“Analysis of nCov-2019 Data on 2/2/2020” by Michael Levitt, Stanford University, CA

Date	Day	Cases Confirmed			Deaths			Death Rate (%)			Ratio Hubei/ Others	Fraction change Cases Confirmed			Fraction change Cases Confirmed		
		Total	Hubei	Others	Total	Hubei	Others	Total	Hubei	Others		Total	Hubei	Others	Total	Hubei	Others
1/22/2020	54	555	444	111	0	0	0	0.00%	0.00%	0.00%	0.0						
1/23/2020	55	653	444	209	18	17	1	2.76%	3.83%	0.48%	8.0	1.18	1.00	1.88	-	-	-
1/24/2020	56	941	549	392	26	24	2	2.76%	4.37%	0.51%	8.6	1.44	1.24	1.88	1.44	1.41	2.00
1/25/2020	57	2019	1052	967	56	52	4	2.77%	4.94%	0.41%	11.9	2.15	1.92	2.47	2.15	2.17	2.00
1/26/2020	58	2794	1423	1371	80	76	4	2.86%	5.34%	0.29%	18.3	1.38	1.35	1.42	1.43	1.46	1.00
1/27/2020	59	4473	2714	1759	107	100	7	2.39%	3.68%	0.40%	9.3	1.60	1.91	1.28	1.34	1.32	1.75
1/28/2020	60	6047	3554	2493	132	125	7	2.18%	3.52%	0.28%	12.5	1.35	1.31	1.42	1.23	1.25	1.00
1/29/2020	61	7783	4586	3197	170	162	8	2.18%	3.53%	0.25%	14.1	1.29	1.29	1.28	1.29	1.30	1.14
1/30/2020	62	9776	5806	3970	213	204	9	2.18%	3.51%	0.23%	15.5	1.26	1.27	1.24	1.25	1.26	1.13
1/31/2020	63	11374	7153	4221	259	249	10	2.28%	3.48%	0.24%	14.7	1.16	1.23	1.06	1.22	1.22	1.11
2/1/2020	64	14562	9074	5488	305	294	11	2.09%	3.24%	0.20%	16.2	1.28	1.27	1.30	1.18	1.18	1.10

Table 1. Showing data for New Coronavirus 2019 (nCoV) from 22 January to 1 February 2020. The raw data of Cases Confirmed and of Deaths has been taken from https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset/data# and checked against data from https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6 and from https://jobtube.cn/wv/?from=groupmessage&isappinstalled=0 . We divide data into Hubei and Others on non-Hubei as almost all deaths are in a 90 km x 35 km area centered on Wuhan and Tianmen in Hubei (see Fig. 1). The Death Rate is Deaths divided by Cases_Confirmed, and Ratio_Hubei/Others is the ratio of the Death Rate for Hubei to Others. The Fraction Change for all raw data is Value_Today divided by Value_Yesterday.

Plots of this data against days are shown in Fig. 2. Panel (A) shows expected increase in Number of Cases. Panel (B) confirms that almost all the deaths are in Hubei (over 95%). Panel (C) shows that the Death Rate (Mortality) is high in Hubei but elsewhere it is 16 times lower. At 0.2 percent it is comparable to the mortality of influenza. Panel (D) shows that the number of reported cases changes unpredictably in all three regions (Hubei, non-Hubei & Total). Of all the measures these numbers seem least reliable. Most interesting by far is Panel (E), which shows that the number of deaths is increasing more and more slowly. Specifically, the ratio of Deaths_Today divided by Deaths_Yesterday is decreasing. This decrease is monotonic for Total Deaths and Hubei Death since 1/25/2020 and linear for them both since 1/29/2020. This suggests by linear extrapolation that the number of new deaths will decrease very rapidly over the next week.

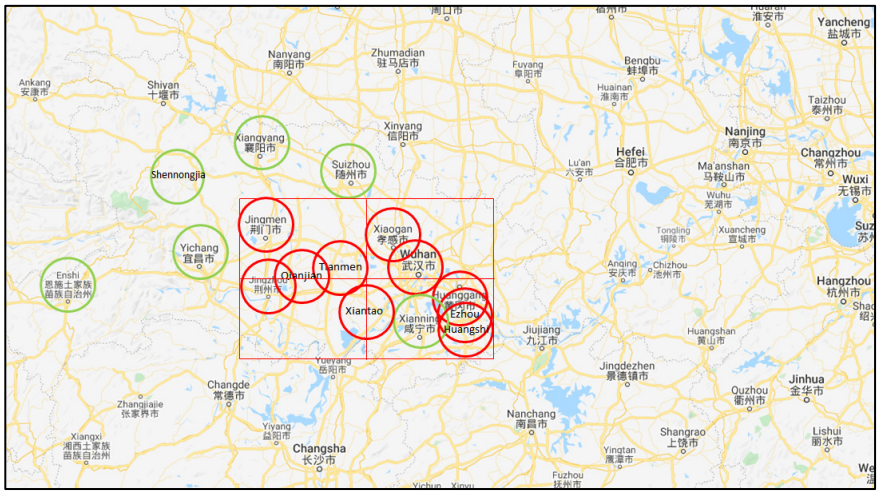
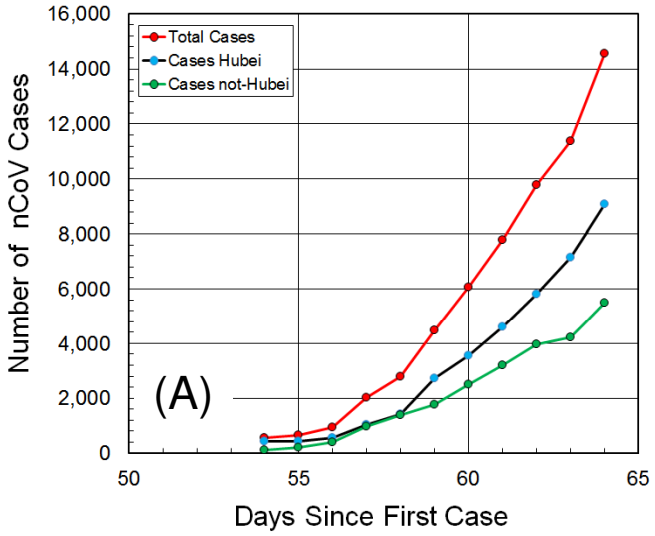
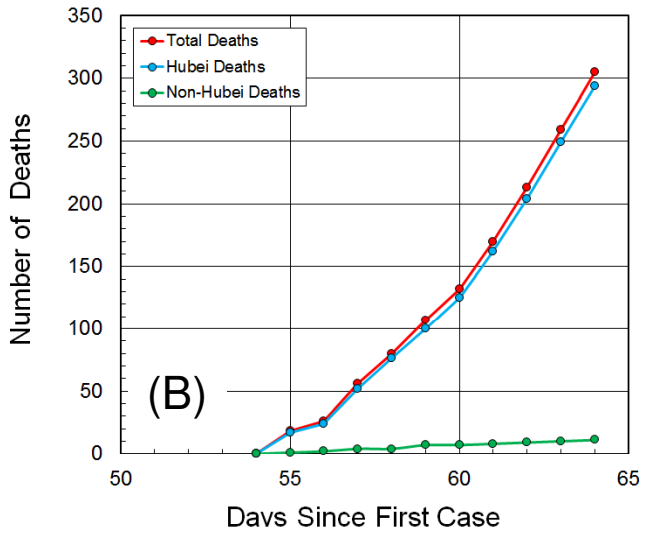
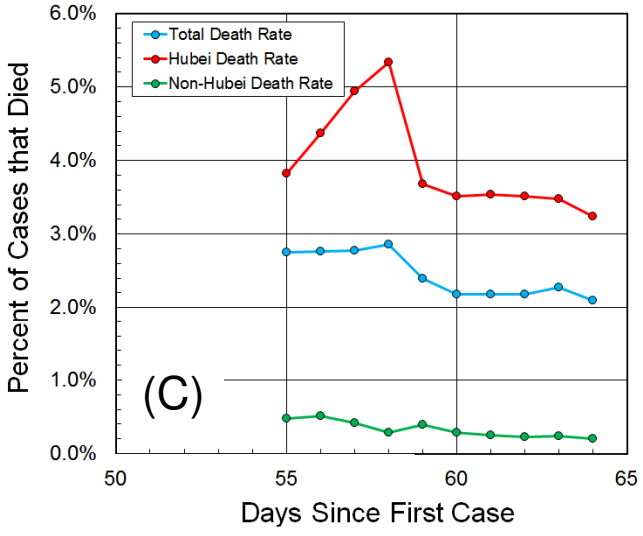
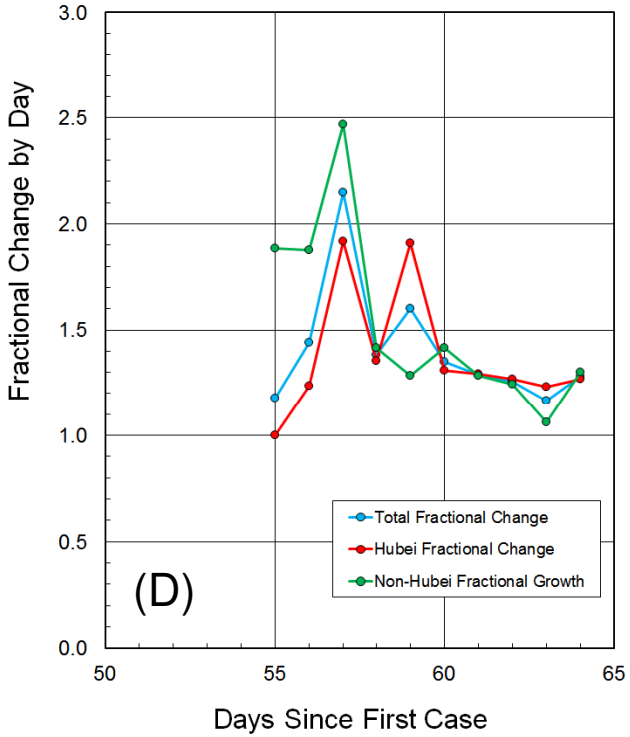


Figure. 1. Map of Hubei circling in red cities with a death rate > 1% and in green those with rate <0.5%. Deaths are localized to a 90km x 35km area centered near Tianmen near (data 12/31/2020 from jobtube.cn)









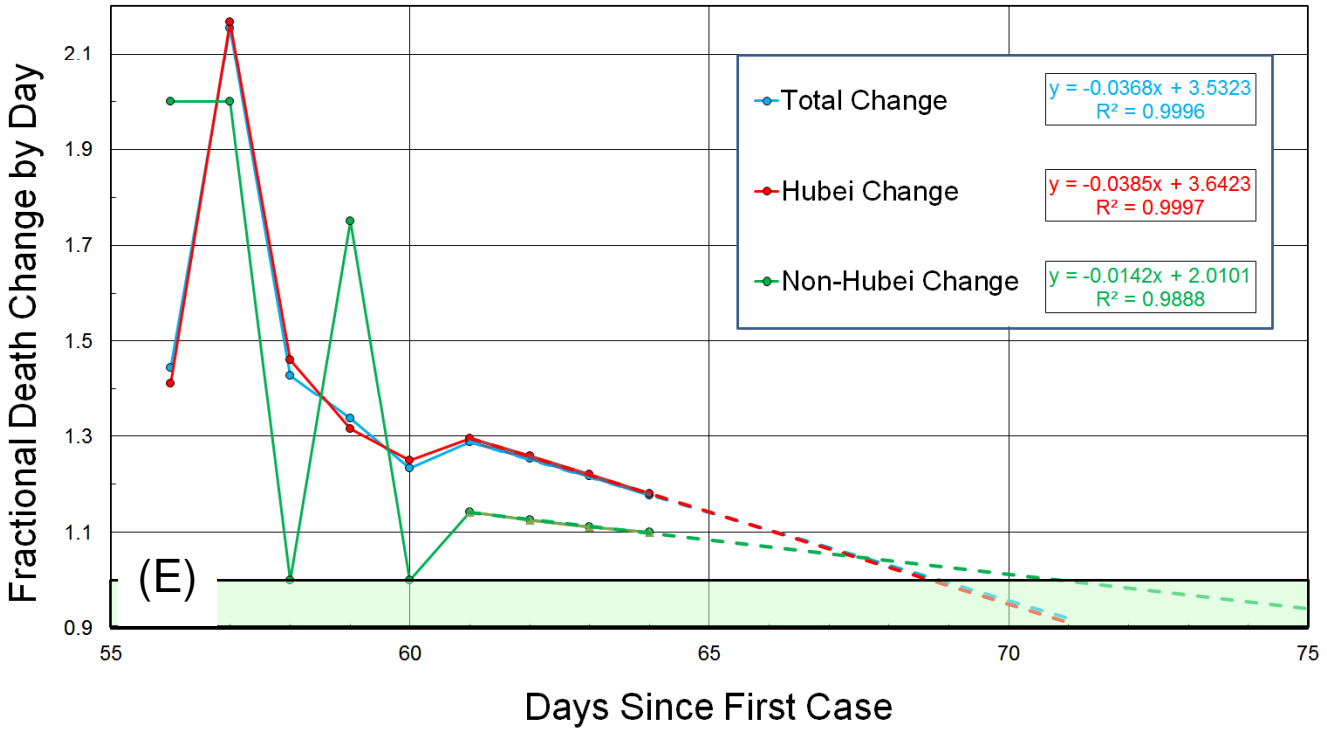


Figure. 2. Variation of nCov-2019 data against time in days since 29 Nov 2019 (guessed first case). Table 1 data is plotted from 22 January to 1 February 2020. In Panel (E) linear trend-lines are added using data for last four days from 1/29/2020. For Total Change, Hubei Change and non-Hubei Change, the fit is excellent (correlation coefficient or sqrt(R^2)> 0.99). This suggests that the Fractional Change will decrease to 1.0 within a week, after which time numbers will grow slowly.