CUH Respiratory Virus Modelling Dashboard – Quick Guide

# Launching the dashboard

Follow the installation instructions at <https://github.com/yinchi/cuh-resp-model>. For Windows, refer to the Word document “Installation\_Windows.docx”. Following all the steps and executing the launch script will create a server on the specified port.

For the purpose of this guide, we will use the default port value of 8050. Open a browser and navigate to <http://localhost:8050> to use the dashboard.

# Step 1 – Upload Files

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1. Enter the **name** of the disease under study (e.g. COVID, influenza, RSV) in the top textbox.
2. Click on the **first** upload dialog to upload the historical patient stay data. This will be an Excel file with the following columns (at minimum):
   * **Summary**: patient outcome, e.g. “Discharged” or “Not Admitted”
   * **First\_Pos\_Collected\_All**: Timestamp of the first positive test for the disease under study
   * **Age**
   * **Admission**, **Discharge**, **ReAdmission**, **ReAdmissionDisch**: admission and discharge timestamps for each patient’s primary stay, and readmission stay (if applicable).

Alternatively, drag and drop file onto the upload dialog.

1. Click on the **second** upload dialog to upload the historical occupancy data. This will be an Excel file with the following columns (at minimum):
   * **Date**
   * **Critical Care**: the number of patients in critical care for the disease under study.
   * **Non Critical Care**: the number of patients in non-critical care for the disease under study.

Alternatively, drag and drop file onto the upload dialog.

1. Click on the **Next** button to continue to Step 2.

# Step 2 – Arrival Modelling

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The scenario parameters for the arrival model are as follows:

* **Date of peak arrivals**
* **Peak daily arrivals**: the expected number of patient arrivals on the peak day.
* **Horizontal scale parameter**: the larger this is, the wider the “bell shape” of the modelled scenario, i.e. the longer the epidemic wave lasts.
* **Minimum value**: the baseline level of daily arrivals.
* **Scenario date range**: the time period to run the simulation for.

The horizontal scale parameter and minimum value can be **fitted** to historical data. To do this, select a date range in the upper part of the dialog and select the “Fit Poisson curve” button.

You can **pan** and **zoom** the graph of daily patient arrivals using the mouse. Double-clicking anywhere in the plot will reset the graph. You can also **download** a PNG copy of the graph using the menu in the top-right corner (mouse over the graph to expose the menu).

After the scenario have been set, select the **Next** button to proceed to Step 3.

# Step 3 – Length-of-Stay distribution fitting

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After a short **wait**, distribution fitting statistics should appear showing the top five distributions for each age group. Select a distribution for each age group using the **drop-down** menus.

The statistics shown are:

* Mean squared error: lower is better.
* AIC: Akaike information criterion, lower is better.
* BIC: Bayesian information criterion, lower is better.
* KS p-value: p-value of Kolmogorov–Smirnov test, higher is better.
* Mean: mean of the distribution.
* St. dev.: standard deviation of the distribution.

After selecting a distribution for each age group, select the **Next** button to proceed to Step 4.

# Step 4 – Simulation

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Simulation starts automatically after loading the Step 4 page. After a **wait**, the simulation results should appear. These show the **projected** number of occupied beds (total, adult, and paediatric) for each day of the simulated scenario, with **uncertainty bands** (top/bottom deciles and quartiles).

As before, you can **pan** and **zoom** each graph using the mouse. Double-clicking anywhere in the plot will reset the graph. You can also **download** a PNG copy of each graph using the menu in the top-right corner (mouse over the graph to expose the menu).

Additionally, you can download the entire simulation configuration as a JSON file by selecting the provided button.