Preliminary estimate of excess mortality during the COVID-19 outbreak – New York City, March 11- May 2, 2020
MMWR Morb Mortal Wkly Rep 2020;69:603–605. DOI: http://dx.doi.org/10.15585/mmwr.mm6919e5external icon.

This study aimed to estimate excess deaths – the number of deaths (from any cause) above expected seasonal baseline levels – in New York city in the setting of widespread community transmission.

QUESTION The PICO of the study is as follows;

P – residents of New York city

O – excess mortality during the COVID-19 outbreak (March 11 – May 2)

METHODS Data on deaths was obtained from an electronic register that allows rapid reporting (within 72 hours of death) of deaths with coding of cause of death according to ICD-10. The Department of Health and Mental Hygiene (DOHMH) performed a daily match between deaths reported in the register and laboratory-confirmed cases of COVID-19. To estimate excess deaths, a seasonal periodic regression model was used. Excess deaths were determined for the period March 11-May 2, 2020 and calculated as the difference between the seasonally expected baseline number of deaths and the reported number of all-cause deaths. COVID-19 associated deaths were those occurring in persons with laboratory confirmed SARS-CoV-2 infection. Deaths for which there was no laboratory confirmation of COVID-19 but where COVID-19, SARS-CoV-2 or equivalent term was listed on the death certificate as an immediate, underlying or contributing cause of death were classified as probable COVID-19 associated deaths.

RESULTS A total of 32,107 deaths were reported to DOHMH between March 11 and May 2nd. Of these, 24,172 deaths were found to be in excess of the seasonal expected baseline; 13,831 (57%) laboratory-confirmed COVID-19 associated deaths and 5,048 (21%) probable COVID-19 associated deaths. The remaining 5,293 (22%) excess deaths were not identified as either laboratory confirmed, or probable COVID-19 associated deaths.

DISCUSSION The study focuses on reporting of mortality data with less emphasis on providing interpretation of the findings. Based on Centre for Disease Control (CDC) data on deaths in New York City over a 20 year period, we estimated there are approximately 150 deaths per day. By adding this data to the Figure presented in the study, we can see that during the period of study, the daily death rate was approximately 6 times that of the normal daily death rate (orange dotted lines). It is difficult to explain the deaths not identified as either laboratory confirmed or probable COVID-19 deaths (white area in the figure). In the overwhelmed healthcare system, these deaths may be occurring as a result of unavailability of beds and resources to manage other non-COVID conditions. Alternatively, they may be a consequence of COVID-19 but not recognized as such (e.g. Kawasaki disease in children) or be deaths that are not directly associated with SARS-CoV-2 infection. The difficulty in reporting cause of death introduces some uncertainty around the figures for the probable COVID-19 associated deaths.

OVERALL SUMMARY The study used a real time near complete count of deaths linked with laboratory data and used an established modelling approach to provide an up to date estimate of excess deaths during a 7 week period of the COVID-19 outbreak. There has been some controversy around the measures that should be used in relation to determining the impact of this epidemic. Political positions have been adopted to inflate or deflate what is perceived to be the importance of the situation. Excess deaths provides a sensible and accurate measure of the total number of deaths as the possibility of misclassification in the denominator or numerator is low.

FIGURE. Number of laboratory-confirmed* and probable† COVID-19–associated deaths and total estimated excess deaths§ — New York City, March 11–May 2, 2020