Summary of themes (November 2021 workshops)

Data

- Theme: Striking a balance. Collecting what is “important”, conditional on ethical considerations and not to overburden the participant and make responses less likely.
- Theme: Given biases of different data streams, a need for pipelines to synthesise a range of data sources.
- Theme: Parameterisation. “Bottom-up” vs “top-down. Aggregate data vs individual data.
- Theme: Format of data. Making it accessible can help aid its usage (for example, sources that use a baseline meaning we do not have the absolute measures).
- Theme: Omission of data in the analyses. Are there communication links between data collectors and data analysts to lessen that?
- Theme: What already exists that could be used/tweaked to the data being collected that would be informative? Not necessarily a need for establishing new data streams.

Integrated models

- Theme: Building the team that has the expertise from the different fields.
- Theme: Modelling perceived risk vs actual risk.
- Theme: Attempting to prepare to face challenges, when we do not even know what they are yet…

Policy

- Theme: Objective matters. Perspective matters. Ethical considerations.
- Theme: Role of the public in the research process (Public Involvement).
- Theme: Take collection of parsimonious models and their results from different fields & attempt to synthesize them vs the one all encompassing mega-model. What will work well in the policy arena?

Also important!

- Theme: Importance of science communication.
- Theme: Availability of people with the skill sets needed.
- Theme: Sustainability of funding to permit interdisciplinary projects over prolonged time horizons.
- Theme: Supportive work environments & discussing our wellbeing (physical and mental).

What are the biggest challenges remaining in including behaviour in models to inform policy?

(February 2022 workshop: Discussion points)

Defining the objective function

- How do we define an objective function for an infectious disease outbreak?
    - Is it reasonable to attempt to encapsulate health, economic, educational, social, … factors in a collective objective function?
    - Approaches: Take collection of parsimonious models and their results from different fields & attempt to synthesise them vs the one all encompassing mega-model. What will work well in the policy arena?
- What is the end game in the face of uncertainty?
    - Not knowing what interventions we may have available
    - How to reasonably account for behavioural response?
    - What is a reasonable time horizon to be looking at for modelling to be informative?
- Questions of scale - What geographical scale is reasonable?
    - Advocating for a global perspective, through conducting work that would like to optimise outcomes globally?
    - At a local level, the values/costs of infection and/or adopting an intervention may differ

Model complexity

- What types of behaviour have we not yet captured in models?
    - Should behaviour always be included in models?
    - Impact of heterogeneity and how to decide what level of detail to include?
- Can the model framework be reliably parameterised & is it appropriate for the question being analysed?
- A checklist for constructing an interdisciplinary model? E.g. model type, what geographic scale, the time horizon, …

Data

- We have unprecedented data on behavioural response! How may we best use it?
- What data would be useful to collect?/ Why we need more data before the next pandemic
    - https://sociologica.unibo.it/article/view/13221/13836
    - Micro-level mobility data (that big data companies may have but is not immediately accessible)
    - What are people reacting to and how amenable are they to public health messaging?

        - Responding to global information, local information, social networks?
        - Cultural factors modifying behaviour? Complex

Uncertainty
In terms of encountering a novel pathogen & use of “atypical” interventions (e.g. lockdowns)

- How do we account for longer term outcomes when we are uncertain what they may even be,
- how should their cost be quantified?
- how may the costs vary over time?
- Is there a process to have a consensus (across different disciplines) to inform the above questions?

Communication

- How do we effectively communicate that the optimal policy is dependent upon the objective?
- Consideration to the audience
    - between different academic disciplines
    - between scientists and policy
        - What types of projects are useful for which types of policy makers?
    - to the general public

Building on these events & nurturing collaborative links

Non COVID specific lessons!

Retrospectively

- Can we retrospectively go back and infer what the government objective function was? (economics, health, something else?)

Prospectively

- What impact would experiencing this pandemic have on response to a future pandemic?