Supplementary Material

The following pages contain supplementary material explaining calibration efforts, forecasting methods and additional assumptions for the submitted PHAC 2021 Forecast report.

Calibration Methods

Setup for Calibration

Before any forecasting can be done, it is important that critical parameters are calibrated to ensure forecasting accuracy. The calibration process begins by loading the observed data and manipulating it wherever necessary. Due to noise in the eastern provinces and low incidence in the territories, the Canadian data is filtered to contain only BC, AB, SK, MB, ON and QC. The removal of missing values and negative incidence is performed and then the data is converted to long form so that it can be passed to the `McMasterPandemic` function `calibrate`.

Original (Bad) Calibration Attempt

Calibrations are done province-by-province. We began with setting the correct population size N and optimizing for the initial number of exposed individuals E_0 and the initial transmission rate β_0. The calibration function was also fed an estimated reproduction number $\mathcal{R}_0$ based on the second wave data using the ® package `epigrowthfit`. It is clear that after calibration, this is not enough to accurately match the observed data.

Updated Calibration Method Used for PHAC Report

One of the main issues with the original parameter calibration is that it does not take into consideration the noise in the observed data. To rectify this, it was found that the function `calibrate` can https://github.com/bbolker/McMasterPandemic/blob/master/ontario/Ontario_current.R