Instructions

- **Set up:**
    - Download Xcode (only available for Mac - unfortunately, Apple has pretty restrictive policies and do not currently support running Xcode on Windows)
    - Double click “CoronaModel.xcworkspace” to open the project workspace
    - Run the app by clicking play in the upper left corner. There are options to run on any size of iPhone as a “simulator” which appears on your computer screen, or you can connect your iPhone via cable and it will install the app on your phone. This sometimes requires authenticating/approving our app, as it is technically a third-party developer app.
- **Launch Screen:**
  On the launch screen, you can input parameters for the simulation:
    - Simulation duration (days): this represents the number of “days” that the model will represent. In our app, these days are each scaled to seconds, so the default duration of 30 implies a 30 second simulation
    - Desired population: the desired starting population count of all individuals. Default is 100
    - # of Initial Sick Cases: the number of initial cases of the virus. Default is 2
    - Social Distancing value: this runs on a scale from 0 to 100% and is based off of a more general concept of social distancing. 0 means no social distancing, and correspondingly on the map, the individuals move around a lot faster and infect a lot of people early on. 100 represents maximum social distancing. To keep it realistic, the nodes do still move around and sometimes infect others, but it is at a much lower rate than in the other cases.
- Simulation Scene
  At the top, you will see a variety of statistics representing the current state of the simulation:
    - R_o: this statistic is meant to represent the number of new persons infected per individual. Due to model limitations such as limited population/region size and scaling difficulties such as distances and time, we determined that it was necessary to adjust this value to better represent observed R_O values during the current pandemic. At a social distancing value of 50%, the model terminates with an R_O of approximately 1.62. At a higher social distancing value of 75%, the model now terminates with an R_O of 1.07. Finally, with a low social distancing value of 25%, the R_O climbs to 3.48, representing the dramatic effect of decreased social distancing.
    - The counts for Healthy, Infected, Recovered, and Fatalities represent the current total number of cases in each category. This is updated live every time a case changes status.
    - Days remaining represents the number days left in the simulation

    - On the map itself, the nodes are colored according to their status, with colors matching the colored labels at the top. Healthy nodes are in green, infected nodes are in red, recovered nodes are blue, and black nodes are deceased.
- Results page:
  Similarly to the statistics presented on the simulation page and detailed above, the results page shows some interesting statistics observed by this iteration of the model. There is also a "Start Over" button which allows the user to begin again with different inputs.