

Don't Panic, Be Cautious, and Together We Can Stop the Coronavirus Epidemic!

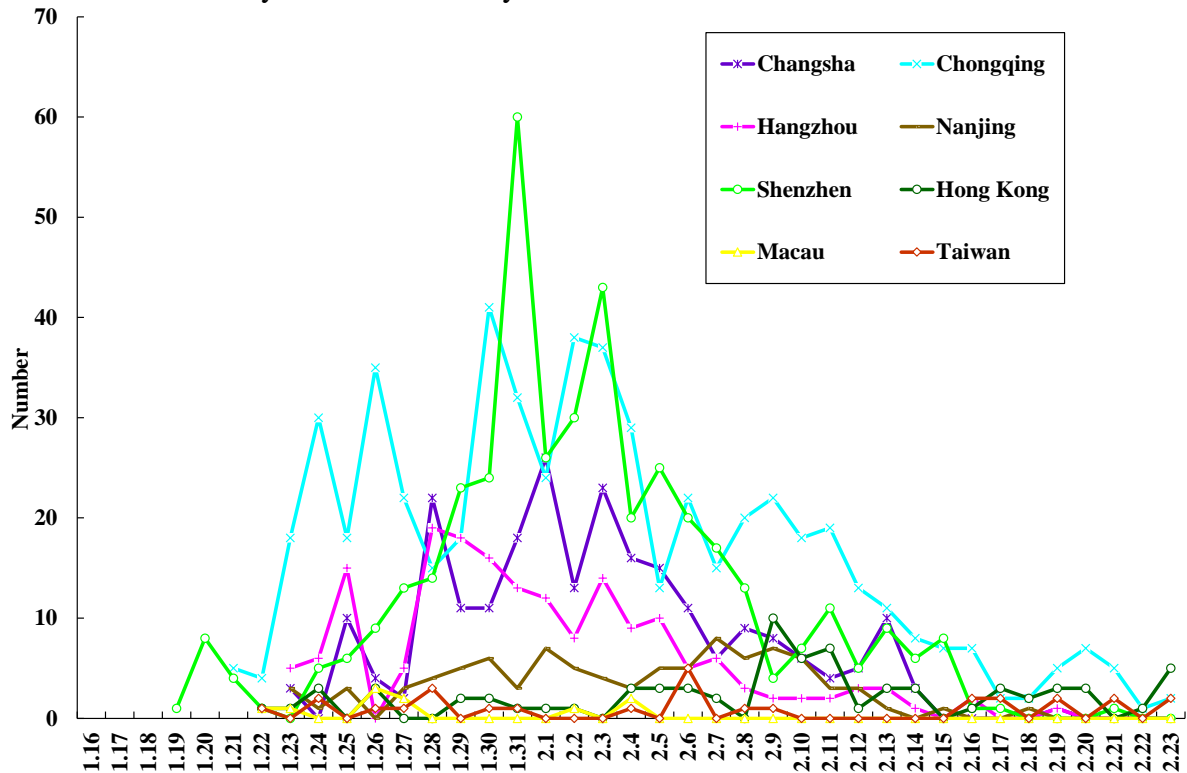
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23 February Supplementary Charts

24 February 2020

Since the publication of our paper in the *Asia Pacific Biotech News*², we have continued to monitor the development of the COVID-2019 epidemic on the Mainland of China. We have prepared this update, through midnight (2400) of 23 February, to some of the Charts in our original paper. However, we have also decided not to show Huanggang separately in the Charts any longer because it is not that informative of the total picture. We note that our earlier conclusions continue to be supported by the new data.

Chart 2: The Daily Number of Newly Confirmed Cases in Selected Areas outside Hubei



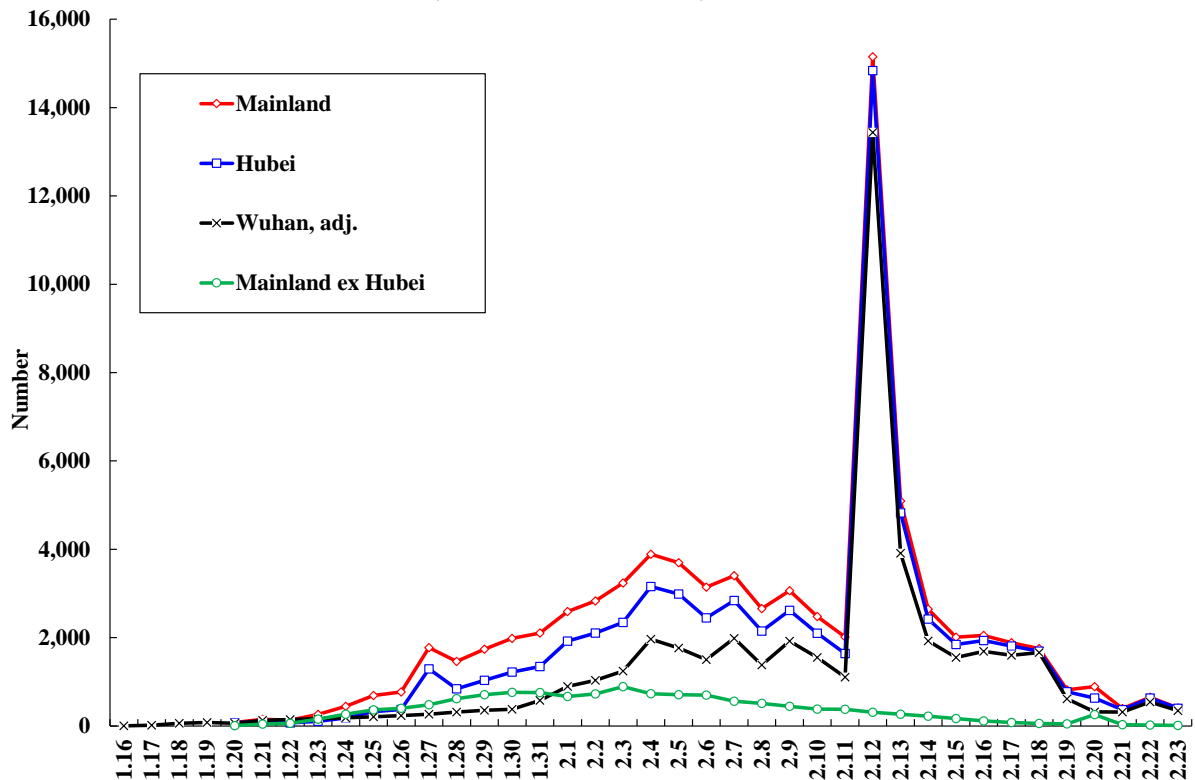
Sources: Same as Chart 1.

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² Lawrence J. Lau and Yanyan Xiong, "Don't Panic, Be Cautious, and Together We Can Stop the Coronavirus Epidemic," *Asia Pacific Biotech News*, Special Issue 1, March 2020, doi: s0219030320001202, pp. 90-107.

The updated Chart 2 shows that in areas outside of the Province of Hubei, the incidence of the COVID-2019 virus has continued to decline due to the isolation of the confirmed infected patients and other precautionary measures undertaken locally. The numbers of newly confirmed cases have all fallen to low single-digit levels. The epidemic should be over in these areas in at most another couple of weeks, and certainly by the middle of March. We have not included major cities such as Beijing, Shanghai and Tianjin in Chart 2 because the numbers of newly confirmed cases there have been quite small despite their large resident populations.

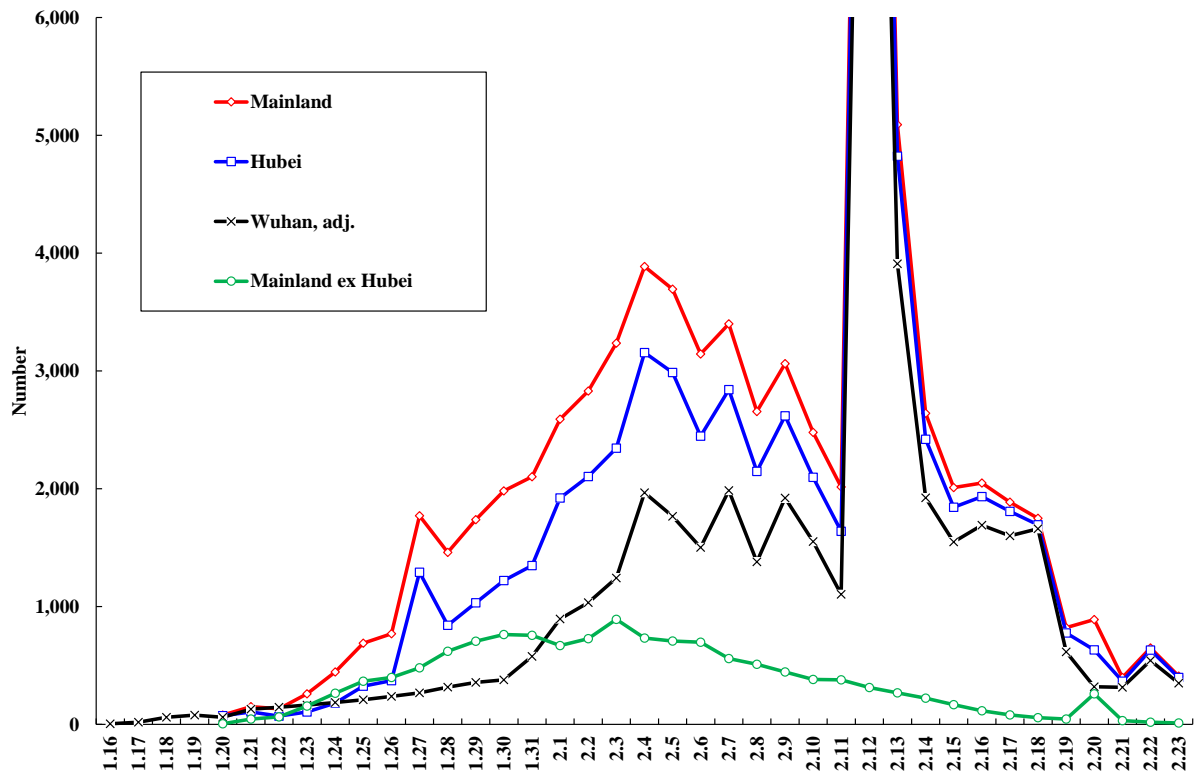
Chart 3: The Daily Number of Newly Confirmed Cases under the Current Definition:
The Mainland, Mainland ex Hubei, Hubei and Wuhan



Sources: Same as Chart 1.

The updated Chart 3 shows that under the current definition of a “confirmed case”, the daily numbers of newly confirmed cases on the Mainland and even in Hubei and Wuhan have resumed their generally declining trends begun on 4 February. What is encouraging is that in both Hubei and Wuhan, the daily number of newly confirmed cases has fallen to the level of hundreds on 19 February, earlier than the end of February as previously predicted by us. We have omitted from Chart 3 the cities outside Hubei, the data for which are already displayed in Chart 2 above; instead the developments outside Hubei are represented by the line Mainland ex Hubei. It shows a continuous decline since 3 February with the exception of an unexpected one-off uptick on 20 February. As of midnight (2400) of 23 February, the total number of daily newly confirmed cases in Mainland ex Hubei was only 11.

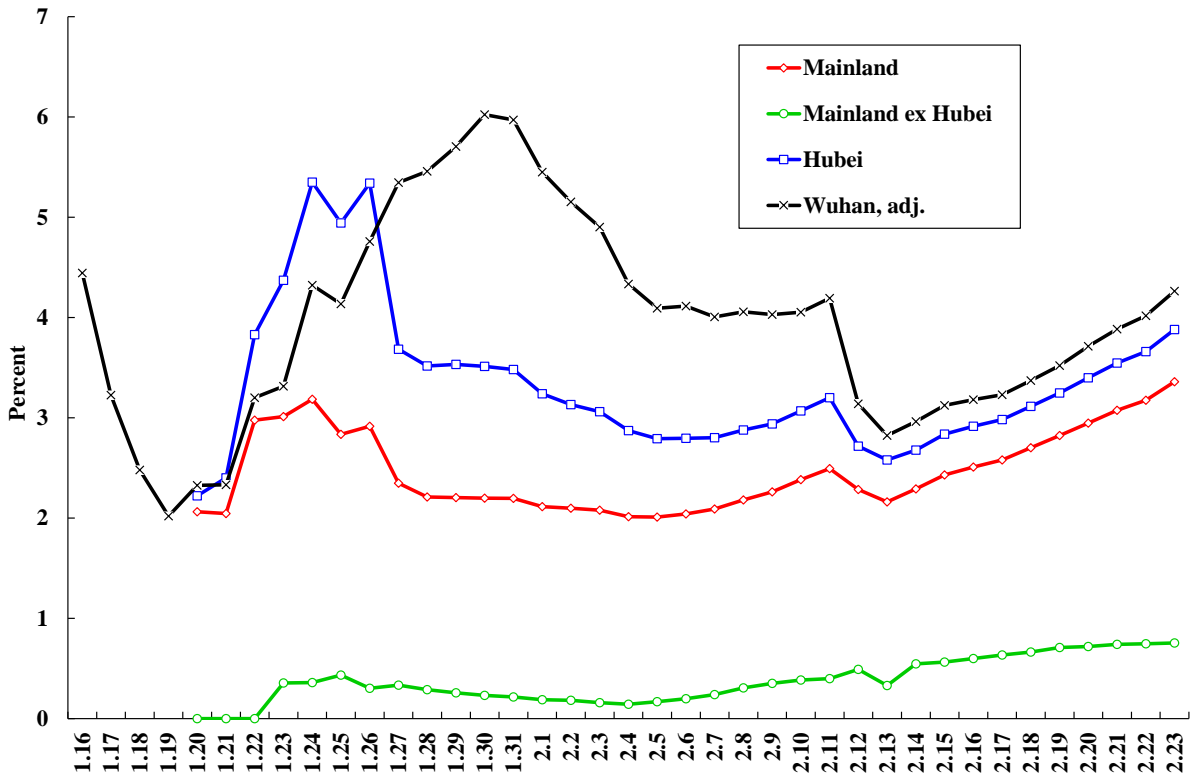
Chart 3A: The Daily Number of Newly Confirmed Cases under the Current Definition:
The Mainland, Mainland ex Hubei, Hubei and Wuhan



Sources: Same as Chart 3.

In order that the more recent developments can be seen more clearly, we have added a Chart 3A, with a different scale from Chart 3, omitting the data points on 12 February when a jump occurred because of a change in the definition of a “confirmed case” in Hubei. Chart 3A confirms the generally declining trends in the daily newly confirmed cases on the Mainland, and in Hubei and Wuhan. However, it does show an unexpected one-off uptick in Mainland ex Hubei on 20 February which may be attributed to outbreaks in one or more prisons in Mainland ex Hubei. As pointed out above, the number has since fallen to 11 on 23 February.

Chart 5: The Instantaneous Cumulative Mortality Rates:
The Mainland, Mainland ex Hubei, Hubei and Wuhan

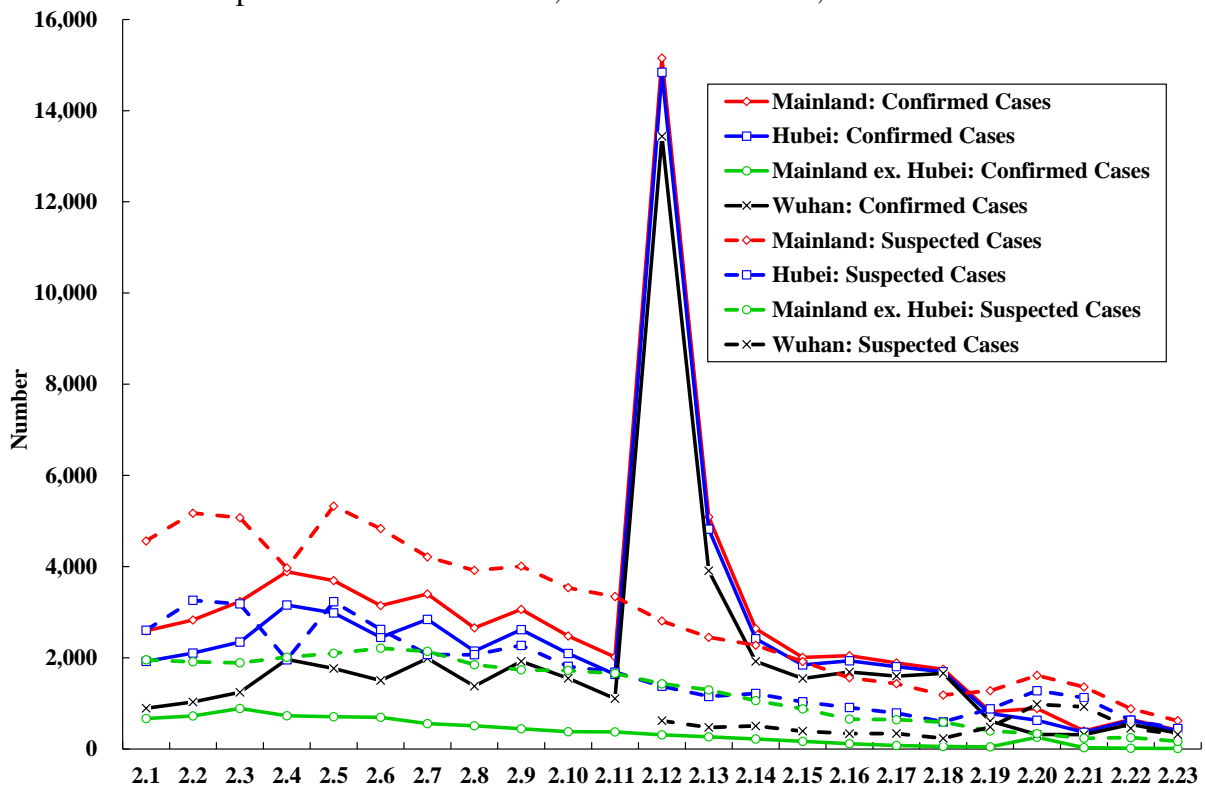


Sources: Same as Chart 1.

The updated Chart 5 shows that the instantaneous cumulative mortality rate (the cumulative total number of deaths due to the COVID-2019 virus divided by the cumulative newly confirmed cases to date) has continued to rise in Wuhan (4.3% as of 23 February), causing the Mainland and Hubei mortality rates to rise as well. This is not unexpected because of the huge one-time increases in the number of confirmed cases in Hubei (and Wuhan) on 12 and 13 February, which had the effect of a significant lowering of the instantaneous cumulative mortality rate. However, with the subsequent decreases in the newly confirmed cases, and a relatively steady number of new deaths, the instantaneous mortality rates are expected to rise over time for a while. Outside of Hubei, the mortality rate of the Mainland has remained steady and been rising very gradually because of the decline in the increases of the number of newly confirmed cases. It stood at 0.75% as of 23 February, in marked contrast to Hubei and Wuhan.

We have added a new chart, Chart 8, in which the daily newly confirmed cases are compared with the daily newly increased suspected cases. Suspected cases are cases that have yet to become confirmed cases pending further clinical observations and/or tests. Once a case is determined one way or the other, it will no longer be retained as a suspected case. Thus, in general, the number of newly increased suspected cases should exceed the number of newly confirmed cases, or at least should do so after a short time lag.

Chart 8: The Daily Newly Confirmed Cases and Newly Increased Suspected Cases:
A Comparison for the Mainland, Mainland ex Hubei, Hubei and Wuhan



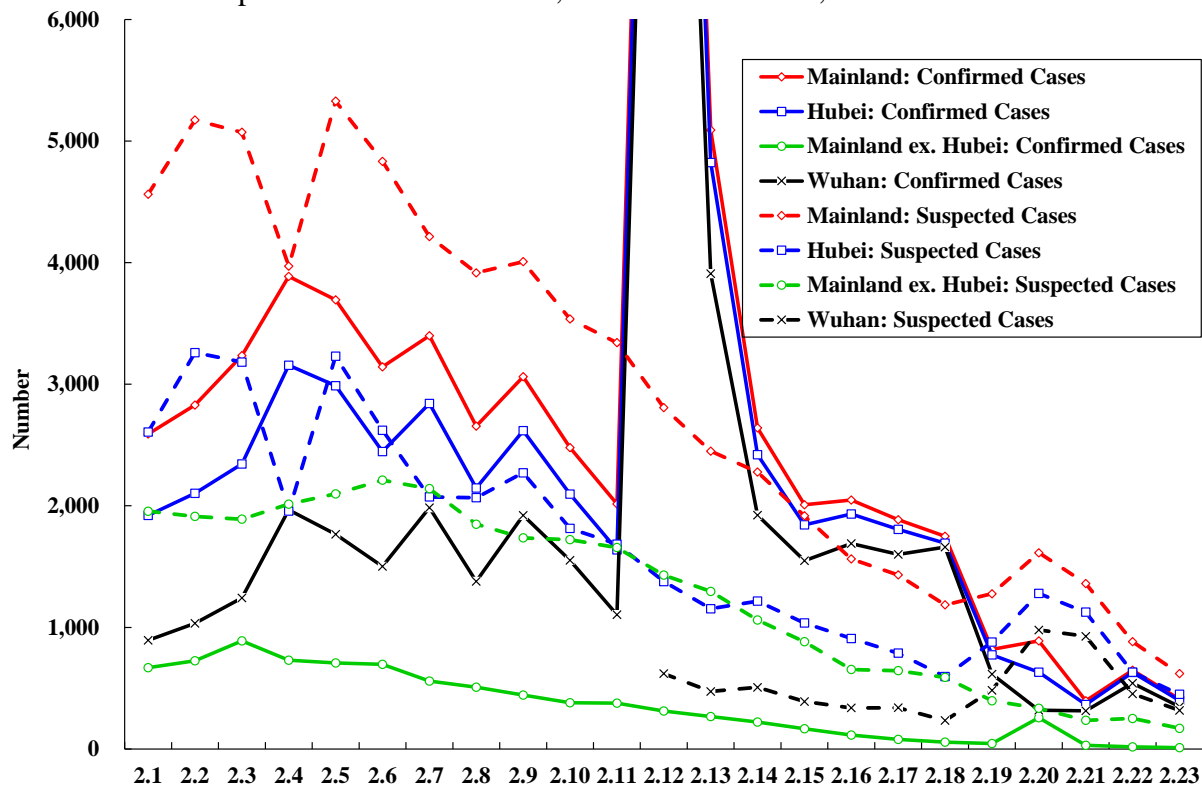
Sources: Same as Chart 1.

Chart 8 shows that the number of new suspected cases for Mainland ex Hubei has been declining continuously since 6 February. Moreover, the number of new suspected cases in Mainland ex Hubei has always been considerably higher than the number of newly confirmed cases (except on 20 February), which means that in general a substantial number of the suspected cases has turned out not to be COVID-2019 cases. This is an indication that the epidemic is under control in Mainland ex Hubei.

This is, however, not yet true of Hubei. The number of new suspected cases were below the number of newly confirmed cases between 12 February and 19 February for Hubei and Wuhan. But these are actually good signs because they indicate that the proportions of as yet unidentified true COVID-2019 cases among the suspected cases in Hubei and in Wuhan have begun to decline. The net result was that the number of new suspected cases on the Mainland as a whole also exceeded the newly confirmed cases on 19 February, the first time this happened since the definition of a confirmed case was changed in Hubei (and Wuhan) on 12 February. Overall, what has been happening should be regarded as a positive development.

In order that the more recent developments can be seen more clearly, we have also added a Chart 8A with a different scale from Chart 8, omitting the data points on 12 February.

Chart 8A: The Daily Newly Confirmed Cases and Newly Increased Suspected Cases:
A Comparison for the Mainland, Mainland ex Hubei, Hubei and Wuhan



Sources: Same as Chart 8.

Chart 8A shows clearly that the numbers of new suspected cases on the Mainland and in Hubei and Wuhan have continued their declines after an interruption on 18-19 February. And in Hubei, they have been higher than the number of newly confirmed cases. However, in Wuhan, on 22 and 23 February, the number of new suspected cases fell below the number of newly confirmed cases. This suggests that the number of newly confirmed cases in Wuhan is likely to continue to fall in the near future. The greatly improved availability of medical care in Hubei and Wuhan recently may have contributed to the temporary rise in new suspected cases around 18-19 February. Their continuing fall also signals that the newly confirmed cases will also continue their generally downward trends.