Dear friends and family,

I made a coronavirus simulator using the demographics of Montclair and the reported Chinese death rates. Of course, this is a rough simulation and should not be interpreted as an exact prediction, but the message is clear: social distancing saves lives!

You should also consider that the flatter the curve, the lower mortality rates are likely to be as hospitals will have more resources to treat each case.

The reason I'm sharing this on Facebook is not to increase fear, but instead, to put some of the statistics we're all inundated with into a more local reality and emphasize that doing your part in social distancing is the ethical choice. Do your part for the betterment of our society!

If you're interested, here is how the model works:

1) Demographic groups are initiated according to census data.
2) Initial infection is a middle-aged person.
3) Each day, every infected person randomly interacts with the number of people corresponding to their demographic group. Young people and middle-aged people interact with the most people and the elderly and very elderly interact with the least.
4) If the chosen interacted person is not socially isolated, a random number is generated to determine if the virus is passed on. The chances that the virus is passed on correspond to roughly 3 infections per person. If the chosen interacted person is socially isolated, they do not get the virus. In other words, the social distancing rate refers to the percent of the community that is completely isolated.
5) If a person has had the virus for 14 days, they recover and can no longer pass the virus on.
7) Each day, mortalities are determined randomly based on the reported Chinese mortality rates.

Limitations of the model:

1) Geographic considerations (People bringing in the virus from elsewhere).
2) Rough estimates (Mortality rates have varied significantly in different countries).
3) Overly harsh abstraction of social isolation
4) Not accounting for habitual contact with the same people.
5) No consideration for unreported cases.
6) I'm sure a number of other factors. The idea here is to get a general idea.

Conclusion:

I am very hopeful that my estimates are high. I believe that they are given the limitations of the model, specifically the consideration of unreported cases. Regardless, the takeaway is clear—doing your best to stay home is likely to save the lives of the people you love in your immediate surroundings. Stay safe and do your part.

Sincerely,
Owen