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8043 cases are still open, of which 2622 are serious or critical. According to Wu and McGoogan's estimates based on 72 314 cases from Wuhan,<sup>4</sup> 81% of patients are classified as mild, 14% as severe, and 5% as critical. CFRs in these subgroups are 0%, 0%, and 49%, respectively. Based on these estimates, of 8043 open cases in China, about 377 are in a critical condition and of those 184 will die. Therefore, once all active cases are closed, we might expect the CFR in China to be around 3.85%.

On a technical note, Baud and colleagues' calculation seems to be an attempt at reporting the cumulative death rate, which is defined as "the proportion of a group that dies over a specified time", rather than the mortality rate.<sup>2</sup>

In summary, the CFR calculated per total cases seems to remain the best tool to express the fatality of the disease, even though it might underestimate this figure in the initial phase of an outbreak.

All calculations were based on data acquired from [worldometer.info/coronavirus](http://worldometer.info/coronavirus) and are available in the appendix. We declare no competing interests.

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In their Correspondence, David Baud and colleagues<sup>1</sup> suggest that case fatality rates (CFRs) for coronavirus disease 2019 have been underestimated and propose to divide deaths at time *t* by cases at time *t* minus 14 days to correct this underestimation and provide so-called real estimates. Many biases in both directions afflict CFR estimates during outbreaks,<sup>2</sup> and experts have spent 2 decades (since the outbreak of severe acute respiratory syndrome coronavirus) finding ways to overcome these.<sup>3</sup> The delay problem highlighted by Baud and colleagues produces falsely low estimates, whereas the underascertainment of mild cases produces falsely high estimates.<sup>4</sup> These issues are well appreciated in the field and have been discussed in the popular press in recent weeks.<sup>5,6</sup>

No expert thinks the 3.6% raw ratio of deaths to cases on March 1 is an accurate estimate of the CFR because it suffers from all of these biases. The authors make the situation worse: correcting for delay (with an invalid method) without correcting for ascertainment of mild cases inflates the estimates, bringing them further from what most experts believe are the true numbers, around the 1–2% range for symptomatic cases.<sup>7,8</sup>

Baud and colleagues' estimates are not real; they are in fact less real than the biased calculations they claim to correct. Especially in a time of great urgency, authors have a responsibility to read and understand relevant background literature and look for obvious flaws in their own analysis. This work does not appear to have met that standard. The fact that peer review did not pick up these flaws should be a caution against hastening the peer review process at the expense of due care.

I declare no competing interests.

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## Authors' reply

We thank David Dongkyung Kim and Akash Goel,<sup>1</sup> Piotr Spychalski and colleagues,<sup>2</sup> and Marc Lipsitch<sup>3</sup> for their critical reading of our Correspondence.<sup>4</sup> In response to the points raised regarding our statistical methods, we agree that our model might not be appropriate for the early epidemic period because of the rapid increase in the number of cases in the 14 days preceding reported deaths. During this period, many patients were certainly diagnosed with coronavirus disease 2019 (COVID-19) at the time they developed critical illness or even at the time of death. By contrast, asymptomatic patients and those with mild disease remained untested. These two factors probably explain the overestimates of mortality at the beginning of the curve (Feb 12–24 in our model,<sup>4</sup> as exemplified in the appendix).

As mentioned by Spychalski and colleagues, "irrespective of the method used, all calculations are



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