

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

Lawrence J. Lau and Yanyan Xiong¹

Supplementary Charts

21 April 2020

Abstract

Since the publication of our article in the *Asia Pacific Biotech News*², we have continued to monitor the development of the COVID-19 epidemic on the Mainland of China and updated the relevant charts in our original article on a weekly basis³. We have prepared this current update, through midnight (2400) of 19 April. This update has been motivated by the announcement of Wuhan of a revision in the cumulative numbers of newly confirmed cases and deaths by 325 and 1,290 respectively on 16 April 2020.

We note that the COVID-19 epidemic was essentially over on the Mainland outside of the Province of Hubei by the middle of March, and on the entire Mainland, including Hubei and Wuhan, at the end of March, in accordance with the prediction in our article. The lockdown in Wuhan has ended. The Mainland has now largely returned to normal. The numbers of new cases in Hong Kong and Taiwan, which have been rising fast recently, have continued to fluctuate. Concern has now also shifted to how new cases imported into the Mainland from abroad can be isolated and contained.

In the updated charts, we have adjusted the official data on newly confirmed cases and deaths of Wuhan, Hubei and the Mainland, so as to smooth out their reported surges on a few occasions, including the one on 12 February, which was primarily caused by a change in the definition of a “confirmed” case in Hubei, including Wuhan, and the more recent one on 16 April in Wuhan, and also to remove some inconsistencies, such as cumulative total numbers that decrease over time.

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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, pp. 90-107, doi: s0219030320001202.

³ The weekly updated charts may be found on the webpage of Lawrence J. Lau, <http://www.igef.cuhk.edu.hk/people/professor-lawrence-j-lau/>.

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Since the publication of our article in the Asia Pacific Biotech News, we have continued to monitor the development of the COVID-19 epidemic on the Mainland of China and updated the relevant charts in our original article on a weekly basis. We have prepared this current update, through midnight (2400) of 19 April. This update has been motivated by the announcement of Wuhan of a revision in the cumulative numbers of newly confirmed cases and deaths by 325 and 1,290 respectively on 16 April 2020, bringing the domestic cumulative total numbers to 50,332 and 3,869 respectively as of 16 April⁴.

We note that the COVID-19 epidemic was essentially over on the Mainland outside of the Province of Hubei by the middle of March, and on the entire Mainland, including Hubei and Wuhan, at the end of March, in accordance with the prediction in our article. The lockdown in Wuhan has ended. The Mainland has now largely returned to normal. The numbers of new cases in Hong Kong and Taiwan have been rising fast recently, although it appeared to have subsided in Hong Kong but flared up again in Taiwan. Concern has now also shifted to how new cases imported into the Mainland from abroad can be isolated and contained.

In the updated charts, we have adjusted the official data on newly confirmed cases and deaths of Wuhan, Hubei and the Mainland, so as to smooth out their reported surges on a few occasions⁵, including the one on 12 February, which was primarily caused by a change in the definition of a “confirmed” case in Hubei, including Wuhan, and the more recent one on 16 April, and also to remove some inconsistencies, such as cumulative total numbers that decline over time.

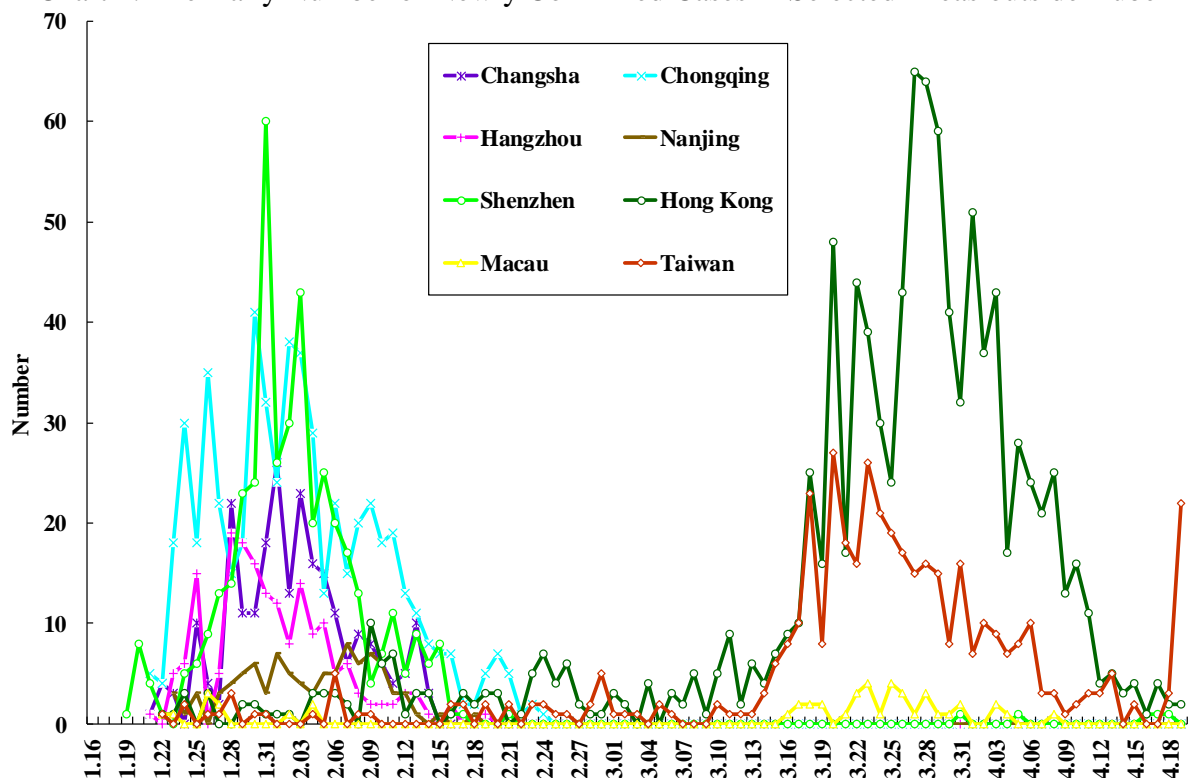
Chart 2 confirms that in Mainland ex Hubei, the incidence of the COVID-19 epidemic has actually been relatively mild and generally declining over time. For Mainland cities outside Hubei, such as Changsha, Chongqing, Hangzhou, Nanjing and Shenzhen, the daily numbers of newly identified cases already began to show a declining trend since the beginning of February, even though they also continued to fluctuate up and down. They became essentially zero by the end of February. For Hong Kong, Macau and Taiwan, the daily numbers of newly confirmed cases all fell to zero on 15 February. However, in early March, the epidemic flared up again, especially in Hong Kong and Taiwan, because of returning residents from Europe and North America. The epidemic appeared to be under control in Hong Kong more recently as the number of newly confirmed cases have fallen to the level of single digits. But unfortunately there was a spike in the number of cases in Taiwan on 19 April (22 new cases).

⁴ The question may be raised as to why the increase in the cumulative number of confirmed cases is less than the increase in the cumulative number of deaths. According to the Hubei Health Commission, 965 of the new deaths reported by Wuhan were COVID-19 patients who were thought to have been cured but passed away at home subsequently. Only 325 were previously unreported confirmed cases.

⁵ We have redistributed the “excess” cases and deaths on 12 February proportionally to the days between 16 January and 12 February. Similarly, we have redistributed the newly discovered cases and deaths on 16 April proportionally to the days between 16 January and 16 April. The redistributions have no effect on the terminal cumulative numbers or on our conclusions. However, they do facilitate comparisons across countries, regions and municipalities.

The overall picture does suggest that the spread of the coronavirus to the rest of the Mainland outside of Hubei have been contained.

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

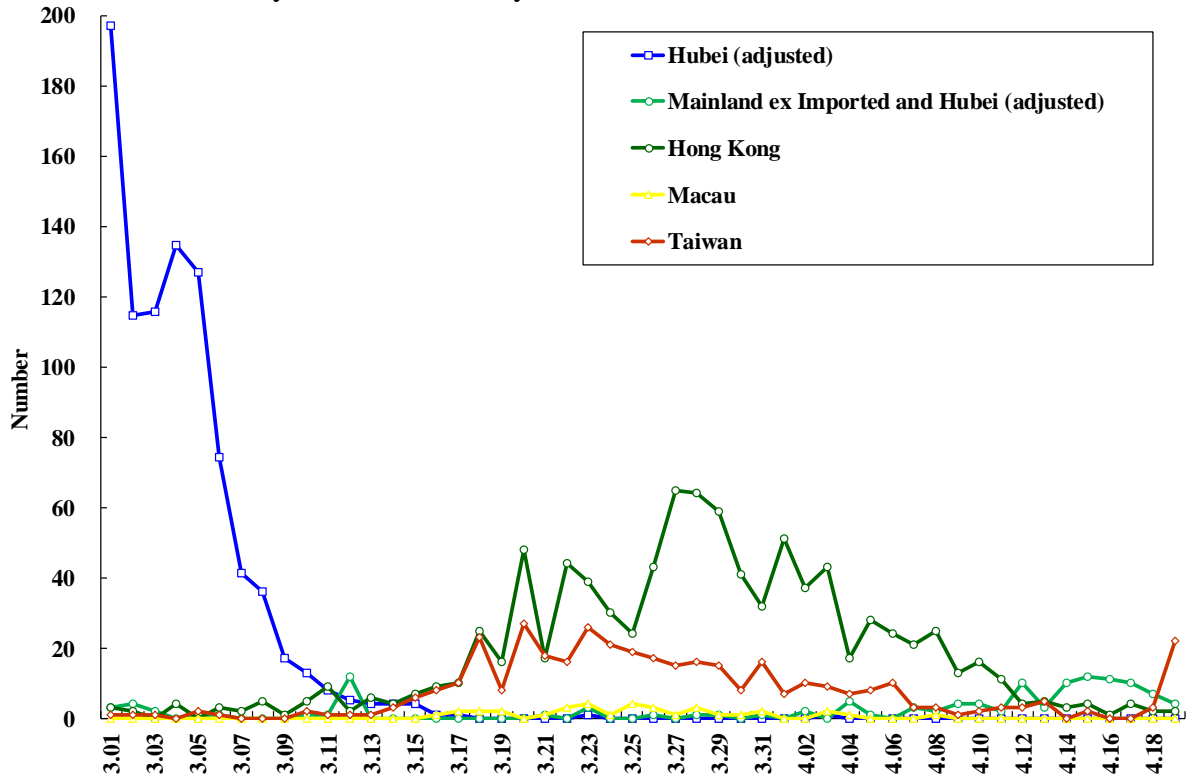


Sources: Same as Chart 1.

In the updated Chart 2A, which begins on 1 March, the daily number of newly confirmed domestic cases outside Hubei is represented by a single line, Mainland ex imports and Hubei. This line is hardly visible and averages 2.8 cases per day since 16 March⁶. Similarly, the number of daily newly confirmed cases within Hubei (including Wuhan) has also been essentially zero since 16 March, with an average of 0.1 case per day. In fact, the epidemic has been basically over on the Mainland, where economic activities have already largely returned to normal, initially outside of Hubei, and then in Hubei (including Wuhan) itself. Moreover, the daily newly confirmed cases in Hong Kong and Taiwan, which had risen rapidly since 16 March because of the influx of a large number of returning residents from Europe and North America, had also begun to decline, except for a hopefully temporary flare-up in Taiwan on 19 April. However, Hong Kong now has more current COVID-19 cases than any other municipality, province and region on the Mainland, including even Hubei, except Heilongjiang. In the meantime, on the Mainland, newly confirmed cases imported from abroad have also been identified in many places, notably in Beijing, Shanghai, the Provinces of Guangdong and Heilongjiang, and the Inner Mongolia Autonomous Region. Strict quarantine measures must be taken on the Mainland to prevent the imported cases from spreading and possibly triggering a resurgence of the COVID-19 epidemic.

⁶ However, the number of newly confirmed cases was 4 on 19 April, not a large number for the entire Mainland ex Hubei, but should still be carefully monitored.

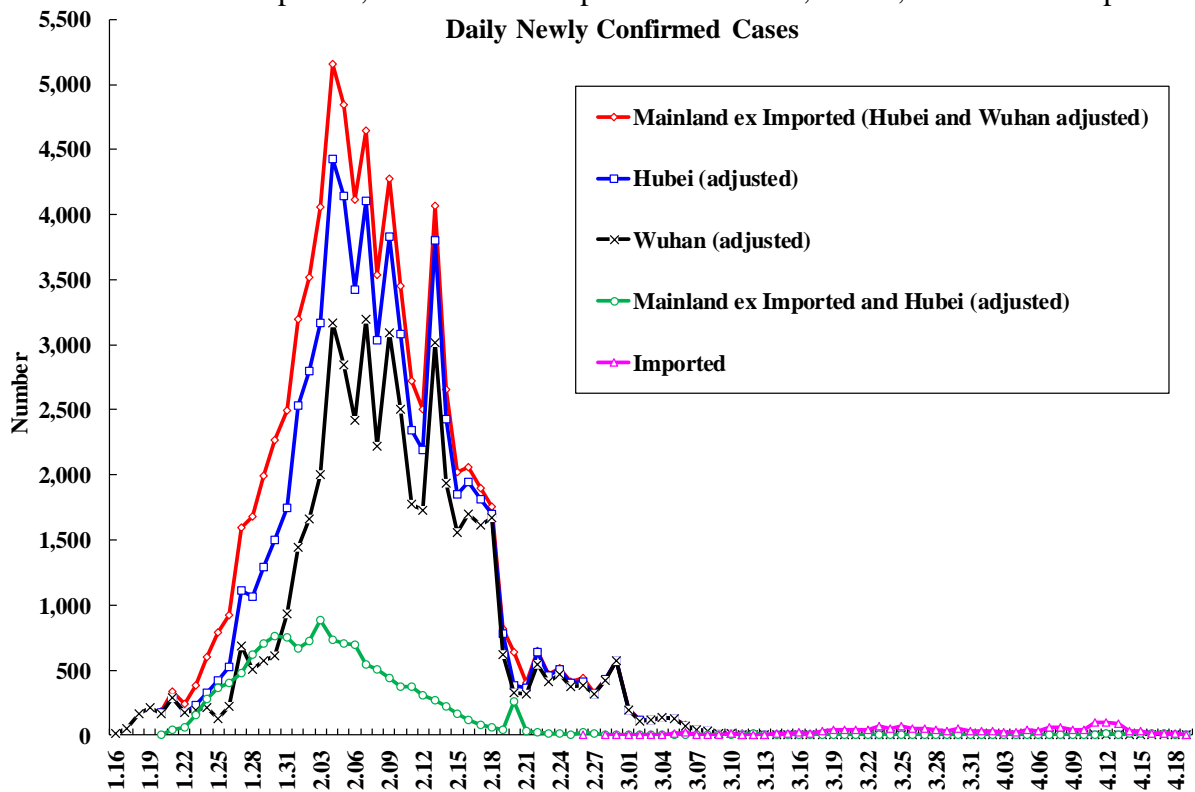
Chart 2A: The Daily Number of Newly Confirmed Cases in Selected Areas outside Hubei



Sources: Same as Chart 1.

The updated Chart 3 shows the trajectory of daily numbers of newly confirmed domestic cases on the Mainland from 16 January, after the reallocation of the surges on 27 January, 12 February and 16 April. The difference between Hubei (including Wuhan) and Mainland ex Hubei was most striking.

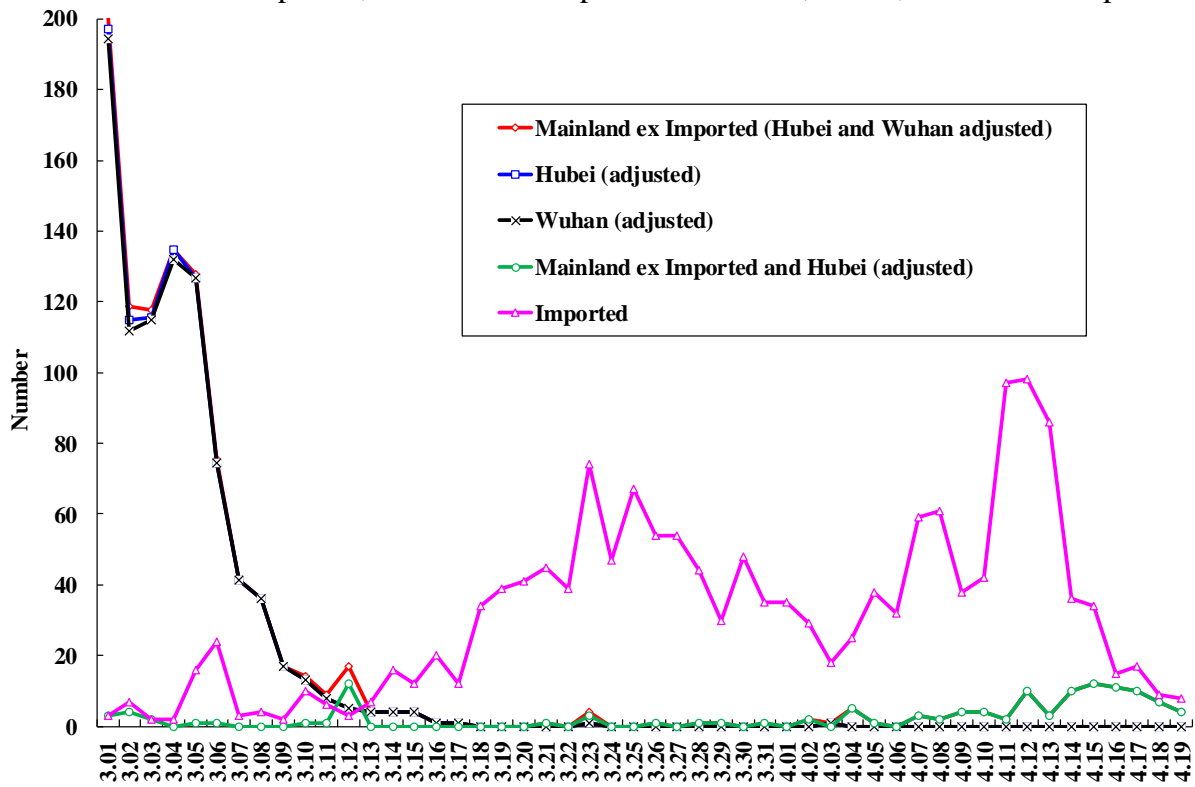
Chart 3: The Adjusted Daily Number of Newly Confirmed Cases under the New Definition: The Mainland ex Imported, Mainland ex Imported and Hubei, Hubei, Wuhan and Imported



Sources: Same as Chart 1.

The updated Chart 3A, which is Chart 3 but begins on 1 March, shows that almost all of the daily newly confirmed cases on the Mainland since 16 March have been imported cases. The average number of newly confirmed domestic cases per day during the five weeks from 16 March to 19 April on the entire Mainland is 2.9. The first imported COVID-19 case was identified on 26 February. All the signs confirm that the epidemic is over on the entire Mainland. The daily number of imported newly confirmed cases averaged 42 for the five weeks 16 March-19 April (though reduced to 8 on 19 April). China must take steps to prevent the number of imported cases from growing and quarantining any such cases because they may rekindle domestic transmission of the COVID-19 virus in an uncontrollable way.

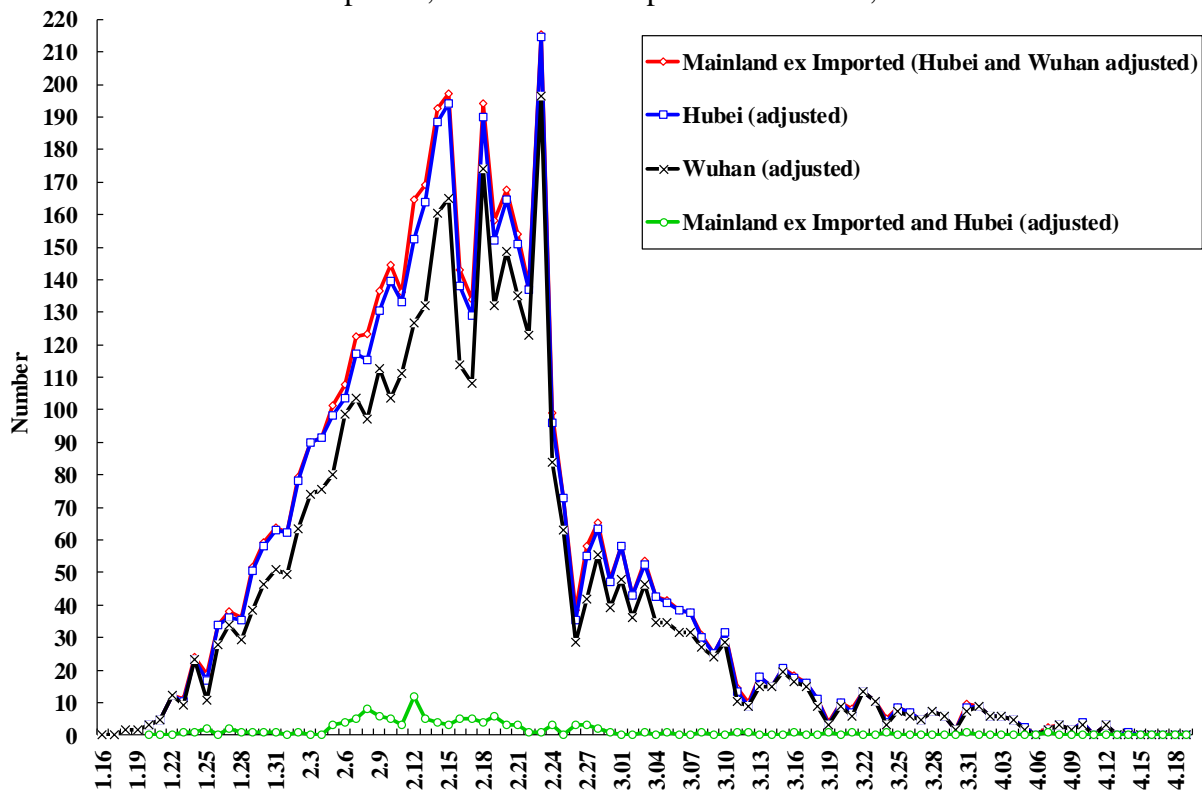
Chart 3A: The Daily Number of Newly Confirmed Cases:
 The Mainland ex Imported, Mainland ex Imported and Hubei, Hubei, Wuhan and Imported



Sources: Same as Chart 1.

Instead of the original Chart 4, we introduce a new Chart 4A, which shows the new deaths on the Mainland (excluding imported cases), Mainland ex imported and Hubei, Hubei and Wuhan between 16 January and 19 April. Chart 4A reflects the reallocation of the surges in the reported number of deaths in Wuhan and Hubei ex Wuhan on 12 February and in Wuhan on 16 April. It is clear from Chart 4A that most of the deaths due to the COVID-19 virus occurred in Hubei and within Hubei in Wuhan. Deaths on the Mainland outside of Hubei totalled only 120 since 16 January (or less than 1.4 per day) compared to 4,512 for Hubei and 4,632 for the Mainland as a whole.

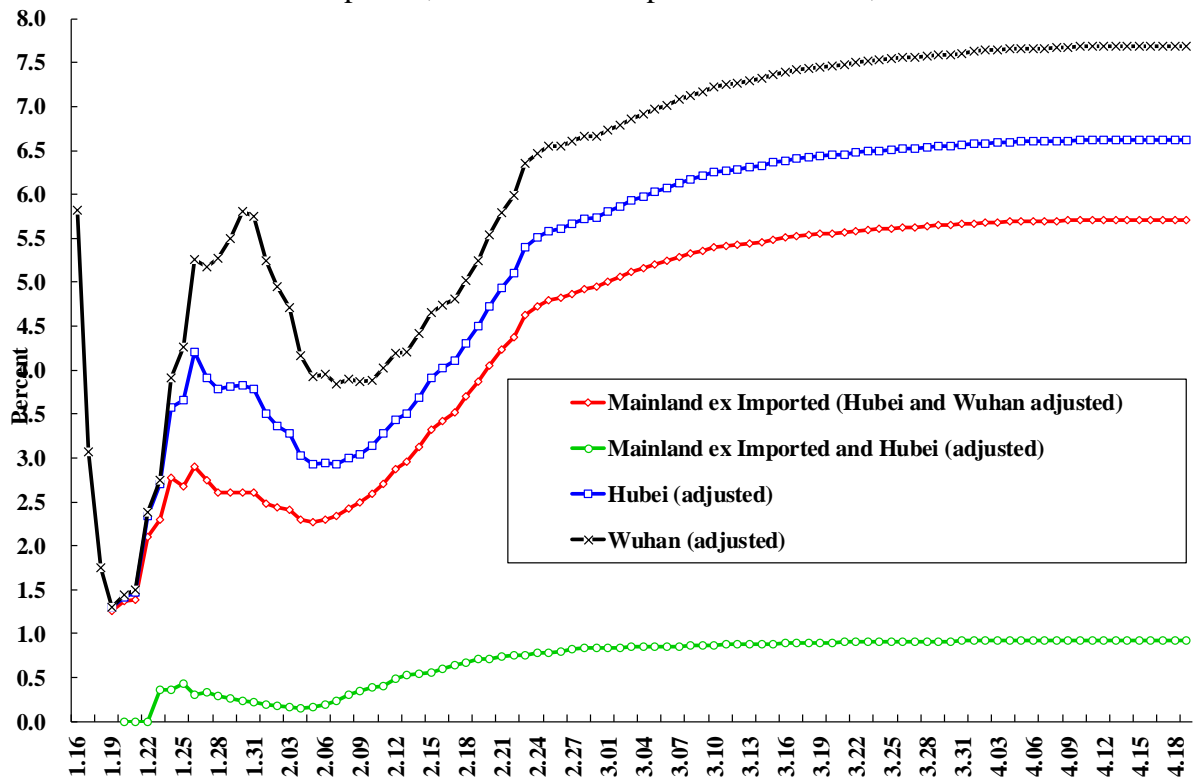
Chart 4A: The Daily Number of New Deaths from the COVID-19 Virus:
The Mainland ex Imported, Mainland ex Imported and Hubei, Hubei and Wuhan



Sources: Same as Chart 1.

The updated Chart 5 also reflects the reallocation of the surge in the reported number of deaths in Wuhan and Hubei ex Wuhan on 12 February and in Wuhan on 16 April. Because the cumulative newly confirmed domestic cases to date is no longer rising in Wuhan, Hubei and the Mainland, the instantaneous cumulative mortality rate (the cumulative total number of domestic deaths due to the COVID-19 virus divided by the cumulative newly confirmed domestic cases to date) will continue to rise, as expected, in Wuhan (7.7% as of 19 April), Hubei and the Mainland, as there were still 81 seriously ill confirmed COVID-19 patients as of 19 April. The jump in the instantaneous cumulative mortality rate in Wuhan from 5.2% in the previous week to 7.7% is caused by the increase in the cumulative number of deaths reported on 16 April. Outside of Hubei, the mortality rate of the Mainland has remained steady and been rising very gradually also because the cumulative number of confirmed cases is also no longer increasing. It stood at 0.9% as of 19 April, less than one-eighth of the mortality rate of Wuhan. These numbers confirm our assessment that the mortality rate of the COVID-19 virus is relatively low, probably not more than 1%, in places where adequate medical care is available.

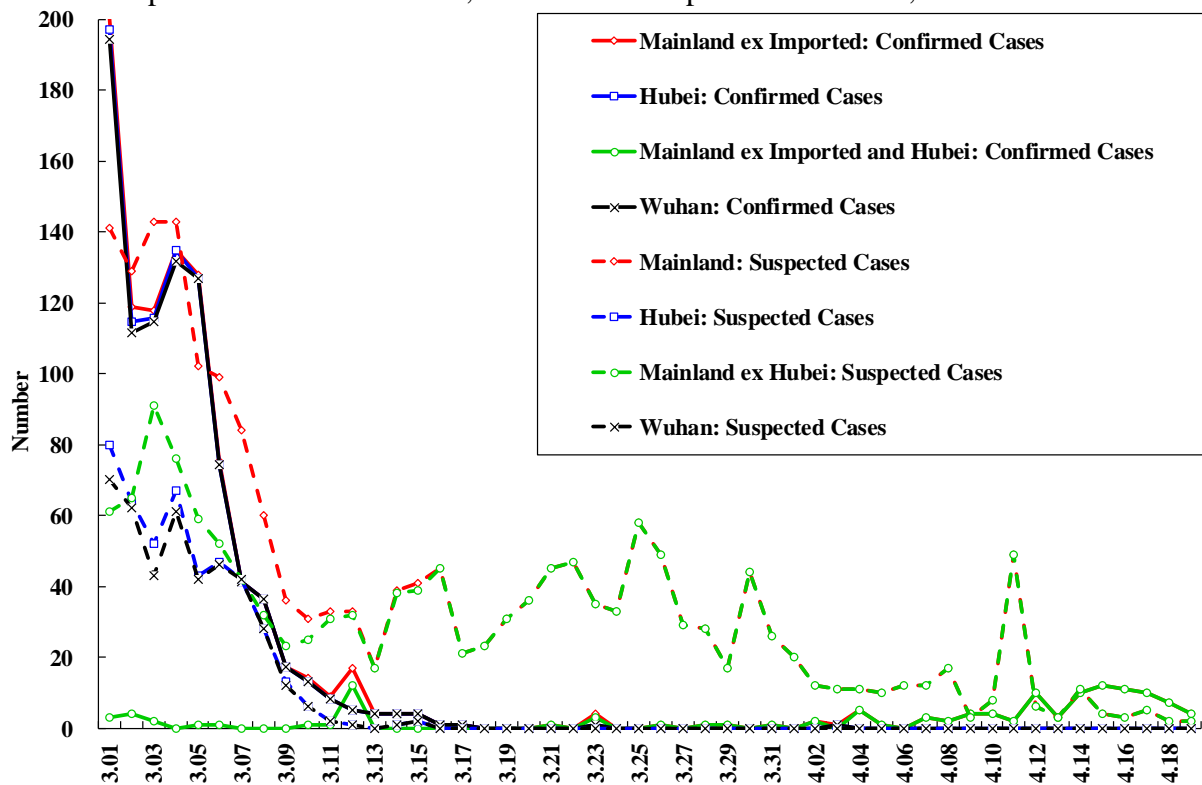
Chart 5: The Instantaneous Cumulative Mortality Rates:
The Mainland ex Imported, Mainland ex Imported and Hubei, Hubei and Wuhan



Sources: Same as Chart 1.

In the updated Chart 8, the daily newly confirmed cases are compared with the daily newly increased suspected cases for the period beginning on 1 March. Suspected cases are cases that have yet to become confirmed cases pending further clinical observations and/or nucleic acid 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 new suspected cases should exceed the number of newly confirmed cases, or at least should do so after a short time lag to allow for testing.

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



Sources: Same as Chart 1.

The updated Chart 8 shows clearly that the numbers of new suspected cases on the Mainland (excluding imports) and in Hubei and Wuhan have generally continued their declining trends. For the Mainland as a whole, the daily number of new suspected cases averaged 4.5 per day during the week of 12-19 April, compared to an average of 8.4 per day for newly confirmed cases. What is most remarkable is that in Hubei (and Wuhan), there have been zero new suspected cases since 16 March. This reflects the greatly improved availability of medical care in Wuhan and Hubei so that the backlog of unreported and suspected cases has been completely cleared. It further reinforces our confidence that the number of newly confirmed domestic cases in Wuhan, and hence in Hubei and on the Mainland, is likely to remain essentially zero in the near future. Imported cases are another matter altogether. They must be strictly controlled, isolated and quarantined to prevent a resurgence of the COVID-19 epidemic on the Mainland.