Goals:

- Make it easier for pro bono custom modelling team to estimate intervention effectiveness and turn it into gleam simulations. In particular allowing:
    - A unified workflow with the active infections estimation
    - Easier collaboration on making estimates
    - Easier way of updating estimates over time in light of new information
    - Easier way of generating the gleam definition files
- Allow for uncertainty in estimating intervention effectiveness

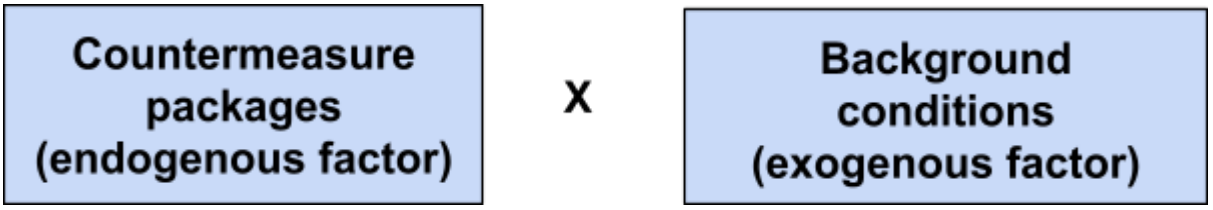
These are all accomplished by integrating Foretold with a colab notebook; and solutions will require making some progress on forecasting infrastructure and building good pipelines for integrating with Foretold.

To start with, the below feature could be integrated into the same colab as the active infection estimates, to have an easier unified workflow.

Feature specification

User submits a link to a spreadsheet of the following type.

The spreadsheet encodes the following intervention:



The type signature of a countermeasure package or a background condition are the same:

They are sets of so-called “exceptions” $\{e_1, e_2, e_3, \ldots\}$, where each exception e_i is a quadruple `<geographical region, distribution over a model parameter, start date, end date>`.

Each combination of a countermeasure package and background condition defines a single Gleam simulation run (which also takes as input a list of active infections in different regions).

Concrete example:

- Countermeasure packages
    - Sao Paulo implements school closings & compulsory mask wearing, followed by relaxation of school closing [March 20th to April 20th]
        - `<Sao Paulo, normal(0.8, 0.2), March 20th, April 20th>`
        - `<Sao Paulo, normal(1.6, 0.2), April 20th, May 20th>`
    - Sau Paulo implements school closings & compulsory mask wearing & general curfew [March 20th to April 20th]

        - <Sao Paulo, normal(0.4, 0.2), March 20th, April 20th>
- Background conditions
    - Rio de Janeiro implements same countermeasure package [March 14th to April 8th]
        - <Rio de Janeiro, normal(0.8, 0.2), March 14th, April 8th>
        - <Rio de Janeiro, normal(1.6, 0.2), April 8th, May 20th>
    - Rio de Janeiro implements no countermeasure package [March 14 to April 8th]
        - <Rio de Janeiro, normal(2.5, 0.6), March 14th, April 8th>
- In total, 2 x 2 = 4 simulation runs

In the MVP, the distributions over parameters are sourced from Foretold measurables. The measurables will be placed in this Foretold channel. (Later, we might also source the start and end dates from Foretold measurables.)

This colab notebook then takes the spreadsheet and replaces all the Foretold IDs with numbers from their Foretold distributions.

DONE ~~The colab notebook should:~~

- ~~take the appropriate Foretold distributions (as defined by IDs) from the spreadsheet~~
    - ~~Please note that Foretold distributions will be in a private channel, so this will require adding support for authorising a user on Foretold~~
    - ~~Sometimes this column will not contain an id but just a point estimate for the parameter~~
- ~~compute their means~~
- ~~generate an output .csv in the same format as the spreadsheet, but where Foretold IDs are replaced by 20 quantiles~~