

Questionnaire return

UK COVID-19 Inquiry: Module 2B

Reference: M2B/BL/01

Returnee: Professor Biagio Lucini

Brief overview of your qualifications, career history, professional expertise and major publications.

I have earned a Ph.D. in Theoretical Physics from Scuola Normale Superiore (Pisa, Italy) in 2000. I have worked as Postdoctoral Fellow at Oxford University (January 2000 to September 2003) and ETH Zurich (October 2003 to September 2005). In October 2005, I joined Swansea University as a Lecturer, and I was promoted Professor in 2011. I have covered several roles, including Head of the Mathematics Department (Aug. 2015 – July 2020) and Deputy Pro-Vice-Chancellor for Research Culture (December 2021 – to Date). My research expertise is in Mathematical Modelling using advanced statistical tools (including machine learning). The main applications are in theoretical particle physics, but due to the general nature of the modelling I have explored also other problems. My work in the pandemic modelling group was a response to a necessity, since specific modelling expertise was missing in Wales. A list of all my research publications is available at

<https://scholar.google.com.sg/citations?user=B8oZzXAAAAAJ&hl=en&inst=15992813652391199708>

The most relevant for COVID modelling are:

- (1) Understanding and responding to COVID-19 in Wales: protocol for a privacy-protecting data platform for enhanced epidemiology and evaluation of interventions, J Lyons, A Akbari, F Torabi, GI Davies, L North, R Griffiths, R Bailey et al., BMJ open 10 (10), e043010
- (2) Disease control across urban–rural gradients, K Wells, M Lurgi, B Collins, B Lucini, RR Kao, AL Lloyd, SDW Frost et al., Journal of the Royal Society Interface 17 (173), 20200775

A list of the groups (i.e. TAG and/or any of its subgroups) in which you have been a participant, and the relevant time periods. Please also confirm if you are or have been a participant in SAGE or other relevant groups.

I was a member of the Policy Modelling Subgroup of TAG, which met weekly. I joined in May 2020 and I carried on until December 2022. Meetings were on-line. I estimate that I have participated to about 80 one-hour meetings. I have not participated to any other related groups directly. I am aware that some of our data have been discussed by other groups.

Overview of participation

I was invited to participate in May 2020, following some earlier modelling work I contributed to, which has attracted interest in TAC. For the first three months, I reported weekly on the

work we have performed. This work was based on our adaptation of a mathematical model developed by the London School of Hygiene and Tropical Medicine to the Welsh context. The model took as an input weekly data provided by Public Health Wales and produced possible scenarios for the evolution of the pandemic. The scenarios were discussed and checked for robustness in the group. As far as I can reckon, no decision was taken in the group and only recommendations based on solid evidence emerging from those scenarios were passed to TAC, after broad consensus in the group had been reached. In Autumn 2020, the role of reporting was more firmly taken by my colleague Prof. Mike Gravenor. At that point, my participation became reduced to listening and participating to discussions. I have tried to provide my specific expertise where I felt that I could contribute (e.g., interpretation of the data). As mentioned before, I reckon that my participation has covered about 80 meetings.

Summary of documents contributed

Documents that were contributed are mostly graphs and presentations. The graphs that were considered of wider interest were passed on to TAC. A re-elaboration of those graphs has been included in TAC publications, where relevant. Other than to those documents, no public links are available.

Summary of articles, interviews and evidence

I have published two scientific articles in peer-review journals, whose references are provided above. In addition, I have been interviewed twice by BBC Radio Wales and once by BBC Wales on the trends seen in the models. These interviews have generally happened after a peak was starting to emerge following a period of relative calm. For instance, BBC Wales has interviewed me around Christmas 2021, when a new mini lockdown was being anticipated. In those interviews, I have explained in lay terms the models and what they were seeing, refraining from providing personal opinions or advice on what should be done.

View on the effectiveness of the work

I believe that the work done by the policy modelling subgroup has been very effective. The group included a wide range of stakeholders (Welsh Government Civil Servants, high-profile NHS Wales and Health Board representatives, Public Health Wales people, scientists, epidemiologists among others), all able to bring specific expertise to the table. Discussions have always been open and frank, and very well managed. The group has been excellently chaired. Openness and transparency have been the guiding principles. The group worked very well together. There have been disagreements and exchanges of different opinions on more than one occasion, but discussions developed always with high ethical integrity and professionalism. Consensus has been reached most of the times, especially on crucial matters. Minority views have always been given a voice and due consideration. The topics were brought to the group by the Chair/co-Chair. They reflected the relevant policy questions at that moment in time. Discussions were based on evidence, whether from models or from collected data. Strength and weaknesses of approaches were always exposed. Support was provided in terms of meeting organisation, minutes and data made available (where possible).

Lessons learned

I believe that the Welsh Government took a science and evidence-based approach to their decision making process, which has been justified a posteriori by the results. Personally, I am

unable to comment on lessons learned or to recommend changes, as I work with modelling data and I am not involved in recommendations or decision making/influencing beyond providing scenarios under agreed assumptions.

Documentation held

I do not hold document in particular. All evidence provided is based on numerical simulation, and can be produced or reproduced on request, following the principles of open, transparent, reproducible and trustworthy research. The computer programmes that we have developed and used can be made available if needed.