It is important to note I will be moving to Newcastle University June 1st, 2023.

UK COVID-19 Inquiry: Module 2B - Rule 9 Request to Dr Daniel Archambault- Reference: M2B/DW/01 Please provide the following information:

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

Ph.D. Computer Science, University of British Columbia, 2008
M.Sc. Computer Science, University of British Columbia, 2003
B.Sc. (Hons.) Computing and Information Science, Queen's University (Kingston), 2001

Post-doctoral studies, INRIA Bordeaux Sud-Ouest 2009
Post-doctoral studies, University College Dublin, 2010-2012

I've been at Swansea University since 2013 where I am now an Associate Professor

My main area of expertise is information visualisation for which I have approximately 50 publications. In particular for Dynamic Network and Dynamic Data visualisation.

2. 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 attended the COVID-19 Welsh Government Modeling subgroup on a regular basis since the fall of 2020. I did not regularly attend any of the other TAG subgroup regularly. However, I did give presentations (details below).

I was not a participant in SAGE.

3. An overview of your involvement with those groups between January 2020 and May 2022, including: a. When and how you came to be a participant; b. The number of meetings you attended, and your contributions to those meetings; and c. Your role in providing research, information and advice.

As mentioned below, I regularly attended the Welsh Government Modeling subgroup since late summer 2020.

I did present some interm results to the Welsh Government Technical Advisory Group (TAG) on May 14, 2021. This presentation consisted of some preliminary visualisation results.

On July 12, 2021, Alma Rahat and I presented at the Socio-Economic Harms TAG subgroup of the Welsh Government. Again, this work contained some preliminary visualisation results.

My role was primarily in advising and creating visualisations to potentially be used by the response.

4. A summary of any documents to which you contributed for the purpose of advising TAG and/or its related subgroups on the Covid-19 pandemic. Please include links to those documents where publicly available.

My work consisted of visualisations of the data and simulations which appeared in documents. These were visualisations which appeared in figures.

In July of 2021, two members of the Welsh Government response team involved in determining hospital bed capacity (Andrew Nelson and Jenny Morgan) used our software as a trial. This deployment was relatively easy given that the tool takes public information as input and our users were technically proficient so that they could install the software on their local machines to use if for a short period of time. Initial discussions of the tool went well, but to my knowledge the tool was never deployed. The tool was described in a short paper:

F. Gibson, R. Fabbro, A. Rahat, T. Torsney-Weir, D. Archambault, M. Gravenor, and B. Lucini. An Interactive Tool for Enhancing Hospital Capacity Predictions Using an Epidemiological Model. Proc. Of the Genetic and Evolutionary Computation Conference Companion (GECCO '21 Companion), 2021.

As part of the Swansea University team, I contributed visualisation work to the Medium Term Projections of COVID-19 (MTPs). The MTPs which are still being used today were primarily made by Dr. Alma Rahat (Swansea University), Prof. Biagio Lucini (Swansea University), and Prof. Mike Gravenor (Swansea University). The MTPs used the Swansea Model (written by Biagio and Mike). These predictions used optimisation methods to fit past data in order to run the compartmental model forward, creating a prediction of a couple of weeks in the future. The work was an extension of the tool described in the previous paragraph. As part of this project, my main role was contributing visualisation designs for the fits and predictions.

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 Welsh Government's response to the Covid-19 pandemic. Please include links to those documents where publicly available.

I was involved in contact tracing policy modelling which lead to the following publication. This was part of RAMPVIS (embedding visualisation in the COVID-19 response.

Sondag, M., Turkay, C., Xu, K., Matthews, L., Mohr, S. and Archambault, D. (2022), Visual Analytics of Contact Tracing Policy Simulations During an Emergency Response. Computer Graphics Forum, 41: 29-41. https://doi.org/10.1111/cgf.14520

This publication visualised contact policy simulations. From my understanding as it was finalised late in the pandemic. As such, it was not used as part of the response or to inform subgroups.

RAMPVIS generated two papers:
Jason Dykes, Alfie Abdul-Rahman, Daniel Archambault, Benjamin Bach, Rita Borgo, Min Chen, Jessica Enright, Hui Fang, Elif E. Firat, Euan Freeman, Tuna Gonen, Claire Harris, Radu Jianu, Nigel W. John, Saiful Khan, Andrew Lahiff, Robert S. Laramee, Louise Matthews, Sibylle Mohr, Phong H. Nguyen, Alma Rahat, Richard Reeve, Panagiotis D. Ritsos, Jonathan C. Roberts, Aidan Slingsby, Ben Swallow, Thomas Torsney-Weir, Cagatay Turkay, Robert Turner, Franck P. Vidal, Qiru Wang, Jo Wood, Kai Xu. Visualization for Epidemiological Modelling: Challenges, Solutions, Reflections & Recommendations. Philosophical Transactions of the Royal Society A, 380:20210299, 2022.

M. Chen, A. Abdul-Rahman, D. Archambault, J. Dykes, P.D. Ritsos, A. Slingsby, T. Torsney-Weir, C. Turkay, B. Bach, R. Borgo, A. Brett, H. Fang, R. Jianu, S. Khan, R.S. Laramee, L. Matthews, P.H. Nguyen, R. Reeve, J.C. Roberts, F.P. Vidal, Q. Wang, J. Wood, K. Xu. RAMPVIS: Answering the challenges of building visualisation capabilities for large-scale emergency responses. Epidemics, 39:100569, 2022.

These papers describe the types of visualisation work that could be used to help inform the pandemic response.

6. Your views as to whether the work of the above-mentioned groups in responding to the Covid-19 pandemic (or Wales'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; b. The way in which the groups were commissioned to work on the relevant issues; c. The resources and support that were available; d. The advice given and/or recommendations that were made; 3 e. The extent to which the groups worked effectively together; and f. The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness.

In my opinion, I believe the scientific response was very well done. Given my specific role, I would say that I was more on the perifery of the response. In all of our meetings, it was clear that everyone was trying to contribute the best they could during these circumstances. Composition of the group seems well done. Work of the groups was well organised and supported. The resources available were good and I believe that the advice given was of high quality. We worked very well together.

7. Your views as to any lessons that can be learned from the Welsh Government'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.

In my opinion, I believe the scientific response was very well done. I am not sure what I can add.

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 don't really have data or material on my person. All such material and models have been stored with the Swansea University modeling goup HPC servers (Alma, Mike, and Biagio). In my case, I provided visualisation methods which could be used as part of the response.

All of my contact tracing work was conducted on simulated data.