2 community infections observed in multiple large datasets; https://doi.org/10.48550/arXiv.2111.05728, (preprint) arXiv
- E. Fearon et al., SARS-CoV-2 antigen testing: weighing the false positives against the costs of failing to control transmission; https://doi.org/10.1016/S2213-2600(21)00234-4, Lancet Respiratory Medicine

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

I attended SPI-M on 2 occasions during August 2020 to present some research on out-of-household-isolation strategies. I worked as a researcher on a contact tracing grant modelling grant which provided input to SPI-M from September 2020 until August 2021, and as part of this grant I co-authored several reports that were submitted to SPI-M. I did not have a regular invite to SPI-M meetings as I was not a core member of the group.

3. An overview of your involvement with those groups between January 2020 and February 2022

a. When and how you came to be a participant;

During August 2020, a question was raised to SPI-M regarding out-of-household isolation strategies. At that point in time, I had a well-developed model of contact tracing that could be used to model out-of-household isolation strategies, so the research question was passed onto me by my PhD supervision team (Prof. Ian Hall, Prof. Thomas House, Dr Lorenzo Pellis), who are SPI-M members. I investigated the question and presented the results of my research at two SPI-M meetings.

My understanding is that I am listed as participant of SPI-M because I attended a SPI-M meeting to present this work. I contributed to several other pieces of research that were presented at SPI-M, however these pieces of research were presented by more senior colleagues.

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

I attended two SPI-M meetings in August 2020, where I presented my initial modelling on out-of-household isolation strategies, and an update to that initial work.

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

For the most part, my role has been to contribute to reports on contact tracing modelling that were sent to SPI-M. Initially, I was researching contact tracing as part of my PhD studies, and modelling requests would be occasionally forwarded to me by members of SPI-M when my work was a natural fit for the modelling question. Later, I worked as part of a contact tracing modelling grant and contributed to research and advice through requests that would reach the principal investigator Dr Elizabeth Fearon.

On several occasions, I was approached by SPI-M secretariat to provide rapid reviews of contact tracing modelling conducted by the civil service.

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.

I contributed to several documents that were sent to SPI-M, however given that SPI-M meeting had limited time not all documents that were sent in were discussed at SPI-M, especially if they did not align with current priorities. Without attending the SPI-M meetings, I cannot always be sure if the reports were presented and discussed.

I have provided list of documents where I was lead author or involved in final edits, that I believe either were, or may have been discussed at SPI-M or SAGE.

- Initial report on results from Household Contact tracing model
    - Submitted: 11/05/2020
    - Contained modelling results on the effectiveness of contact tracing, assuming various lockdown exit scenarios
- Preliminary Analysis: Out-of-household isolation.
    - I presented this at SPI-M on 12/08/2020

    - Contained modelling regarding the reduction in transmission under strategies that isolate exposed or infected individuals outside of their household.
- Preliminary Analysis: Out of household isolation of the index case vs out of household quarantine of a vulnerable individual.
    - I presented this at SPI-M on 25/08/2020
    - An update to the previous preliminary analysis, with modelling results on the protection of vulnerable individuals.
- On the use of LFA tests in contact tracing: preliminary findings
    - Considered at SAGE 68 on 16th November 2020
    - Initial modelling results regarding the use of LFA tests in contact tracing
    - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/950771/s0897-testing-of-traced-contacts.pdf
- Comparison of quarantine and testing strategies to prevent onwards infection from infected travelers returning to the UK from abroad
    - Considered at SAGE 71 on 3/12/2020
    - https://www.gov.uk/government/publications/tti-modelling-group-comparison-of-quarantine-and-testing-strategies-to-prevent-onwards-infection-from-infected-travelers-returning-to-the-uk-from-abr
- Investigating changes to the symptom criteria for testing and effectiveness of TTI
    - Sent to SPI-M on 10/02/2021
- Daily contact testing investigations
    - "For Interest" paper sent to Sage 83 on 02/03/2021
    - An update to our previous work on contact testing
    - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1067145/S1157_LSHTM_Daily_Contact_Testing.pdf

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.

I did not conduct any interviews or give any evidence regarding the work of the afore mentioned groups, or the UK's response to the Covid-19 pandemic.

The following articles in the public domain are commentary pieces that I contributed towards.

- SARS-CoV-2 antigen testing: weighing the false positives against the costs of failing to control transmission. The Lancet Respiratory Medicine, https://doi.org/10.1016/S2213-2600(21)00234-4
- Rapid response to: Covid-19: Controversial rapid test policy divides doctors and scientists. BMJ, https://doi.org/10.1136/bmj.n81
- SARS-CoV-2 antigen testing: weighing the false positives against the costs of failing to control transmission. BMJ, https://doi.org/10.1016/S2213-2600(21)00234-4
- Going with the flow: Are lateral flow tests useful? Plus Magazine, https://plus.maths.org/content/going-flow-are-lateral-flow-tests-useful

The following articles in the public domain are research papers that I contributed towards

- CE Overton et al., Using statistics and mathematical modelling to understand infectious disease outbreaks: COVID-19 as an example. https://doi.org/10.1016/j.idm.2020.06.008, Infectious Disease Modelling.
- M. Fyles et al., Using a household-structured branching process to analyse contact tracing in the SARS-CoV-2 pandemic; https://doi.org/10.1098/rstb.2020.0267, Philosophical Transactions of the Royal Society B
- M. Fyles et al. Diversity of symptom phenotypes in SARS-CoV-2 community infections observed in multiple large datasets; https://doi.org/10.48550/arXiv.2111.05728, (preprint) arXiv
- Public perceptions and interactions with UK COVID-19 Test, Trace and Isolate policies, and implications for pandemic infectious disease modelling, https://doi.org/10.12688/f1000research.124627.1

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 only attended SPI-M on two occasions and did not attend meetings of any of the other groups. As such, I do not have a strong opinion regarding the overall composition their diversity of expertise of SAGE and its subgroups.

During the small number of SPI-M meetings I did attend, there were broad discussions on complex modelling topics, and an appreciation of what can be captured by models and the features that models are unable to capture.

The contact tracing modelling grant which I worked on made several contributions to SPI-M, was highly interdisciplinary featuring: epidemiologists, modellers, mathematicians, social scientists, clinicians, and research software engineers. In addition, we conducted patient-partner interviews with the public that were targeted to enable better understand how the public interact with contact tracing, which would allow us to conduct better modelling.

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

As I was not a core member of any of these groups, I do not have a detailed understanding of how they were commissioned to work on relevant issues.

c. The resources and support that were available;

Some of the datasets we were interested in using were stored in data environments that were not user friendly, for example the contact tracing dataset on the ONS's secure research space. On the occasions that I interacted with SPI-M secretariat, I have found them to be highly efficient and professional.

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

I am not able to provide a general comment on the advice and recommendations that were made. This is a very broad, and complex topic, and I had a very narrow research focus during the pandemic.

For the contact tracing modelling that I contributed to, SPI-M did a good job at conveying the scientific output of models and highlighted key model assumptions and uncertainties in their consensus statements. Without being present at the appropriate meetings, I cannot comment on how the results were conveyed to decision/policy makers in government.

Overall, my understanding is that SPI-M/SAGE state scientific output, and do not give policy advice or recommendations, as this is the remit of decision/policy makers within government.

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

I did not have any interactions with SAGE subgroups other than SPI-M. I did interact with colleagues in the civil service on several occasions and found these to be useful collaborations where we provided model checking, or input into modelling conducted by the Civil service.

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

I do not have a comment on this, as I am not familiar with which structures or policies are applicable.

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.

At times, scientific concepts were not always communicated well to the public. For example, people often had a misleading understanding of the sensitivity of lateral flow tests, which may have led to poor adherence or uptake of those tests. It would make sense to have scientific communicators employed by the government to communicate scientific topics to the public on a regular basis.

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 a small number of emails with SPI-M that I retain electronically, largely pertaining to requests for modelling or input on modelling. In terms of research papers, these have either been published by SAGE or in academic journals. I hold copies of various documents that I contributed to that were sent into SPI-M.