



Excess Deaths Among Blacks and Latinx Compared to Whites During Covid-19

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Abstract

Importance Blacks and Latinx are disproportionately affected by Coronavirus disease 2019 (Covid-19) and experience higher mortality rates than Whites and Asians in the USA. Such racial disparities, in Covid-19 testing, cases, and mortality are visible in Connecticut too. Recently, excess deaths have become an important consideration in news reports and academic research. However, data on racial differences in excess death is limited.

Objective This study examines racial/ethnic differences in excess deaths in the state of Connecticut during the Covid-19 pandemic.

Design This is a cross-sectional epidemiological study to estimate excess deaths by racial/ethnic status utilizing mortality data during the peak months of Covid-19 infections from March 1 to June 30, 2020, in Connecticut. The following assumption is applied: expected non-Covid-19 deaths from March 1 to June 30, 2020, are equal to the number of deaths occurring during the period of March 1 to June 30, 2019. Race/ethnicity are defined as Non-Hispanic White, Non-Hispanic Black, and Latinx. Descriptive statistics and rates with 95% confidence intervals are presented. Chi-square analyses are performed where applicable.

Setting Connecticut

Participants All deaths in Connecticut from March 1 to June 30, 2020.

Key points Question

What are the racial/ethnic differences in excess deaths in Connecticut, CT, a microcosm of our country?

Findings

In this epidemiological study of 14,226 all-cause deaths from March 1 to June 30, 2020, in Connecticut, there is a 74% increase in mortality in Blacks, 63% increased mortality in Latinx, and 30% increase for Whites when compared to expected deaths. Undetermined deaths increased in 2020 and accounted for 13% of deaths in the Latinx population, 10.8% in the Black population, and 6.2% in the White population.

Meaning

Black and Latinx populations experienced an increase in mortality and undetermined deaths during the pandemic. These findings suggest that Covid-19 deaths may be underreported by at least 10% in these populations during the peak of the pandemic. We advocate for increasing testing capacity among these groups.

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Exposure Covid-19 and race/ethnicity

Results From March 1 to June 30, 2020, a total of 14,226 all-cause deaths occurred including 1514 Blacks (10.6%), 1095 Latinx (7.7%), and 11,617 Whites (81.7%). This represented a 74% increase in mortality for Blacks; 63% for Latinx, and 30% for Whites. In addition, 42.70% of the deaths in Blacks were attributed to Covid-19; 38.5% for Latinx, and 23.0% for Whites ($p < 0.001$). Covid-19 deaths accounted for over 90% of the excess deaths in Blacks and Hispanics. In contrast, in Whites, Covid-19 deaths exceeded the number of excess deaths by 353 cases (113.2%), indicating that some Whites may have died from other underlying health conditions with a positive Covid-19 diagnosis. Furthermore, there was an increase in undetermined deaths in 2020, which accounted for 10.8% of deaths in Blacks, 13% in Latinx, and 6.2% of deaths in Whites.

Conclusions and Relevance Excess deaths in Blacks and Latinx were found above the numbers of deaths determined to have occurred due to Covid-19. The fact that a large number of undetermined deaths were found for Blacks and Latinx individuals, and testing rates for Blacks and Latinx individuals (as determined by positivity rates) were lacking during this period strongly suggests, these excess deaths were Covid-19-related deaths.

The study findings indicate that Black and Latinx COVID-19-related deaths may be underreported in this pandemic. We advocate for targeted strategies that increase testing capacity, treatment, and vaccine availability in Black and Latinx communities.

Keywords Covid-19 · Coronavirus · Racial · Ethnic · Disparity · Community · Death

Background

The overall impact of Coronavirus Disease 2019 (Covid-19) remains uncertain. The USA maintains the most documented cases globally [1], and the ramifications are largely felt in communities of racial/ethnic minorities [2, 3]. Black communities are marred with health and economic challenges, and we were among the first to report that these communities are strained further in the time of crisis [4]. The disproportionate impact of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on Blacks is widely reported and reflected in higher mortality rates [5]. Lapses in reporting and missing race/ethnicity data [6] have obscured the true impact and consequently exacerbate disparities. Thus, analyzing excess death data, the difference between observed deaths and expected deaths further elucidates mortality burden that could otherwise be missed or underestimated [7]. We previously suggested that Connecticut is a microcosm of America [4, 8]. This work examines the racial/ethnic differences in excess deaths and undetermined deaths during the state's peak of Covid-19 infections.

Design

This is a cross-sectional epidemiological study analyzing mortality data from March 1 to June 30, 2019, and 2020. Data was obtained upon request from the Connecticut State Department of Public Health. The data includes cause of death (Covid-19 death identified by ICD-10 code U071), race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Latinx) gender, and age.

Other racial/ethnic groups were not included in the analysis, due to low numbers of Covid-19 deaths in those categories. Deaths categorized as “not listed” or “other ill-defined and unspecified causes of mortality” are defined as undetermined causes of death.

This excess death analysis is based on the assumption that expected non-Covid-19 deaths for March 1 to June 30, 2020, are equal to the number of deaths occurring during the period of March 1 to June 30, 2019. The excess death data provides in-depth information regarding the mortality rates in different racial/ethnic groups due to the Covid-19 pandemic. The calculation of excess deaths is a more accurate way of determining the effect of the pandemic on different racial/ethnic groups. It compares historic death averages to the volume of deaths that occur over and above the expected normal for the time period. Calculating excess death data is important because it gives light to the most affected population and allows implementing strategies to help communities that are at higher risk. It shows inequalities for overall deaths and can possibly thin the major gaps and health disparities in our healthcare system with better information access and health care need for minority groups.

The following formulae describe calculations for non-Covid-19 deaths and excess non-Covid-19 deaths. All calculations are based on the time period of March 1 to June 30, 2019, and 2020. We calculated (1) total excess deaths in 2020 = total deaths in 2020 – estimated expected deaths in 2020 and (2) excess non-Covid-19 deaths in 2020 = total excess deaths in 2020 – Covid-19 deaths in 2020. Descriptive statistics, rates, and 95% confidence intervals are presented. In addition, Chi-square analysis is performed where appropriate using a $p < 0.05$ level of significance.

Results

Covid-19 Deaths (Also for All the Results Below) by Race/Ethnicity

A total of 14,226 all-cause deaths occurred in Connecticut from March 1 to June 30, 2020; this includes 11,617 Whites (81.7%), 1514 Blacks (10.6%), and 1095 Latinx (7.7%) (Appendix Fig. 3). Among Blacks, 41.0% of the deaths were attributed to Covid-19 compared to 35.5% of deaths in the Latinx population and 26.0% of deaths in the White population.

Excess Deaths

In Table 1, there were 646 excess deaths in the Blacks population, which accounts for 42.7% of the total observed deaths among Blacks during this period. Among Latinx, 422 excess deaths comprised 38.5% of the total deaths in this population. While the White population experienced the most cases of excess deaths at 2673, this only accounted for 23.0% of the total deaths in this group (Table 1). These racial/ethnic group differences are statistically significant ($p < 0.001$).

The number of excess deaths relative to the expected deaths for this time period is shown in Fig. 1. There is a 74% increase (646/868) in mortality for Blacks, 63% increase (422/673) in mortality for Latinx, and 30% increase (2673/8944) in mortality for Whites when compared to expected deaths.

Non-Covid-19 Excess Deaths

The excess deaths in 2020 are either Covid-19 deaths or non-Covid-19 deaths (also referred to as non-Covid-19 excess deaths) (in Appendix Table 2). From March 1 to June 30, 2020, there were 11 (1.7%) excess deaths in the Black population and 33 (7.8%) excess deaths in the Latinx population not attributed to Covid-19 (i.e., non-Covid-19 deaths) in the state. Covid-19 deaths in the White population exceeded the number of excess deaths by 353 cases (−13.2%) during the same time period.

Table 1 Excess deaths from March 1, 2020, to June 30, 2020 in CT

| Race | Observed deaths | | Expected deaths† | | |
|----------|-----------------|--------------------|------------------|-------------------|---------------|
| | <i>n</i> | % (95% CI) | <i>n</i> | % (95% CI) | Excess deaths |
| Black | 1514 | 42.7 (39.5, 44.4)* | 868 | 39.5 (37.1, 41.9) | 646 |
| Hispanic | 1095 | 38.5 (32.6, 38.4)* | 673 | 32.6 (31.1, 34.1) | 422 |
| White | 11,617 | 23.0 (25.3, 26.8)* | 8944 | 25.3 (24.1, 26.5) | 2,673 |
| Totals | 14,226 | | 10,485 | | 3,741 |

†Expected deaths is the total deaths from March 1 to June 30, 2019

* $p < 0.001$

Locations of Deaths Attributed to Covid-19

In Appendix Table 3, the majority of Covid-19 deaths occurred in the hospital for all groups. Nearly half of Whites died in nursing homes, compared to about a quarter of Blacks and Latinx ($p < 0.001$).

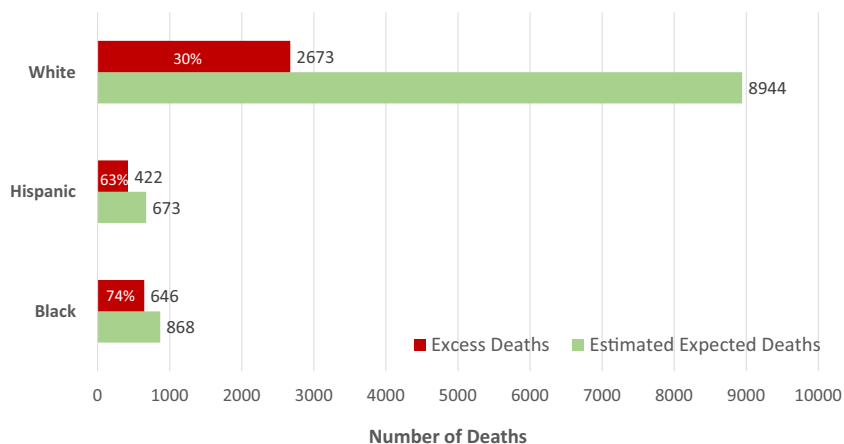
Undetermined Causes of Deaths

Undetermined causes of death are defined by a combination of two categories, “not listed” and “other ill-defined and unspecified causes of mortality.” In 2019, no deaths were classified as “not listed” or “other ill-defined...causes of mortality,” therefore were characterized as less than 0.5% of deaths, for analytical purposes. By 2020, undetermined causes of death were among the top 10 causes of non-Covid-19 deaths. Figure 2 illustrates a summary of undetermined cause of death by year. Among Blacks and Latinx, “not listed” was the primary cause of death in 2020. Undetermined deaths in the respective populations are as follows: 13% in the Latinx population, 10.8 % in the Black population, and 6.2% in the White population.

Conclusion

We found very high mortality rates due to Covid-19 in Blacks and Latinx, and both groups experienced a greater increase in mortality than Whites especially when compared to the same time period of the previous year. There was also an appreciable increase in undetermined deaths in 2020 with a greater proportion identified in Blacks and Latinx and less in Whites. Is it possible that unknown deaths represent undiagnosed Covid-19 deaths? Black and Latinx deaths were underreported during the peak of the pandemic. Excess data reveal that deaths in Blacks may be underreported by 10%. This is confirmed by an increase of deaths in the Black community listed as undetermined (10%). The high Covid-19 positivity rates of 48.3% (March 2020) in the Black community and 45.9% in the Latinx community versus 29.8% in the

Fig. 1 Number of excess deaths relative to the expected number of deaths by race from March 1 to June 30, 2020 in CT



White community may partially explain the Covid-19 underreporting in the minority population. High positivity rates in the Black and Latinx communities indicate high risks of Covid-19 infections in these populations. To elevate the disproportion between races more testing is critical and essential for minority populations to identify the infections equitably and to prevent further widespread infections.

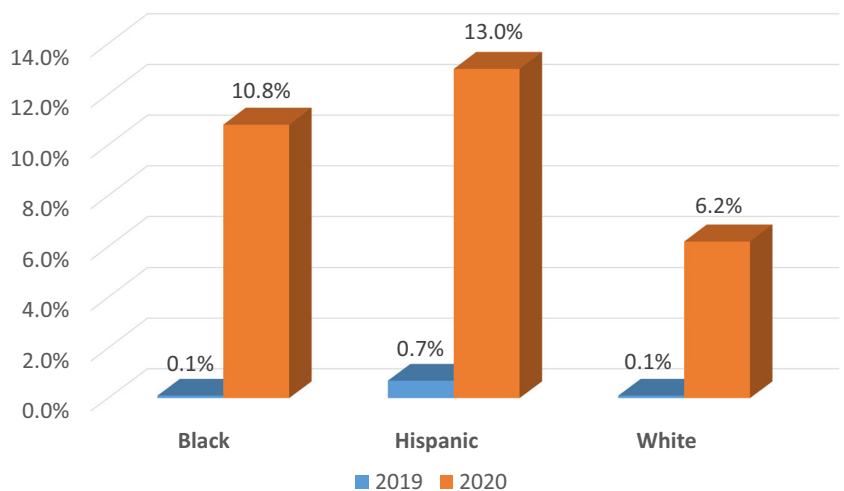
Our analysis revealed a noteworthy finding in Whites. There were 3026 reported Covid-19 deaths. However, the analysis estimated 2673 excess deaths in this population; therefore, more Covid-19 deaths were observed than anticipated, and accounted for 113% of excess deaths. This finding may result from a higher testing capacity in a given population that identifies more positive cases. A Covid-19-related death is reported when an individual has a positive diagnosis even in the setting of other comorbidities. Therefore, it is challenging to determine if death occurred due to the SARS-CoV-2 infection or if death occurred due to other conditions in the setting of a positive diagnosis. Nearly half of the White population died in a nursing home, a presumed vulnerable population with advanced age, and a more significant disease burden.

We must consider that some individuals died from other conditions in the setting of a positive diagnosis. Deaths in Whites may have been overestimated during the early peak of the pandemic.

The differences in COVID mortality can be a function of actual COVID testing, and that differential testing can affect mortality disparities findings, therefore such differences in testing should be examined. Recent data obtained from the Connecticut Department of Public Health showed the proportional testing in Blacks, Latinx, and Whites in the state. The racial distribution of testing was similar to the racial distribution of the population (Appendix Table 4). However, the test positivity rate in Blacks and Latinx was approximately 1.5 times greater than the positivity rate in Whites (Appendix Fig. 4). This trend remained consistent in the months prior to June 2020. The higher positivity rates suggest that more testing was required in Black and Latinx communities at the time to capture positive cases.

As we experience a second surge, and further surges can occur, we must identify areas of improvement and establish strategies to coordinate a proactive rather than a reactive

Fig. 2 Undetermined deaths from March 1 to June 30, 2019 and 2020 in CT



response. Here, we present key findings that may serve as lessons. Our conclusions are limited by potential inaccuracies in reporting and assumptions made in the analysis. Nevertheless, this work suggests that future testing strategies should aim to test Blacks and Latinx at a higher rate than their population percent due to a greater burden of infections in

these communities. One state for example reported that their testing sites were disproportionately established in predominately white neighborhoods [9]. Perhaps, efforts should focus on establishing accessible testing sites and educating communities on the importance of identifying positive cases to initiate treatment and prevent further spread.

Appendix 1

Table 2 Excess deaths from March 1, 2020, to June 30, 2020, attributed and not attributed to Covid-19 in CT

| Race | Total | Deaths attributed to Covid-19 | | Excess deaths not attributed to Covid-19 | |
|----------|-------|-------------------------------|-------|--|-------|
| | | <i>n</i> | % | <i>n</i> | % |
| Black | 646 | 635 | 98.3 | 11 | 1.7 |
| Hispanic | 422 | 389 | 92.2 | 33 | 7.8 |
| White | 2673 | 3026 | 113.2 | -353 | -13.2 |

Table 3 Locations of deaths attributed to Covid-19 in CT

| | Black (<i>n</i> =635) | | Hispanic (<i>n</i> =389) | | White (<i>n</i> =3026) |
|---------------|------------------------|--------------|---------------------------|------|-------------------------|
| | % | 95% CI | % | % | 95% CI |
| Hospital | 66.0 | (64.3, 67.7) | 71.0 | 47.6 | (45.8, 49.4) |
| Nursing home | 27.2 | (25.7, 28.8) | 22.4 | 45.8 | (44.0, 47.5) |
| Home | 4.9 | (4.1, 5.6) | 4.1 | 2.2 | (1.7, 2.8) |
| Hospice/other | 1.9 | (1.4, 2.4) | 2.6 | 4.4 | (3.6, 5.1) |

p<0.001

Table 4 Number of Covid-19 tests by race/ethnicity from March 1 to June 30, 2020

| Race/ethnicity | Total number of Covid-19 tests | | | | | Percent of population tested | CT population 2019* |
|----------------|--------------------------------|-------|-------|-------|--------|------------------------------|---------------------|
| | March | April | May | June | Total | | |
| White | 9585 | 34333 | 56012 | 75153 | 175083 | 63.1% | 65.9% |
| Black | 1718 | 9095 | 12548 | 17543 | 40904 | 14.8% | 12.2% |
| Latinx | 2314 | 11071 | 16242 | 17709 | 47336 | 17.1% | 16.9% |
| Other | 661 | 2595 | 4449 | 6276 | 13981 | 5.0% | 5.0% |

Fig. 3 Covid-19 and non-Covid-19 deaths by race from March 1 to June 30, 2020 in CT

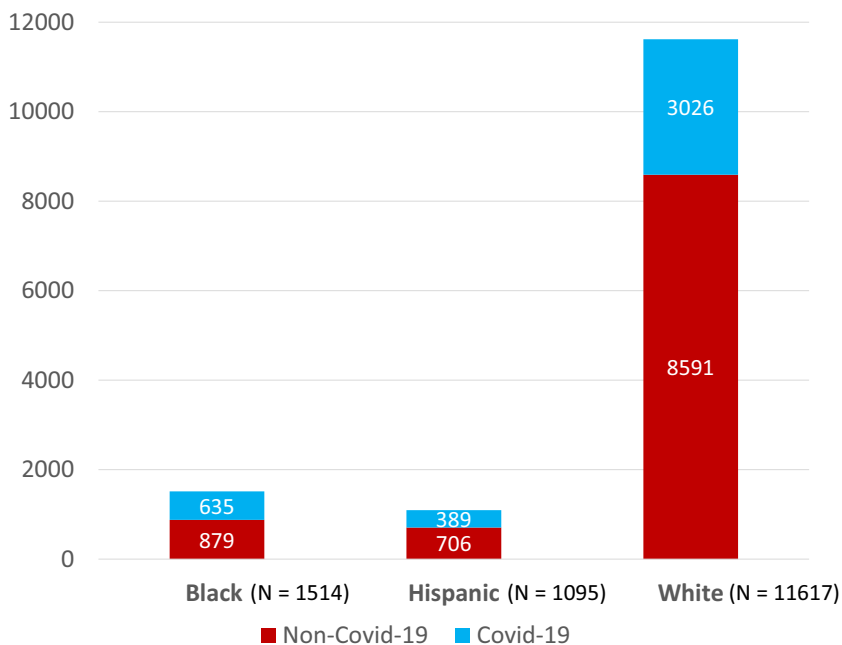
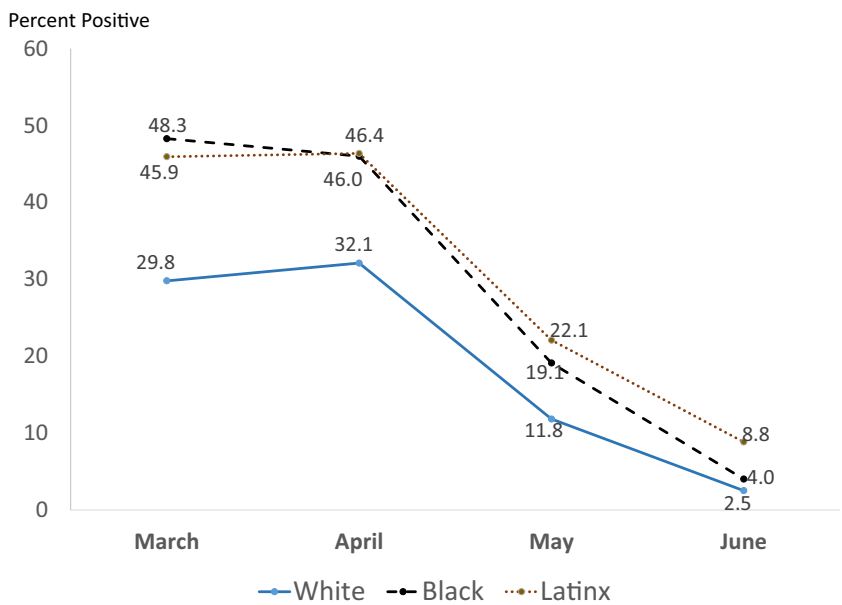


Fig. 4 Positivity rates for Covid-19 testing by race from March 1 to June 30, 2020 in CT



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Competing Interests The authors declare no competing interests.

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Declarations

Ethics Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Not applicable.

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