

Witness Name: Craiger Solomons

Statement No.: 1

Exhibits: 17

Dated: 19 September 2023

## UK COVID-19 INQUIRY

### WITNESS STATEMENT OF CRAIGER SOLOMONS MBE

I, Craiger Solomons MBE, will say as follows: -

#### **Background**

1. I graduated from Cardiff University with a BSc in Mathematics, Operational Research and Statistics in 2011. I undertook a one-year placement with Welsh Government as part of my undergraduate studies.
2. Following my graduation, I joined the Welsh Government in September 2011 as a Statistical Officer and member of the Government Statistical Group. The Government Statistical Group is a UK wide profession led by the National Statistician and Permanent Secretary of the Office for National Statistics. I have worked in several statistical roles across the Welsh Government and Welsh Revenue Authority (WRA), providing high quality evidence and advice to Ministers. I have received awards for my work including the Royal Statistical Society and Welsh Government Awards. During my time with the WRA I developed brand new statistical outputs from inception. I was also a quality champion whilst carrying out the role of Head of Transport, Economic and Labour Market Statistics in Welsh Government. This included assessing the quality of statistical outputs across the Welsh Government's statistical profession.
3. In 2019 I joined the Welsh Government Grade 7 Talent Scheme which gave me the opportunity to rotate across high performing Grade 7 roles across the Welsh Government. I completed the scheme in 2022.

4. From October 2019 – March 2020 I was Head of EU Settlement Scheme (EUSS) operating as the policy lead for EU citizens living in Wales. I lead the co-ordination of advice for EU Citizens in Wales and Ministerial support chairing the EUSS Co-ordination group leading on all EUSS services both Home Office and Welsh Government. The role involved briefing key senior public service officials including Local Authority Chief Executives, NHS Wales, and the Children’s Commissioner. I was also the policy sponsor for the Administrative Data Research UK (ADR UK) project a data linking project which aimed to develop EU population statistics using data linking. Data linking is where data from two different data sets about the same individual are joined together to create a new dataset with richer data. In this project we sought to link data from the EUSS with health and population data for research purposes.
5. From September 2018-September 2019 I was Head of the Administrative Data Research Unit for Wales. I established a new team, processes, and ways of working in partnership with Swansea University. The project was to develop a programme of data linking and data science for Welsh Government in partnership with academia.
6. From March 2018 – September 2019 I was Head of Statistical Outputs and Policy for the Welsh Revenue Authority (WRA). In the role I developed organisational Official Statistics policies and established their suite of official statistics. I worked effectively both in the operational and strategic running of the WRA. I helped to establish relationships between WRA and the Welsh Treasury to ensure purposeful data sharing.
7. I was Head of Transport, Economic and Labour Market Statistics from October 2015 – March 2018. In the role I managed the official statistics for 100 publications annually. I provided analytical support for Ministers and was the analytical lead for the Transport Bill.
8. In addition to my day-to-day role, I was also the People Committee representative for the Government Statistical Services from 2017 -2018 representing the Welsh Government and two UK Government Departments. In my role I had oversight of recruitment, retention and development work including the development of the UK’s data science apprenticeship.
9. Prior to 2015, I worked as an Assistant Statistician on the Welsh Index of Multiple Deprivation and in the Early Years Team, developing the Foundation Phase Profile.

## KEY ROLE AND RESPONSIBILITIES DURING COVID-19 PANDEMIC

### *Introduction to the Modelling and Analysis Sub Cell of TAC*

10. In March 2020 the Welsh Government's Chief Statistician at the time, Glyn Jones, sent out an email to all those working in statistics within Welsh Government asking for volunteers to join the Technical Advisory Cell ("TAC"). TAC formally reported to the Welsh Government's Emergency Co-ordination Centre for Wales, and it was established in March 2020 in response to the COVID-19 pandemic. I put my name forward as a volunteer.
11. On 23 March 2020 I was assigned by Glyn Jones to TAC Modelling and Analysis Sub Cell ("**Modelling Cell**"), as Lead Analyst. Glyn also assigned a Higher Statistical Officer to my team, Laura Andrews. I was the Lead Analyst and Co-chair of the Modelling Cell from March 2020 – April 2022.

### **Role and Responsibilities of the Modelling Cell**

12. Dr Brendan Collins and I jointly lead the TAC Modelling Cell. Dr Brendan Collins joined Welsh Government as Head of Health Economics in January 2020, on a three-year secondment from Liverpool University. His background was working as a health economist specialising in public health. His previous work had covered food policy including food security, food taxes and subsidies, health inequalities, quality of life, wellbeing, cardiovascular disease, cancer, infectious diseases, and substance use. Brendan had worked as a health economist in the NHS, academia, in local authorities and in Government.
13. The role of the Modelling Cell was to provide the scientific evidence for COVID, focusing on harms directly arising from SARS-CoV2 infections and emergency science and analytical requirements in relation to COVID which might overlap with the other harms identified. In July 2022, the Modelling Cell published its definition of the five harms of COVID, **Exhibit CS01/001 INQ000066315**:
  - a. Harm directly arising from SARS-CoV2 infections;
  - b. Indirect COVID-19 harms due to surge pressures on the health and social care system and changes to healthcare activity, such as cancellation or

postponement of elective surgeries and other non-urgent treatments (e.g. harm from cessation of screening services) and delayed management of long-term conditions;

- c. Harms arising from population-based health protection measures (e.g., lockdown) such as, educational harm, psychological harm and isolation from shielding and other measures;
- d. Economic harms such as unemployment and reduced business income arising both from COVID-19 directly and population control measures, like lockdown; and
- e. Harms arising from the way COVID-19 had exacerbated existing, or introduced new, inequalities in our society.

- 14. Brendan and I worked on different tasks, but would quality assure each-others' work as independent analysts. We would review documents in draft, discuss the methodology used and review the coding we had used. This quality assurance process was in line with the Aqua Book, the guidance on producing quality analysis for government.
- 15. The Modelling Cell was a relatively small cross discipline analysis team, of between 3 and 12 civil servants. The numbers flexed depending on the demands of the Modelling Cell at the time. The majority of people brought into the team were volunteers, from across analytical professions or with some background in analysis but did also include analysts on the Civil Service Fast Stream where posts were able to be filled.
- 16. The team carried a large number of vacancies throughout this period. As a new team we were required to adapt quickly to changes, but quite frequently we were unable to resource the demand internally and as a result we had to prioritise our workload. Initially we were led by the Technical Advisory Group's (TAG) demands for modelling. As both TAC and TAG developed throughout the pandemic a TAG Steering Group was established and the Modelling Cell regularly reported our priorities to that group which included the Director General for Restart and Recovery, the Chief Medical Officer and the Chief Executive of NHS Wales/DG Health and Social Services Group.

## **Key Aims of the Modelling Sub-Cell**

17. The three key aims of the Modelling Sub-Cell were:
- a. **Surveillance and Intelligence** – agreeing indicators to monitor the pandemic, including considering thresholds for local and/or national action across multiple policy areas within Welsh Government. The aim was to be able to provide a ‘single version of the truth’ on the pandemic, to present the situation to policy colleagues and the public. As part of this we established data flows with appropriate governance.
  - b. **Modelling** – developing and considering scenarios moving forward, support emergency planning across the Welsh Government – including support for health boards, enable the use of modelling within policy making, ensuring effective quality assurance of models, and development of operational models for Test, Trace and Protect system and Vaccine Roll Out; and
  - c. **Analytical projects** – translate and deliver policy requirements into analytical tasks and projects; source appropriate data; bring together key information for ministerial briefings, deliver regular reproducible analysis for: Ministerial advice; Ministerial meetings; policy officials; policy documents; press and communications colleagues; and the public.

## **My Role**

18. The majority of work that I carried out in the Modelling Cell was commissioned from policy leads within Welsh Government and had a clear Senior Responsible Owner (someone at Senior Civil Service grade).
19. A large part of my role was talking policy leads through available scientific evidence and supporting them in integrating science into their policy area. I was particularly focused on supporting those in the central COVID teams including: COVID Restart and Recovery; NHS Planning, Schools, Further Education, Higher Education, and Transport to name a few key areas.
20. In that supporting role I met regularly with senior policy officials. I would attend 10-15 meetings with senior policy officials each week. I would provide an up-to-date picture of the situation in Wales and scientific evidence and advice from SPI-M (UK Scientific Pandemic Influenza Group on Modelling Operational sub-group) or SAGE (the UK Scientific Advisory Group for Emergencies). I also attended meetings with

policy stakeholders, including unions, NHS planning meetings, and Ministerial stakeholder group meetings.

21. I also supported policy officials by drafting and signing off the use of scientific content which was included in public facing policy documents and their supporting communication materials which ranged from press notices, briefing materials, correspondence, responses to Freedom of Information requests and written and oral statements.
22. Where new models were introduced, typically Brendan, Professor Mike Gravenor, from Swansea University who modelled the reasonable worst case scenario for Welsh Government, and I would also host a series of technical briefings for those on the COVID steering group and the System Resilience and Response Group (which included Welsh Government Staff, Health Boards, and Trusted Partners) to ensure that they fully understood the materials and provide them with an opportunity to ask questions.
23. I regularly attended Cabinet meetings to discuss the position on COVID and new modelling scenarios and provided numerous briefings to Ministers across the Welsh Government – but most frequently provided updates for the Minister for Health and Social Services.
24. In addition to this, I made myself available to the press as part of technical briefings and Assembly Members through informal and formal attendance at the Welsh Government Health & Social Services Committee.

## **HOW THE MODELLING CELL COLLECTED AND SHARED DATA**

25. In the very early stages of the COVID-19 pandemic a third-party provider, Armakuni, was engaged by TAC to assist them in creating a dashboard to replace the manual daily or weekly Covid-19 Situational data collection and reporting. Dashboarding is a term used to describe the presentation of multiple indicators on an interactive dashboard.
26. Armakuni were tasked by TAC to create an automated and accurate data dashboard system to enable accelerated decision making based on a single, at-a-glance view of aggregated (non-personally identifiable information) critical real time data.

27. The Modelling Cell and my team in particular, took on the management of the Armakuni dashboard from May 2020, the contract had been established by Fliss Bence, Co-Chair of TAC and previously Head of Digital Policy for Health in Welsh Government. We worked with Armakuni to develop the web-accessible dashboard system. Armakuni carried out the coding and web development and my team focussed on sourcing data and agreeing indicators with data providers, the National Modelling Forum and the Technical Advisory Group (TAG).
28. The Wales COVID-19 dashboard was used by circa 500 users in Welsh Government, NHS Wales (including Public Health Wales (PHW), NHS Wales Informatics Service and individual health boards), Ministry of Defence, police and fire, and Local Authorities. It gave access to those organisations to monitor the current Covid-19 situation, inform policy decisions and understand potential future COVID-19 situations and impacts on public health and services.
29. We agreed a format for the data, how the data would be uploaded to the system, and what calculations would be carried out on the data once it had been uploaded. When the data was uploaded the calculations were run automatically and then the original data was deleted immediately and not stored. The results of those calculations were stored and then presented on the dashboard. Those uploading the data (data providers) would quality assure the indicator result to ensure it was calculated correctly and the indicator values made sense. ~There were validation rules built into the calculations which automatically flagged whether there were any large changes from previous values or potential mistakes. My team typically drafted the validation parameters with the data providers and Armakuni. I provided an analytical sign off before an indicator went live. For some of the indicators Armakuni would collect the data from a public facing website (for example Office for National Statistics deaths data and PHW COVID cases data) so the data was updated a couple minutes after the release time to ensure that all sources were kept up to date and consistent where possible.
30. In most respects the data collection needed for the COVID-19 pandemic was brand new and systems were not in place. The outputs did not necessarily meet our full requirements for integration into a data-platforms; sometimes these outputs were PDF files and sometimes there were inconsistencies in reporting of data across different geographies. In order to mitigate these challenges we held regular discussions through the All-Wales National Modelling Forum. We also held regular

meetings with data providers to determine if we were accessing the available data. We always highlighted in these meetings and discussions the importance of our data providers using the national standards wherever possible for example, the Office for National Statistics guidance on Administrative Geographies.

31. A lot of new information was collected for the first time. This meant that there was not a clear and consistent understanding of what an indicator meant, for example the Rt – the reproduction number and whether it was good or bad if an indicator increased or decreased (like halving or doubling times of COVID cases). We presented all this information on our COVID-19 dashboard alongside the indicator data to alleviate this issue, however many policy colleagues did not have a sufficient understanding of the different datasets. This meant that me and my team spent a lot of time attending team meetings and providing additional support to teams to provide advice on using the indicators.
32. There were additional benefits in spending a lot of time working with policy teams as we were able to quickly identify how our policy colleagues wanted to use the data and translate that need to inform our data providers (using the appropriate terminology) and develop appropriate indicators.
33. A large part of the success of the dashboard came down to having regular and open discussions with data providers. We took a proactive role in bringing the analytical community together, through the All-Wales National Modelling Forum, which brought together analysts across the Welsh public sector to discuss what indicators were available at a local level that could be then turned into a national picture as well as disseminating the latest modelling for planning purposes.

## **ACCESS TO MODELLING SOFTWARE AND HARDWARE**

34. In the early days of the COVID-19 pandemic there were undoubtedly issues with accessing software and hardware to enable effective analysis for planning purposes and data sharing.
35. A key issue was how the Modelling Cell encountered accessed statistical software. R and Python are the main statistical software provider used heavily across academic and analytical communities, including across UK Government and the Office for National Statistics (ONS). In March 2020 the Welsh Government did not have access



to this software on their network, as it was considered freeware and flagged as a risk with the information security team. Typically, the lack of access to R and Python is not an issue, as there would usually be time to develop new code in other statistical software. But with the urgency of the pandemic, complex and regularly updated code, and a lack of time and resources; we had to consider other options to accessing this software to be able to use code. The consequence was that trying to adapt models for England into models that considered the Wales population was quite difficult.

36. We considered this challenge with the Welsh Government data science lead, and they were able to run some of models on standalone laptops; but due to internet access we were not able to access the data or updated versions of the models.
37. PHW colleagues did have access to some of the software and were able to run some initial models for us but had limited resources to be able to implement it. There were also additional issues flagged considering computing power (requirement for supercomputer access) and output frequency and requirements. The result of these models were used to communicate estimates of impact on the Welsh Population to Strategic Co-ordination Group/Local Resilience Forums, the Emergency Co-ordination Centre for Wales, Ministers and Policy Officials.
38. In parallel to trying to run this model with PHW, Brendan and I also developed a project with Swansea University's Data Linking Service. I had previously developed access to this system in a previous role leading the Administrative Data Research Unit - Wales. We established a project that allowed the Modelling Cell to access specified data from PHW and NHS Wales Informatics Service (NWIS) and ran R & Python software through a virtual desktop.
39. There were some limitations with using the virtual desktop at Swansea University. Some of the code required write access (the ability to create new files in a specific computer's drive) to areas not permitted through our access. There were new data management requirements within Swansea University, this could take between a couple of weeks and months to get established for new datasets. Getting analysis out of the system took around 2-3 days, which regularly did not meet time requirements for Ministers and required the timetable for getting advice to Ministers to be adjusted to enable appropriate approvals before sending the evidence to policy officials and Ministers. We did find a solution to the limitations presented by the virtual desktop and these are set out from paragraph 61 of my statement.

## WORKING WITH UK GOVERNMENT AND OTHER DEVOLVED ADMINISTRATIONS

### SPI-M

40. Brendan and I were responsible for attending the SPI-M meetings as representatives of TAC from when I joined the team in March 2020. SPI-M was a sub-group of SAGE and included leading academics with experience in epidemiology and respiratory modelling. The group would develop their own models, commissioned by the UK Government against SAGE requirements.
41. Brendan or I would provide a summary of updates to TAG after every meeting. We regularly referred to the papers and updates we received from SPI-M as part of our evidence in the Welsh Government 21-day review of national restrictions.
42. As part of SPI-M, I acted as a conduit to enable SPI-M members (leading academia) to access data for Wales. We worked with the SPI-M secretariat to make the data available in a consistent form for SPI-M modellers, so that analysis for Wales could be run in parallel to that commissioned for UK Government analysis for England. We found that a lot of the models initially just apportioned the English rates using the population totals for England and Wales, which provided results of a poor quality. As the virus impacted older people more severely the higher levels of older population of Wales needed to be considered.
43. We agreed the same governance around the data that was being shared as the SPI-M team, with a written agreement in place between the modellers and the SPI-M Secretariat. In addition, modellers would request additional data, and we would support them in getting access to the relevant data they needed to run their models for Wales.
44. The majority of the data was provided by PHW and the NHS Wales Informatics Service (NWIS). Colleagues in PHW did flag up multiple concerns throughout the process, which were considered and addressed where possible. Most of these concerns were around communicating the quality of the data, ensuring appropriate access to the data, or the level of data to provide (whether to provide individual level information).

45. One example of the concerns raised throughout my time in the TAC team was that there was limited room for developing Welsh models, as we started with no models and there were a limited number of people in Wales with the skills to produce models. There were also occasions where SPI-M modellers were not able to develop their model due to the lack of availability for data in England, where there was more detailed data available for Wales. For example, England was never able to model for NHS capacity for beds or staff whereas in Wales, through the local health boards data, we could model bed and staff capacities in our hospitals. We supported the majority of access to data for SPI-M modellers; and provided colleagues in PHW and NWIS with support and assurance of processes and practices.
46. We were provided the opportunity to present to SPI-M on a number of occasions. I presented the Circuit Breaker work that we established for Wales to SPI-M, **Exhibit CS01/002 INQ000066284**. SPI-M was supportive of the approach and noted that England could not do this analysis as there was no clear understanding of capacity of the NHS in England. The paper I presented was then included in papers for SAGE. We also were able to get Professor Mike Grovenor added into SPI-M group as a contributing modeller, to ensure that he had access to the same information and parameters as those modelling for UK policy. I have been unable to confirm exactly when Professor Grovenor was added to the SPI-M group.

#### **Recipient of data from UK HEALTH SECURITY AGENCY (UKHSA)**

47. I was also the lead analyst with responsibility for the UKHSA within the Welsh Government. Chris Williams, from PHW, or someone from his team, would attend Joint Biosecurity Centre (JBC)/UKHSA meetings also representing Wales' interests. This meant that we were responsible for trying to support the JBC & UKHSA in developing analysis for Wales. I was also the lead analyst within the Welsh Government, responsible for trying to get their work into impactful work, by explaining it to the relevant policy lead.
48. It was difficult at times to effectively work with JBC/UKHSA. The set-up of the department initially felt quite slow, with little work that would provide an impact on Welsh policies.
49. Part of the problem was that the commissioning of the projects came directly from policy leads and JBC had little understanding of devolution. When I was invited to

meetings I was able to fill the gap between the two, however this put an additional burden on me to attend meetings with the policy leads. The requirement for data skills was key to be able to communicate commissions for work with the JBC. There were steps taken to improve this working relationship and I was invited to some of the JBC team meetings and an organisation wide Show and Tell meeting to discuss Devolution and our evidence requirements.

50. There was a clear divide in JBC between teams who were supporting the Devolved Administrations and those who were supporting UK Government. If the work was carried out for UK Government typically UK Government ministers were asked for approvals before sharing with Devolved Administrations. This meant we saw relatively little evidence developed that could be used to inform policy making decisions in Wales. By way of example, the Variant of Concern dashboard which presented different datasets available in relation to Variants of Concern for England alongside a lot of contextual data. We had developed indicators for this back in July 2020, when we published the Circuit Breaker Indicators, see paragraph 107 below, and were keen to make sure that we kept up with developments to provide coherent statistics across the UK. We spent significant time working with JBC to get a version available for use within Welsh Government whilst also ensuring that we were not duplicating existing work. The final product developed by JBC didn't provide anything new for Welsh Government, mostly due to data not being processed by JBC, and access was not provided to the dashboard for Welsh Government Analysts, even when we had JBC laptops. As a result, we had to establish alternative processes for Welsh Ministers to be kept briefed about Variants of Concern.
51. When the UKHSA was responsible for the oversight of testing labs, there was an issue with the Immensa lab which heavily impacted Wales, having notified people that were infected with COVID that they weren't ('false negative'). We carried out an analysis of this and shared it with UKHSA, **Exhibit CS01/003 INQ000227972** UKHSA were then responsible for an analysis considering the impact of the whole lab on England and Wales, but we were never sighted to the final report created by UKHSA. By not sharing this intelligence, the UKHSA didn't provide sufficient information for Welsh Ministers to be able to learn from the experience.
52. One of the ways that JBC tried to address this was through a prioritisation panel. This is where JBC colleagues would discuss the commissions and workload that they have on. I was invited along to support the DG for Recovery and Restart and identify

potential opportunities for work to be developed for Wales. In practice this meant that if a piece of analysis was commissioned for UK Government, then we could request additional work for the Devolved Governments if it fit with their existing analysis. This would sometimes be difficult due to changes to analytical coding for geographies, but most notably in devolved policy areas like education and health which have differences in approach and would require a different approach to ensure the analysis would be accurate and robust. This also meant that the timing of the decisions wouldn't work effectively, as once the analysis was complete and UK Government Ministers and policy officials were briefed, there would be a short time before it was made public, and a position would be expected of Welsh Ministers too. This meant that the opportunity to use the evidence to influence the Welsh position was constricted.

53. There were also barriers to Welsh Government accessing results from JBC work, which meant that a lot of the evidence that was provided was in PDF formator slides rather than data tables. JBC tried to facilitate us getting access to their network but this failed. JBC laptops were delivered to me and a member of my team, however I was not provided with access to the systems and data that JBC had available on it. This process took place in the second half 2021.
54. There was also significant mistrust between some Welsh data providers and UKHSA which lead to issues in sharing data with UKHSA. Most of this was due to Welsh data providers not trusting the potential uses and misuses of patient level data in line with their privacy notices. We flagged the need for appropriate assurances around the use of this data and a requirement to brief Welsh Ministers at the same time as any UK Government Ministers; but I did not see a resolution to either issue by the time I left the role officially on 22 April 2022 but I had been off work due to illness so effectively I left my role on 6 February 2022. This became part of the role for our Welsh Government JBC/UKHSA liaison, Jo Trott.

## **THE DEVELOPMENT AND USE OF MATHEMATICAL MODELS**

55. The Modelling Cell had three main purposes for the use of models:
  - a. Modelling to support monitoring and surveillance information and future position – including R number, halving times, Mid Term Projections (of cases, hospitalisations and deaths);

- b. Policy modelling (Restrictions) and Reasonable Worst Case (RWC) modelling;  
and
- c. Operational modelling (including Tracing Workforce; Vaccine Roll Out)

## **MODELLING TO SUPPORT MONITORING INFORMATION AND SURVEILLANCE**

- 56. The purpose of this modelling throughout the pandemic was to present what the situation was and what it would look like with different scenarios of Rt. The modelling would present the Rt estimate alongside statistical counts of cases, hospitalisations and deaths to illustrate the current situation. Separate models then considered future cases, hospitalisations, and deaths there would be in relation to COVID-19 infections. These models were used to inform the Welsh Government to make evidence-based policy decisions.
- 57. I understand that Wales was the first UK nation to publish estimations of the measures of the spread of the virus establishing the Modelling Cells regular updates of scientific information for the public. Our Modelling Update published on 8 May 2020, **Exhibit CS01/004 INQ000066276**, outlined the different methods we were using to agree estimates of Rt, halving/doubling times, the potential impact on hospital admissions which inform NHS planning, and understanding of adherence to social distancing guidelines.
- 58. Rt could be calculated using multiple methods. The differences in the approach were typically based on which data source was used to consider growth or decline of the virus, as Rt could not be measured directly.
- 59. An estimate of Rt was provided from the multiple SPI-M academics (for example, Imperial, London School of Hygiene and Tropical Medicine, Warwick and others) that had calculated an estimate for Wales, through the SPI-Modelling group regular reporting. All contributors used a different methodology for modelling Rt and their results were brought together by the Defence Science and Technology Laboratory (DSTL) an executive agency of the Ministry of Defence, for a consensus view. This UK and 4 Nations monitoring covered multiple sources and produced the highest confidence estimate. However, estimates relate to the two-three weeks previous to that being reported, meaning it was slightly lagged. We started publishing these estimates on the Welsh Government website from 7 May 2020.

60. We were not always able to agree a consensus estimate for Wales due to lacking a number of models that considered Wales or used data that was made available for Wales, via the SPI-M secretariat. I attended a number of assurance sessions with SPI-M academics to enable us to understand how the models were established, the underlying assumptions of the models, and further understand the results and limitations of the models.
61. In addition, in February/March 2021 PHW developed an Rt estimate at Wales level, based on cases data. Understanding the trajectory of cases was important to establish workforce requirements of services which were based on cases (e.g., the tracing workforce). It also provided a faster estimate of Rt than the consensus statement, but the confidence in the estimate was less as not all cases would have been identified by testing alone. In March 2021 a local health board level Rt indicator based on cases was also developed and regularly published within the Welsh Government's Covid Situation Report publication.
62. Halving times are a more traditional way of presenting the trajectory of cases in epidemiology. These were also developed for Wales by PHW and published for the first time on 7 May 2020. Later, halving times were also developed at Local Health Board (7 in Wales) level. Halving times were also used by some models to support modelling parameters. It provided a faster estimate of Rt than the consensus statement (below), but the confidence in the estimate was less as not all cases would have been identified.

#### ***SHORT TERM PROJECTION ILLUSTRATION – RT ESTIMATOR***

63. We accessed the statistical package “R” through Swansea University's United Kingdom Secure e-Research Platform (UKSeRP) which I had previously established when I headed up ADRU-Wales. I already had established relationships with Swansea University Population and Data Science Team and the ADRU-Wales and familiarity with processes and procedures, so I was able to get a project set up and access to the appropriate software and regular updates for datasets by May 2020.
64. The Modelling Cell developed its own model showing potential scenarios based on different levels of Rt, and published its findings in May 2020 producing data on the potential level of cases, hospital admission and deaths based on scenarios of Rt.

### ***SHORT TERM FORECASTS OF HOSPITALISATIONS AND DEATHS***

65. SPI-M models also were created to provide data on the short-term forecasts for hospitalisation and deaths due to COVID19. These were initially created at an England and UK level but by approximately May 2020 were developed to cover Wales. We included these estimates in our publications from 26 May 2020. Later these were developed to Mid-term forecasts included in regular COVID-19 Situation Report publication. An example can be found at **Exhibit CS01/005 INQ000066222**.

### ***COVID INFECTION SURVEY***

66. The Covid Infection Survey is a structured sample survey to identify covid cases in the community, run by the Office for National Statistics and Oxford University. The survey also later supported the identification of variants (through S gene target failure). The survey provided an effective estimate, however, was limited in statistical power (or potential accuracy) due to the initial sample size of the survey for Wales. Over time and when the sample size was increased estimates became more accurate and we were able to use the indicator to inform moving out of national restrictions. I am not able to be precise as to when this was achieved but I do know that indicators were first used on 11 February 2021. The data related to 2-3 weeks previous initially, so couldn't be used to assess going into national restrictions. The data fed also into SPI-M consensus estimate by the end of the time period highlighted.
67. There were a few key issues around the Covid Infection Survey that I supported on. Initially the ONS were under instructions to not expand the survey to Wales as the funding available to them was England only and did not cover Wales. We escalated this through Welsh Treasury colleagues and Ministers and were able to get an agreement to progress with getting the survey in Wales by 29 May 2020.
68. Once the sample was created, it was quite small and lacked statistical power and therefore value that can be attributed to it. Over time when the sample size increased it became a lot more helpful in confirming the position.
69. There were initially concerns that the ONS were not passing on notification of positive COVID cases to PHW. When this was flagged at a COVID Infection Survey steering group the problem was addressed, and notifications were then passed onto



PHW. The Chief Statistician for Wales was responsible for the management of this project within Welsh Government.

70. We felt that there were opportunities to develop a better indicator using statistical methods that incorporated the data from PHW and the ONS data, however ONS had concerns with sharing the data and the work wasn't progressed.

#### **POLICY MODELLING (RESTRICTIONS) AND REASONABLE WORST-CASE SCENARIO**

71. Policy modelling for restrictions covered a range of key issues including: the national lockdown, the "firebreak"; the closure of schools and education settings; working from home; reduction of person to person contact / social distancing; self-isolation requirements; the reasonable worst case scenario in Autumn and Winter 2020; the return of University students to Welsh Universities in or around September 2020; the potential effect of the firebreak lockdown in October/November 2020; and the return of children to school and educational establishments in 2020 and 2021.
72. The Modelling Cell was very keen to get different types of models established for Wales. There were initially no models for Wales' population. The Imperial Model (produced by Imperial University) provided a UK estimate that was used to move into national restrictions on 23 March 2020.
73. The types of models developed for Wales included: stochastic, deterministic or agent based models. We wanted to ensure that we could get coverage of the different model types for Wales as each model would have its limitations; most notably the source of the data that supplied it (cases, hospitalisation, deaths, or mobility data for example). Where possible we would try to have different modelling teams establish the models to build capacity for Wales.

#### ***PHE model – adapted by TAC/ PHW Observatory (March/April 2020 Onwards)***

74. This model was produced by the PHW observatory analytical team, in March/April 2020, because we did not have the software (R or Python). The model inserted health board population figures into a model developed for England by Chris Pottage and Jonny Pearson of NHS England and NHS Improvement. This was the first set of modelling results that I presented to trusted partners (including SCG /LRFs, All-Wales

National Modelling Forum, 4-Nations call, Senior Policy Officials across Welsh Government, TAG and Welsh Government Health Planning Officials).

75. This model was used to: estimate the trajectory of cases, deaths, and hospitalisations due to COVID-19; to set up enough resources (staff, beds, Nightingale hospitals) for certain scenarios output by the model and to be aware of what a reasonable worst case may look like (40% adherence).

### ***Swansea University model – Introduction to the model***

76. A stochastic model developed by Swansea University academics (Prof Gravenor and Dr Dawson), based on the London School of Hygiene and Tropical Medicine model - but specific to Wales. Funding was provided to Swansea University from the Welsh Government to enable the team to focus on this work. The funding was approved on 30 July 2021 with the contract beginning on 1 August 2021 and was further extended on 7 November 2022.
77. The model informed TAG advice to Welsh Government on a range of issues. The modelling had many uses and informed policy making of national restrictions at Wales level; supported hospital planning; set levels for Circuit Breaker Indicators; Reasonable Worst Case for Local and National Partners' planning purposes.
78. The model's parameters were set based on contacts and interactions with other people when compared to pre-pandemic levels. Each of the scenarios were considered with their impact on contacts and a range of scenarios were then presented, illustrating the impact of different options. Different model versions were given letters to illustrate time different hospital admissions data that had fed into the model to develop the resulting estimates of cases, hospitalisations, and deaths. One of the weaknesses of the model was that there was a lack of data on contacts and adherence to restrictions, we included 'high' and 'low' estimates to show the range of estimates that the model generated.
79. As part of the requirement to inform Welsh public services that were planning for the impact of COVID, we produced a Welsh Reasonable Worst Case that was agreed by TAG. My team would draft the Reasonable Worst Case Scenario document. This provided a clear set of planning scenarios for organisations to consider in advance of them happening. It was by no means a prediction, however a most likely scenario

was also developed and presented in later publications and planning materials. The Reasonable Worst Case Scenario documents were drafted throughout the pandemic to cover the range of issues referred to in my statement from paragraph 79.

80. A reasonable worst case would be created when the previous reasonable worst case was needed to be updated. This may be due to the policy decisions, outbreaks of the virus, or new variants (with differing qualities of transmissibility and vaccine effectiveness). My team would provide a weekly update to the TAC co-chairs, comparing the current Reasonable Worst Case and the data that was being published by PHW. This would inform discussions with stakeholders over the coming week and facilitate a conversation with stakeholders to assess whether an update is required.
81. The RWCs were developed as follows. All models available at the time were assessed through a paper considering what the model would mean in practice for Wales. My team would consider this and propose option based on criteria established in the paper. This would then be discussed with TAG modelling group and TAG itself over multiple meetings. This would give us time to consider and amend based on advice from both of the groups, COVID-19 policy colleagues, and NHS planning colleagues. When approvals from TAG were in place, the paper and underlying datasets were distributed through the Emergency Co-ordination Centre for Wales.

### ***Swansea University model – C3: 27 August 2020 - October 2020***

82. The “C3” scenario was signed off as a Reasonable Worst case (RWC) for Wales in August 2020. The RWC represented a possible version of the future, but one that we hoped to avoid. Through demonstrating a pessimistic but plausible scenario, the RWC could support planning efforts to focus on the mitigations and activities that needed to be undertaken to avoid this scenario becoming a reality.
83. The Swansea university baseline model contained further sensitivity analyses; the rapid response where circuit breakers were reacted to within 15 days, a delayed response where it took 45 days to react (recommended scenario), and a shielding scenario where shielding was considered. “C3”, the delayed response scenario was adopted as the official RWC by the Welsh Government in August 2020.

84. The C3 model enabled the Modelling Sub-Cell to support planning to ensure that we were able to consider and respond to a range of potential outcomes. It represented a challenging manifestation of the outcome of events, whilst excluding highly implausible scenarios.
85. As part of setting this RWC we also rejected the UK Cabinet Office RWC, the Academy of Medical Sciences, and the Armakuni Model. Our conclusion extracted from the paper is at paragraphs 86-89 below.
86. When considering all 4 models, in general, the AMS2 RWC gave the lowest values, the Armakuni RWC gave the highest values and the SAGE RWC and Swansea University RWC gave figures in between, which appeared to be more in line with the previous peak. Out of those latter two models, the Swansea University model was seeded to Wales whereas the SAGE RWC was not. The higher the number of cases that were seeded into the model the quicker the exponential growth that are observed.
87. We contracted Armakuni to run the Oxford model for us, as they had access to super computing power required for the model. One of the key differences between our work and Armakuni was the use of Google products or Microsoft. We later learned from the Welsh Government's Chief Architect that this was because his team didn't have capacity to provide assurance on Google products, and as such we weren't able to bring access to the analytical space into the Welsh Government. Access to Google products, i.e. not having to rely on Microsoft, would have enabled us to work more easily with academic and private sectors. Instead, we used screen sharing (where possible) which regularly felt overly burdensome for those we were working with.
88. Additionally, the Swansea University model RWC was accompanied with sensitivity analysis showing 3 more scenarios to the baseline RWC: the rapid response, the delayed response, and the shielding response.
89. Of the 4 scenarios received using the Swansea University RWC model, the delayed response scenario allows for a 45-day delay in reacting to a circuit breaker trigger being hit. This could be considered a reasonable worse case (RWC) scenario.
90. Therefore, we considered the most value could be taken from the Swansea University model (in particular the delayed response version) and we would recommend it as our official RWC for Wales.

***Swansea University model – E1 (Nov-December 2020)***

91. Swansea University was the only model run we could get in the timescales required to meet the 21/28-day review period. I refer to the 21-day reviews later in my statement, from paragraph 120. SAGE did not have a formal commission from UK Government Cabinet office so would not request modellers to consider it formally.
92. This new scenario fitted to the September and early October 2020 rise in cases and the consensus R value, plus a 10% increase in R for seasonal transmission. It then included a modelled effect of the firebreak. The new scenario was more pessimistic about the potential level of some outcomes, and less about others, as it had been better calibrated to what had been observed in the second wave from September 2020.

***RWC Case – December 2020***

93. No reasonable worst case was formally established in December as we were still learning about the Kent variant. We used the indicators detailed in the Covid Control Plan, which are detailed in paragraph 108 below, to move into national restrictions, notably due to an increase in the number of cases and rate of hospitalisations.

***Swansea University model – February Most Likely Scenario (MLS) and RWC February 2021***

94. From December 2020, new variants of concern (“VOC”) were identified, and the vaccine rollout had commenced. These were unaccounted for in the previous “E1” RWC model. Swansea University updated their model to include the effects of new VOC with increased transmission rates and a vaccine rollout which would have an opposing effect, **Exhibit CS01/006 INQ000066314**.

***Swansea University model – April 2021 MLS and April 2021RWC***

95. The previous, February 2021, RWC was updated as cases continued to fall in April 2021 and remained low, hence a peak in May/June 2021 as estimated previously was unlikely. Additionally, Swansea University updated their models to reflect real-world data regarding vaccine-uptake, **Exhibit CS01/007 INQ000066349**. This

modelling included three detailed scenarios that had been agreed with the COVID policy team, lead by Thomas Smithson. The scenarios considered different returning schedules for schools returning and through the alert levels with different timings.

***Policy modelling paper – July/August 2021***

96. We produced a paper which introduced Flu and Respiratory Syncytial Virus (RSV) modelling. RSV is a virus that affects people of all ages but typically infects up to 90% of children in the first two years of life and some children get acutely ill and require hospital treatment. RSV causes bronchiolitis – inflammation of the lungs, dry cough, and breathing problems. There is some protection against severe illness in infants in the early weeks of life due to transplacental antibody transfer in third trimester of pregnancy.
97. By July 2021 we were at a point with the COVID modelling where the commissioned results from Swansea University had been quite robust in predicting what happened over the next two months. This was useful for policy makers in Government and for the NHS and led to questions about modelling other respiratory viruses like influenza (flu) and RSV (Respiratory Syncytial Virus). They were largely absent in winter 2020/21 but were likely to recur and may rebound at a higher rate than a typical winter. This effect was partly due to an ‘immunity debt’ where lack of exposure meant low immunity, for instance in 1-2 year olds who had not been exposed to RSV. In general, nearly 90% of children may be infected with RSV in the first two years of life but a small proportion may develop bronchiolitis and need hospital treatment including for some, Paediatric ICU.
98. The paper included results from Academy of Medical Sciences (AMS), PHW and my team in Welsh Government. It presented estimates for cases and hospital admissions and identified the need for increased surveillance of RSV, **Exhibit CS01/008 INQ000227887**.

***Policy modelling paper – COVID, Flu and RSV – 30 September 2021***

99. This model introduced waning immunity of the vaccine and considered a COVID, Flu and RSV together for Winter planning purposes. It also updated the timing of the results from the previous paper, incorporating updated hospital occupancy and admissions data which supported better planning **Exhibit CS01/009 INQ000066344**.

## OPERATIONAL MODELLING

100. The modelling of operational systems supported policy colleagues to provide an illustration of the impact of policy decisions when developing something new (for example what would the vaccine roll out look like, when would milestones be expected, and what resources were required to deliver it). This work would typically be supervised by a Head of Profession for Operational Research, but the Welsh Government had not appointed one since Kate Chamberlain left in 2019/2020. Rob Orford took on the role of Senior Responsible Owner (SRO) for this work under his role as Chief Scientific Advisor for Health, and all reports were coproduced with the TAG modelling subgroup, and then presented to TAG for sign off before use. We also established quality assurance meetings with Scottish Government Operational Research leads. Because of their skills in this area they were able to provide independent analytical assurance from an operational research lens.
101. We created three key operational models: the Testing & Tracing Workforce model (multiple versions); the impact of tracing on Rt; and the Vaccine roll out modelling.

### ***Tracing workforce: Version 1***

102. Version 1 was an in-house model developed in late May 2020 using a combination of Rt estimator and cases data for tracing system size, **Exhibit CS01/010 INQ000227459**. It was developed by Ifan Evans, Director within Health and Social Care and me to model what size workforce would be required based on the number of infections with options to cap based on the number of available tests. Our work was quality assured by NR Higher Analytical Officer and signed off by TAG with policy sign off given by Joanne Daniels, the SRO, and presented to the First Minister for the first time in April 2020. We produced a summary paper for TAG on the model once we had done some quality assurance with work pulled together from PHW and had confirmed policy colleagues method of tracing. We presented this to TAG on 12 May 2020, **Exhibit CS01/011 INQ000227535**.

### ***Future versions of Tracing workforce modelling and testing demand***

103. Once testing was expanded to be able to cover demand for Wales, we used the RWC scenarios included in the policy modelling section to inform planning for the testing

and tracing system. The results of the modelling were included in the advice provided to Ministers.

***Circuit breaker indicators***

104. In order to monitor any future easements of measures, requirements and restrictions we considered the 'trigger points' to determine whether measures needed to be re-imposed. Those trigger points would also inform whether additional restrictions were required that are were not already in place.
105. Underpinning each of the circuit breakers was an NHS layer that informed on whether national or local actions were required, dependent on the level and trend observed (in effect an escalation/de-escalation approach similar to that currently used in Emergency Departments). For instance, if critical care capacity was 40 beds, as part of the all Wales 180 (there may be extreme surges beyond that point), and COVID patients occupy 20 with an increasing trend then elective and non-essential activity may immediately cease to provide an immediate capacity buffer.
106. There was no single indicator that could provide an understanding of whether measures should be amended immediately. Indicators that were available also varied in terms of timeliness. Indicators were also reviewed when new data was made available. It was noted that in the event that a circuit breaker indicator was breached there would be a three day lag from when the indicator was reported to legislation being in place and announcement of new measures. Then five further days before the impact of the previous measures to be noticed, due to the incubation period of the virus.
107. The Circuit Breaker Indicators, which are set out in the public explainer at **Exhibit CS01/012 INQ000228030**, included were as follows:
  - a. If a reliable estimate of  $R_t$  (median) for the population of Wales was greater than or equal to 1.1.
  - b. If the doubling rate for new hospital admissions (all Wales community acquired) was shorter than 30 days and decreasing for consecutive measurements, and/or current occupancy for suspected and confirmed patients was above 1200.
  - c. If the total critical care bed occupancy (for COVID and non-COVID patients) was above 180 and COVID numbers were increasing for 7 consecutive days.



- d. If the critical care occupancy for suspected and confirmed COVID patients above 120 and increasing for 7 consecutive days.

### **COVID control plan for Wales**

108. I drafted the scientific material for the COVID Control Plan, **Exhibit CS01/013 INQ000066066**. Each section was signed off by the Chairs of the COVID Intelligence Cell, Rob Orford, Fliss Benez and Jo Trott. The document introduced the key surveillance indicators that we would be considering alongside local evidence. In addition, it formally announced the Covid Intelligence Cell and governance around the decision-making process. The process and indicators were widely discussed across Welsh Government, including at the COVID steering group, Cabinet (with Ministers) and TAG.

### ***Local Restrictions : November 2020***

109. Following the local restrictions we carried out statistical analysis to determine their impact. We concluded that:
  - a. The NPIs used for the local interventions appear to have less impact than national interventions (medium confidence);
  - b. The population interventions used in Wales appear to wane over time and become less impactful (medium confidence); and
  - c. Further work was required to analyse the impact of local and national interventions to support the response to C-19 in Wales (high confidence)

### ***Senedd & Policy & Crime Commissioner Elections***

110. In February 2021 I was asked by Piers Bisson, Director of European Transition, Constitution and Justice and Sir Frank Atherton the Chief Medical Officer to lead on the development of scientific advice to inform the timing of elections and its impact on COVID outcomes, and what needed to be considered from a COVID perspective when running the elections. This evidence supported the decisions taken by Ministers, identified funding requirements for materials to make the voting centres as safe as possible (in relation to COVID-19), and provided advice to the Electoral Commission on how to implement those safety measures.

### ***Suggested amends to Self-Isolation Period***

111. In approximately October 2020, at the request of Jo-Anne Daniels (Director for tracing policy), I went back to consider the evidence in relation to the tracing policy. The review was prompted by Policy colleagues who wanted a review to determine if the length of time people were self-isolating could be shortened if there was evidence it would increase adherence to the tracing policy. Developments in the scientific evidence highlighted that the serial interval for the virus was 7 days and to interrupt transmission people should self-isolate for two serial intervals to interrupt onward transmission, i.e. 14 days. I highlighted this to Rob Orford and colleagues at PHW that showed that onwards transmission was happening, on average, around day 2, and that there was evidence to support the self-isolation period to 10 days. We pulled together this evidence into a number of papers from different angles, **Exhibit CS01/014 INQ000227539**, **Exhibit CS01/015 INQ000227536**, **Exhibit CS01/016 INQ000227537**, **Exhibit CS01/017 INQ000227538** and presented it to SAGE in November 2020, and requested they reconsider the length of self-isolation period. SAGE considered this and then updated their advice for the UK.

### ***Vaccine roll out modelling: October 2020***

112. This was a Welsh Government and Local Health Board (LHB) level model used to show the time it would take to vaccinate particular groups of Wales's population and how many staff would be required based on easily-changeable inputs.
113. The vaccine roll out model estimated: the time taken to vaccinate each of the Joint Vaccination and Immunisation (JVCI) priority groups in Wales with different resource levels; including: the amounts of vaccines wasted; the vaccinating staffing costs; and informed timings for procurement of Vaccine and Training requirements.
114. The model was agreed at TAG on 23 October 2020 and was used to support Ministerial discussions around the vaccine roll out and potential different approaches.

### ***Population Level Immunity***

115. In this analysis, we estimated the proportion of Wales' population that may have some immunity to COVID-19. Immunity can be acquired following a COVID-19 infection or

an effective COVID-19 vaccination. The term “COVID-19 immunity” can mean protection from COVID-19 infection, protection from severe illness, and/or prevention/reduction of transmission of COVID-19 to others.). This analysis focussed on immunity at a population level as a proportion of the population, but in reality, immunity would also vary for individuals.

116. We estimated the immunity levels in Wales from early 2020 to 8th May 2021. Assuming immunity did not wane over time, we estimated that the level of immunity in Wales was between 55% and 60% as at 8th May 2021. We also estimate that without the introduction of COVID-19 vaccines, 30% of the population would have been immune at this date.
117. The analysis then was developed to include waning immunity, using vaccine efficacy assumptions, and looks at how immunity changes within 10-year age bands. A scenario analysis was carried out to assess the impact of waning immunity over time. In this analysis, it was assumed that immunity to COVID-19 would wane after an average of 180 days following infection or vaccination (accounting for a 14-day lag to build immunity). Under this assumption, immunity as at 8th May 2021 was estimated to be between 40% and 46% of Wales’ population. The counterfactual, a scenario where no COVID-19 vaccines exist, estimated that 9% of the Wales population was immune as at 8th May 2021.
118. This analysis also estimated immunity levels for each ten-year age band from 20-29 to over 80s. Assumptions for waning immunity, vaccine efficacy and the time it takes to build immunity following a COVID-19 infection or vaccination were kept constant for all age bands, but the population immunity model was designed so these parameters can easily be changed for each age band. This analysis extends to the most recent date data was available (8th May 2021). It formed part of a wider analysis which projects to future dates to determine when herd immunity may be reached, if at all.
119. The majority of our modelling was carried out at a population (Wales) level and didn’t consider individual protected characteristics separately. Where there were factors to raise, they were typically flagged for consideration as part of the Equality impact Assessments carried out as part of Ministerial Advice from policy colleagues.

## HOW MODELS WERE EXPLAINED TO MINISTERS

120. There was a 21-day review process for changing national restrictions and related legislation. There were a few different ways that I would support policy colleagues in providing scientific evidence to Ministers. I was invited to a weekly catch up, chaired by Reg Kilpatrick, the Director responsible for the National Restrictions policies for COVID and later the Director General for Restart & Recovery. I would provide the latest modelling information and COVID monitoring information. Policy colleagues called and asked for all available evidence on specific topics that were being discussed and monitoring information that would evidence the COVID harms. Tom Smithson, the lead policy official, and I had regular phone calls (sometimes daily) to discuss different policy options being discussed and whether there was any evidence available to support it.
121. My team and I would consider what evidence was available and whether we could give advice that would support decision making. We also provided an assessment of how confident we were in the advice. We would typically discuss the advice at a TAG meeting and then put that advice into a paper for Ministers to consider alongside their policy advice. The paper would get clearance from Rob Orford, CSO for Health, and any modelling would be considered by the Modelling Cell.
122. In August 2020, we established the Covid Intelligence Cell (CIC) as method of highlighting monitoring evidence to Ministers, providing a single consistent and agreed version that we could provide to all Ministers when they were taking advice.
123. From August 2020, Health Protection Advisory Group (HPAG) and the COVID steering group were introduced, and the membership was tightened to Senior Civil Service (SCS) only, so I didn't regularly attend. I attended the meetings for individual agenda items where I presented CIC's agreed position on monitoring data and new sets of modelling results. When there were new modelling results available, we would run an SCS technical briefing and a technical briefing for Ministers in the Cabinet also. The First Minister also had a twice weekly catch up on the 21-day review contents where we would keep him updated with monitoring and evidence.
124. I sometimes supported individual Ministers by attending stakeholder workshops to explain the situation fully and give stakeholders an opportunity to raise questions with the Minister present. This included meetings with the First Minister for Wales; the Minister for Health and Social Services; and some other Cabinet Ministers.

## MEETINGS WITH OTHER UK NATIONS

125. We met regularly with the other nations of the UK across multiple fora for different purposes. For modelling and data our 5 key meetings with other Nations were the following.

### **SPI-M Meetings**

126. **SPI-M meetings** were meetings with leading academics for which I was a member (in place of Rob Orford and Fliss Benee). We were able to agree at least 2 members from WG; one from PHW; and Mike Gravenor from Swansea University (as the lead for our reasonable worst case most frequently) to enable Wales to input effectively. We also took papers to SPI-M including a paper on our Circuit Breaker indicators, which we used to communicate to the Welsh public on when full national restrictions would be required. In addition, there were also quality assurance sessions specifically for Devolved Administrations to quality assure models in use by SPI-M academics and present our own models for quality assurance by SPI-M academics. We also invited one of the chairs of SPI-M to TAG meetings, given that a lot of the TAG time was spent on modelling or data.

### **Social Care SAGE Subgroup Meetings**

127. The **Social Care SAGE Subgroup** was mostly focused on England however we supported its development to include Wales and Scotland (to an extent, noting their different set up for social care). Wales was not as heavily involved as we did not have social care data (workforce, population, covid cases), which also reduced our ability to model for the sector.

### **4-nations Modelling Group Meetings**

128. In March 2020 I began to establish the **4-Nations Modelling group** by contacting colleagues through the Chief Medical Officers in each of the 4 Nations and provided a secretariat for the group. The purpose of the group was a method of joining up the 4-Nations of the UK to consider the advice, limitations, and communication of science/ SAGE advice. It was most useful as a method of peer review. As a group we were able to share and discuss how we were communicating our modelling and

learn from other Nations. Scotland, Northern Ireland, Public Health England and the Department for Education had good representation; however, Cabinet Office colleagues were invited and attended only once or twice. Through this meeting we were able to discuss the different measures, their strengths and weaknesses, and different technical elements. Ministers in Wales and Scotland were content with us being quite open with each other and lead to us developing our communication tools much more efficiently and effectively. We also supported each other with provision of modelling, such as the Imperial model, which Scotland ran on our behalf. We were also able to discuss differences between different indicators and how we should interpret the different counts. This was quite key as the UK data rarely matched the quality assured PHW data. JBC/ UKHSA took on the administration of this meeting once they were fully established, seeing it as the key forum for communicating with devolved administration analysts.

### **JBC Meetings**

129. By June 2020 the 4-Nations Modelling Group was established, and **there were multiple JBC meetings that were on a 4 nations basis**. Given the nature of the JBC (a data science organisation) most of the discussions were quite technical or required some understanding of data. However, they did provide useful contact information so that we could establish relationships with analysts in the organisation to develop analysis for Wales. One of the key issues with working with JBC was the barrier introduced by having a policy lead within Welsh Government with no analytical skill set. By introducing a policy intermediate step, analysts from WG were not able to work with analysts from JBC by default (as is the case across the rest of the GSS profession) and analysis wasn't effectively developed to include Wales from the outset (because the knowledge of analysis for Wales was absent). I took on the role within TAC to try and improve this, however additional policy governance barriers were then introduced within Welsh Government and JBC which meant that analysis wasn't effectively embedded. There were also several delays in getting JBC to a place where they could work with other nations, including the requirement to develop data and analytical policies for the JBC. This led to members of the team becoming frustrated with approach to JBCs work. Governance within Welsh Government also slowed down the commissioning of new analysis, as the meetings weren't frequent enough nor did the chair have a sufficient analytical skills.

## **JBC Technical Board Meetings**

130. I attended the **JBC Technical Board to support the CMO for Wales**, Sir Frank Atherton, and the chairs of TAC. Before each meeting I briefed both parties and we discussed the key of the analytical and technical elements. We also discussed the UK Alert Level at this meeting.

## **International travel and working with JBC/UKHSA**

131. We received multiple sources of intelligence that supported the Welsh Government policy on International Travel. The core information for making the assessment was provided by the JBC/ UKHSA, as part of their process. The process was designed and carried out by the UKHSA and approved at the JBC technical board by CMOs.
132. As part of the discussion at JBC technical board, we were guided through a series of questions that had been written by the UKHSA. The questions were quite limiting, and only one option was presented and then later updated. We highlighted that there are different options that should be considered. Having worked on the Welsh Index of Multiple Deprivation (Welsh IMD), which sought to rank different geographic areas in Wales from most deprived to least deprived, I flagged that the methodology was inconsistent with the IMD approach across all four nations. UKHSA highlighted that Cabinet Office had agreed to consider some elements of this approach and were in discussion about this with UKHSA, but nothing further was developed or presented to us.
133. We briefed policy officials and Welsh Ministers on the results. Countries were split into the categories: Red, Amber, and Green. Ministers from across the Devolved Government and the UK Government would meet to discuss the results and agree an appropriate level. We flagged a number of risks with the methodology and process, some of which we were able to get addressed.
134. It was difficult for us to get access to be able to quality assure the assessment methodology and process. When access was provided it was provided to both policy and analytical teams. As a member of the Government Statistical Service, we typically have a role in being independent to government policy and have more freedoms to work across organisational barriers. When considering access to this work, analysts and policy officials from Welsh Government were treated as the same,

including policy officials attending quality assurance meetings. This sometimes meant that I felt restricted in providing a full view, as policy colleagues would message me after I said something to explain it to them fully alongside trying to participate in the meeting.

135. The process itself was initially quite manual and high volume for UKHSA analysts, meaning lots of opportunities for errors to occur. UKHSA colleagues divided the countries between multiple UKHSA analysts for them to individually assess. They then collected data for each international country to be considered individually and applied the indicators to a decision-making framework, usually signed off at JBC/ UKHSA technical board.
136. We were provided with time to quality assure the process and assessments but there was a significant delay between it being raised and UKHSA actioning. We raised at multiple fora between UKHSA and Welsh and Scottish Governments and also escalated it to Director General for Restart & Recovery before we were provided any information about the process. This was key, as Welsh Ministers had to make a decision, and attend COBR meetings with UK Government Ministers and received limited briefing in advance; whilst UK Government Ministers would get access to UKHSA briefings.
137. The categories that each country was assigned to were not always well defined within the framework for assessment meaning it was not clear what circumstances would move different countries into specific categories. This also led to significant consistency issues that we raised as part of the quality assurance process. UKHSA took this on board and developed a consistency spreadsheet to check whether there were any large consistencies between different countries.
138. A new category, Red-Amber, was introduced by UKHSA with no information in advance that it would change, nor sign off from the JBC / UKHSA technical board. We later understood that this was on the back of discussions between DfT, Cabinet Office and UKHSA.
139. On a few occasions UK Government Ministers views or comments about individual countries were highlighted during the quality assurance process; and sometimes there was discussion about handling for briefing individual UK Government Ministers. It felt as though there could have been more separation between policy and analytical perspectives to ensure the independence of the process.



## LESSONS LEARNED

140. There has been limited lessons learnt exercises for my team during my work for the TAC, however I did leave the team at the end of the main response to COVID. We contributed to the overarching TAC lessons learned points but they were mostly supportive of other TAC colleagues and less about the analysts in the team. The statistics profession in Welsh Government has not requested any information from me.

### 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 .....

Craig Solomon MBE

Dated: .....19<sup>th</sup> September 2023.....