Excess mortality in West Bengal during the COVID-19 pandemic: A factsheet[1]

What death registration data is available?
Monthly deaths registered in West Bengal's online civil registration system, from January 2018 to May 2019, are available on github. The data was reported in The Hindu. The data is recorded according to date of occurrence rather than date of registration.

What do we know about delays in registration?
According to the 2019 CRS report, 90% of registrations occurred within 21 days, and 91% within 30 days.

What do we know about registration coverage and trends in the state/within this system?
According to the 2019 CRS report, West Bengal saw death registration of 72.3%, 80.6%, 79.7%, 90.8% and 100% during 2015, 2016, 2017, 2018 and 2019 respectively. Total registrations for 2018 and 2019 in the online system are, respectively, 79% and 83% of total registrations recorded in the 2019 CRS report.

According to NFHS-5, however, only 78.6% of deaths were registered during the three years prior to the NFHS (which was conducted between June 2019 and November, 2019 in the state). This is considerably lower than the 87.7% coverage estimated over 2016-2019 based on SRS-CRS data.

There are thus uncertainties about the level of registration, trends in registration, and, possibly, trends in coverage of registered deaths in the online system prior to the pandemic. Moreover, 2019 saw an increasing trend in registrations in the online system.

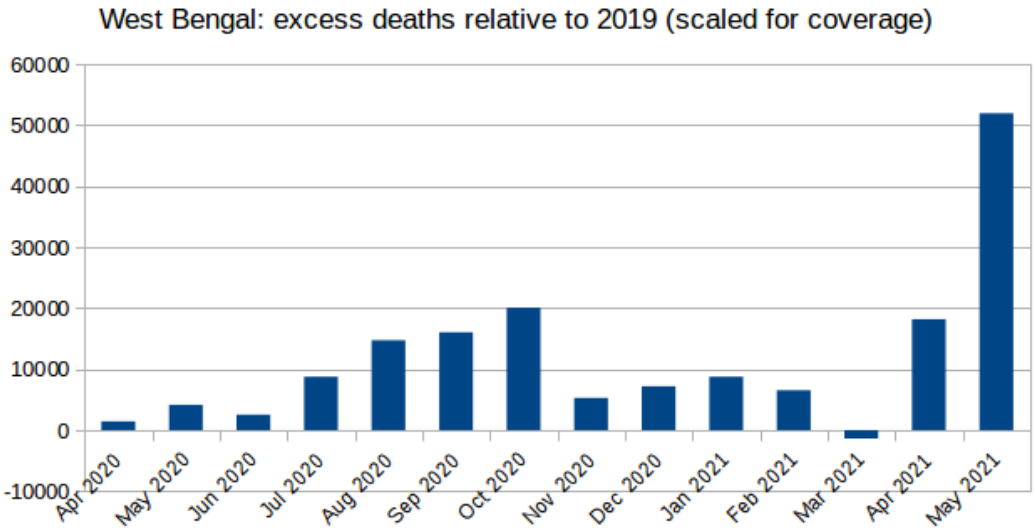
Are there risks of bias in using this data?
The main risks involve uncertainties around the pre-pandemic levels of registration and trends in registration discussed above. There are also some unexpected discrepancies between excess mortality and recorded COVID-19 deaths in the last two months of 2020, discussed later.

Were there unusual fluctuations in registration during the early part of 2020?
There were no drops in registration in the online system during any 3 month period of 2020 relative to 2019. In fact, only March 2020 saw fewer deaths than the corresponding month in 2019.

What are possible choices for baseline deaths and hence excess deaths?
Given the uncertainties around trends, 2019 values may be the best choice for baseline. Excess registered deaths calculated against such a baseline can then be rescaled to account for incomplete coverage in the online system.

What do monthly excess deaths look like relative to various baselines?
Below is a plot of excess deaths relative to 2019 baselines, scaled for coverage in the online system.

1 Prepared on 22nd August 2021, by Murad Banaji and Aashish Gupta.



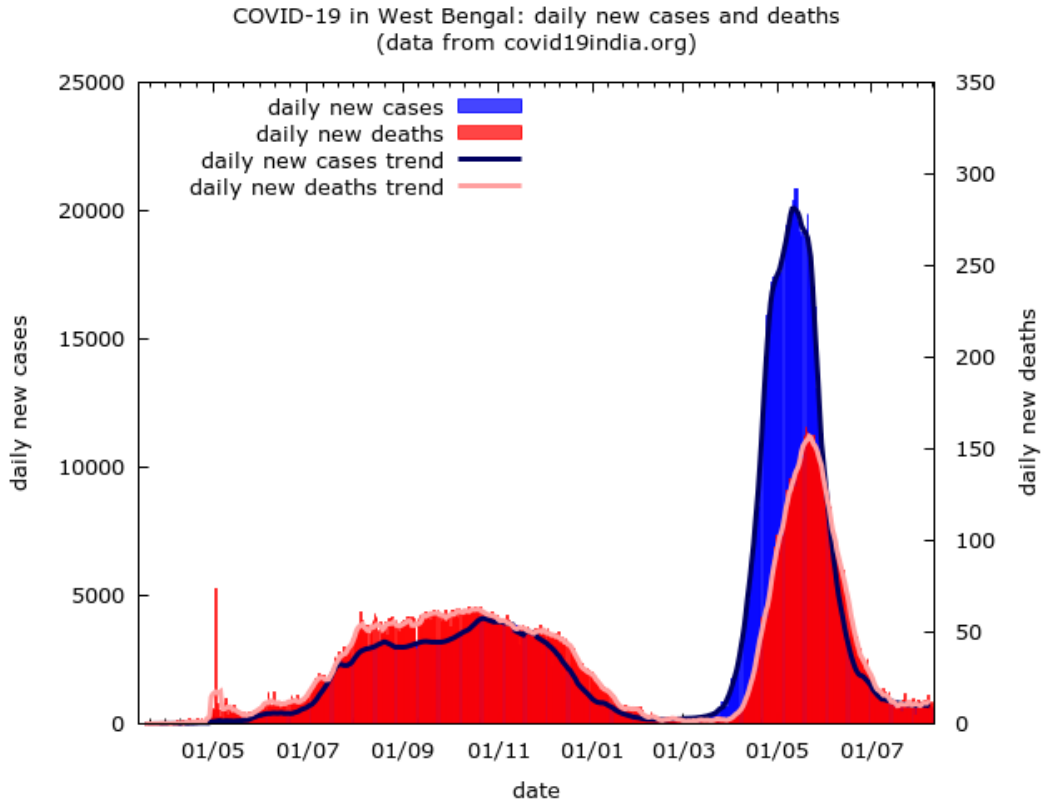
What is the scale of first and second wave excess deaths relative to various baselines?
We have the following estimates (official COVID-19 deaths are from covid19india.org):

	excess deaths (to nearest 1000)	**excess deaths per 1000 population**	**surge relative to baseline**	**ratio of excess deaths to official COVID-19 deaths**
Apr 2020-Feb 2021	96	1.0	19%	9.3
March-May 2021	69	0.7	56%	13.0
Apr 2020-May 2021	164	1.7	26%	10.6

Relative to a 2019 baseline, almost 60% of the excess deaths recorded upto May, 2021 occurred between April 2020 and February 2021. However, West Bengal's cases remained high throughout May, and second wave excess mortality is very likely incomplete in the data.

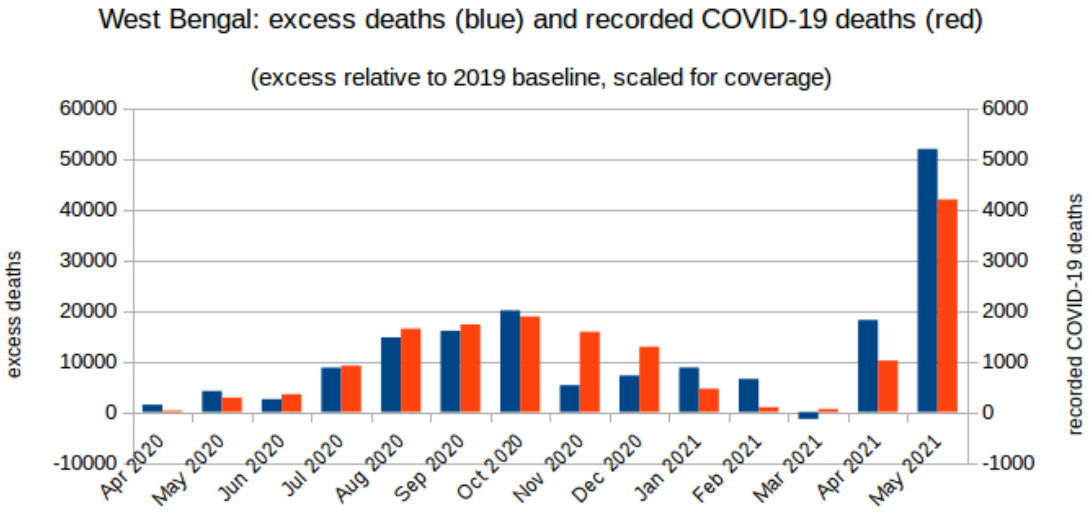
Are there other notable features in the death registration data?
As we will see below, the trend in excess deaths aligns closely with COVID-19 deaths until October 2020. There is, however an unexplained drop in death registrations during November and December 2020, despite the fact that official COVID-19 cases and deaths remained high during this period (see below).

What are the broad features of the state's COVID-19 epidemic so far?
The trajectory of recorded COVID-19 cases and deaths, using data from covid19india.org, is shown below.



The first wave saw a long high plateau in cases, with daily new cases at around or over 3K from mid-August to early December 2020. Daily new cases peaked at around 4100 daily cases around October 23, 2020. The second wave saw a peak in daily new cases at around 12000, close to May 12, 2021. Recorded COVID-19 deaths peaked on May 22, 2021. This late peak suggests that there were very likely further excess deaths in June 2021.

How does the mortality data align with official COVID-19 data?
Excess deaths relative to 2019 values, alongside recorded COVID-19 deaths (from covid19india.org) are plotted below.



There is a reasonable correlation between monthly recorded COVID-19 deaths and monthly excess deaths. During April 2020 to February 2021, the correlation coefficient is 0.78. If we remove November, this rises to 0.90, and removing both November and December takes it up to 0.95. The correlation coefficient is 0.92 over the whole period from April 2020 to May 2021.

Other notes

West Bengal's COVID-19 data shows only a relatively brief lull between the two waves. It is possible that slightly higher than baseline registrations during February and March 2021 (taken together) reflect an improving trend in registration. However, the ratio of excess deaths to COVID-19 deaths was similar in November 2020-February 2021 as in July-October 2020. Thus, the pattern of excess mortality does not point strongly to improving registration (or improving coverage in the online system) during the pandemic period.