Novel Coronavirus (COVID19) China Case Study

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*Introduction*

**All of the information in this study is up to date as of March 16th, 2020**. China has recently started to stabilize and contain the spread of Novel Coronavirus. Examining the Coronavirus trends in China can be a model of what may occur in the United States.

The data used in this study is from Johns Hopkins University Center for Systems Science and Engineering. The GitHub repository is publicly provided here:

<https://github.com/CSSEGISandData/COVID-19>

I used Python Pandas on the Jupyter Notebook to examine the CSV files provided in Johns Hopkins’s GitHub repository. **The range of dates in this study is from January 22nd to March 16th.** In the study, I will refer to January 22nd as day 1, January 23rd as day 2, etc.

Day 1 = January 22nd, 2020

Day 54 = March 16th, 2020

*Study*

Growth of confirmed cases of COVID-19 is exponential. China implemented transportation restrictions and increased surveillance on human activities to contain spread. Effective implementation of new policies and social distancing practices resulted in stabilization of new confirmed cases at around 80000 cases. (Go to references for details on China’s policies) [1]

At around day 23, growth rate spiked due to new liberal screening methods. [2]

The above illustrates confirmed cases, recoveries, and deaths. China’s expansion in healthcare capacity is contributed towards the exponentially increasing recoveries and controlled death count.

“Public risk communications and health education were strengthened; allocation of medical supplies was coordinated, new hospitals were built, reserve beds were used and relevant premises were repurposed to ensure that all cases could be treated; efforts were made to maintain a stable supply of commodities and their prices to ensure the smooth operation of society.” [1]

When news media outlets say, “flatten the curve,” they refer to this curve, which is the number of **active** COVID-19 cases. The number of active cases peaked at day 27 before it began to stabilize. Flattening the curve is crucial to not overflooding the healthcare capacity. The healthcare system can only handle a limited amount of active cases. When we go over capacity, individuals are at higher risk of death.

The curve in the United States is still increasing. The curve will peak and begin to diminish at some point. **However, we can control whether the curve diminishes as a result of recoveries or deaths.**

*Further Comments*

Authoritarian government systems like China is better suited to handle outbreaks. There’s faster implementation of policies and better control of people. China also has the capacity to increase healthcare capacity to deal with a high active case curve at ease. The United States’ government system, healthcare system, and individuals’ attitudes towards COVID-19 raises concerns to the US’s abilities to contain COVID-19.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Day | Confirmed Cases | Growth Rate (Cases/Day) | Recovered | Deaths | Active Cases |
| 1 | 548 | 548 | 28 | 17 | 503 |
| 2 | 643 | 95 | 30 | 18 | 595 |
| 3 | 920 | 277 | 36 | 26 | 858 |
| 4 | 1406 | 486 | 39 | 42 | 1325 |
| 5 | 2075 | 669 | 49 | 56 | 1970 |
| 6 | 2877 | 802 | 58 | 82 | 2737 |
| 7 | 5509 | 2632 | 101 | 131 | 5277 |
| 8 | 6087 | 578 | 120 | 133 | 5834 |
| 9 | 8141 | 2054 | 135 | 171 | 7835 |
| 10 | 9802 | 1661 | 214 | 213 | 9375 |
| 11 | 11891 | 2089 | 275 | 259 | 11357 |
| 12 | 16630 | 4739 | 463 | 361 | 15806 |
| 13 | 19716 | 3086 | 614 | 425 | 18677 |
| 14 | 23707 | 3991 | 843 | 491 | 22373 |
| 15 | 27440 | 3733 | 1115 | 563 | 25762 |
| 16 | 30587 | 3147 | 1477 | 633 | 28477 |
| 17 | 34110 | 3523 | 1999 | 718 | 31393 |
| 18 | 36814 | 2704 | 2596 | 805 | 33413 |
| 19 | 39829 | 3015 | 3219 | 905 | 35705 |
| 20 | 42354 | 2525 | 3918 | 1012 | 37424 |
| 21 | 44386 | 2032 | 4636 | 1112 | 38638 |
| 22 | 44759 | 373 | 5082 | 1117 | 38560 |
| 23 | 59895 | 15136 | 6217 | 1369 | 52309 |
| 24 | 66358 | 6463 | 7977 | 1521 | 56860 |
| 25 | 68413 | 2055 | 9298 | 1663 | 57452 |
| 26 | 70513 | 2100 | 10755 | 1766 | 57992 |
| 27 | 72434 | 1921 | 12462 | 1864 | 58108 |
| 28 | 74211 | 1777 | 14206 | 2003 | 58002 |
| 29 | 74619 | 408 | 15962 | 2116 | 56541 |
| 30 | 75077 | 458 | 18014 | 2238 | 54825 |
| 31 | 75550 | 473 | 18704 | 2238 | 54608 |
| 32 | 77001 | 1451 | 22699 | 2443 | 51859 |
| 33 | 77022 | 21 | 23187 | 2445 | 51390 |
| 34 | 77241 | 219 | 25015 | 2595 | 49631 |
| 35 | 77754 | 513 | 27676 | 2665 | 47413 |
| 36 | 78166 | 412 | 30084 | 2717 | 45365 |
| 37 | 78600 | 434 | 32930 | 2746 | 42924 |
| 38 | 78928 | 328 | 36329 | 2790 | 39809 |
| 39 | 79356 | 428 | 39320 | 2837 | 37199 |
| 40 | 79932 | 576 | 42162 | 2872 | 34898 |
| 41 | 80136 | 204 | 44854 | 2914 | 32368 |
| 42 | 80261 | 125 | 47450 | 2947 | 29864 |
| 43 | 80386 | 125 | 50001 | 2983 | 27402 |
| 44 | 80537 | 151 | 52292 | 3015 | 25230 |
| 45 | 80690 | 153 | 53944 | 3044 | 23702 |
| 46 | 80770 | 80 | 55539 | 3072 | 22159 |
| 47 | 80823 | 53 | 57388 | 3100 | 20335 |
| 48 | 80860 | 37 | 58804 | 3123 | 18933 |
| 49 | 80887 | 27 | 60181 | 3139 | 17567 |
| 50 | 80921 | 34 | 61644 | 3161 | 16116 |
| 51 | 80932 | 11 | 62901 | 3172 | 14859 |
| 52 | 80945 | 13 | 64196 | 3180 | 13569 |
| 53 | 80977 | 32 | 65660 | 3193 | 12124 |
| 54 | 81004 | 27 | 67017 | 3203 | 10784 |

References

[1] <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>

[2] <https://www.huffpost.com/entry/coronavirus-china-hubei-14840-new-cases_n_5e44aecdc5b671eafe1e7324?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAMj6PkxQ6rdwqYVz2LdAkDKWCCK9ZnpePX9mN1wuis5bNg6gyvPK8nhofFsiBMF3NhHznk44YGmLHBARu4KJeyGCe55iNuAe8OUP2zpLGH6S6BZPwUI1QlFJfJgtZhqEtt7caKO7ZAYa7ab9hI7mxO33IAW4I2mrsAVidBXlVt49>