Jonah Tuckman
April 5, 2020

For my project I looked into two extraordinary links. One of them being a link to keep up with on the spread and demographic breakdowns of this virus, the second being a recently published, and very interesting piece on the spread of Corona.

Here are my two papers:

1. This is the resource that I have used since very early on to track the growth of the corona virus. It has become less useful as cases have grown to such a high amount but it is still useful.

https://coronavirus.jhu.edu/map.html

Source of data: WHO, CDC, ECDC, NHC, DXY, 1point3acres, Worldometers.info, BNO, state and national government health departments, and local media reports.

Updated throughout the day

2. This is a great article about the undocumented corona cases early on and how that aided in the spread world wide.

https://science.sciencemag.org/content/early/2020/03/24/science.abb3221

Authors: Ruiyun Li1,*, Sen Pei2,*,†, Bin Chen3,*, Yimeng Song4, Tao Zhang5, Wan Yang6, Jeffrey Shaman2,†

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I chose these articles as they were both things that I had taken interest in prior to the beginning of this project. The Johns Hopkins website is one that I used to watch the first cases come into the US what feels like months ago. I watched the spread through Europe and even the

flattening of the curve in China throughout this process all through the reliability of Johns Hopkins data collection.

The science paper I had read a snippet of prior to this project. I have found the issue of under detection to be fascinating in terms of the understanding of an accurate mortality rate as well as the tracking of the spread, which as of now has found its way to be less useful than it had been.

The general understanding of the paper is that through under documentation of the virus, we have seen inaccurate data in terms of the spread and the true mortality rate, and similarly have seen a rapid spread based on a misunderstanding of the contagious nature of it. Because the virus has been underreported, people who do not show symptoms find themselves not social distancing and for that reason spreading the virus. This has been the largest danger that we have found in terms of the spread and something that we are working tirelessly to solve.

In this paper, the researchers are trying to understand the true number of undocumented cases. They predict with a 95% confidence interval, that in China, prior to January 23 of this year, 86% of cases were undocumented. Through this they then believe that undocumented infections were the cause of 79% of documented cases. The authors used this data and the understanding of undocumented cases that they had collected and studied to further understand the incredulous spread that we have seen. The research here is highly important as a general understanding of the spread will then further our ability to stop the spread.

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This paper was mainly rooted in statistical understanding of the virus rather than using a bioinformatics approach. I felt that this would be a good thing to look into as the statistics can break down the mathematical spread of the virus which then will present nicely alongside the other research brought up about the biological understanding. I feel it is important to understand an issue from all angles which is why I picked this article, allowing for a furthering of understanding of this topic through an additional sense into it.

The biological understanding within this paper is that of the look into the infectious nature of the disease and then through an understanding of the danger it brings through these infectious components, and a look into the spread of undocumented cases, an absolute urging to further strengthen stay at home and social distancing recommendations. This paper has a biological look into the infectious components of the disease and through that, the ways that we have seen it spread so far. It is a combination of the biological ideas and the mathematical significance, what makes the virus itself, and how have we seen that mathematically represented in the world?

I had understood this to be a significant issue for some time now, but it certainly reaffirmed my understanding of the contagious nature of the disease, and through that the need to be isolated even when symptom free. I do feel that, my personal mantra at this time, in a time like this it is important to be cautious rather than fearful. Fear will eat at us while we isolate, caution will not. This paper furthered my understanding of the need for caution, as the spread is something that we cannot see most commonly.

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I now wonder what this data will look like in the coming weeks. I am curious if we will see a flattening of the curve now that social distancing protocols have been put in place or if the lack of reporting will continue to strengthen this growth. We have seen in the past few days, reports that 1 in 4 cases are symptom free, thus strengthening this claim of undocumented cases thus I do hope we understand the importance of social distancing and continue in that fashion.