

Ethnoracial Disparities in Rates of Non-Natural Causes of Death After the 2020 COVID-19 Outbreak in New York State



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Introduction: COVID-19 was associated with increases in non-natural cause mortality in the U.S., including deaths due to drug overdose, homicide, and motor vehicle crashes. Initial reports indicated higher rates of non-natural mortality among ethnoracial minority groups. This report aims to clarify these disparities by documenting trends in non-natural mortality across ethnoracial groups during the 2020 COVID-19 surge in New York State.

Methods: We report monthly trends in non-natural cause mortality (overall and stratified by ethnoracial status) in New York State from January 2019 through December 2020, which included the COVID-19 onset in March 2020.

Results: Total mean monthly unintentional overdose rates per 100,000 increased from 17.45 (before surge: January 2019–February 2020) to 23.19 (after surge: March 2020–December 2020) (mean difference=5.73, 95% CI=3.82, 7.65; $p<0.001$). Mean monthly homicide death rates increased from 2.34 before surge to 3.55 after surge (mean difference=1.20, 95% CI=0.60, 1.81; $p<0.001$), with the increase seen primarily in the non-Latinx Black population. Although increasing unintentional overdose death rates before surge equally affected non-Latinx White, Latinx, and non-Latinx Black persons, they remained high for non-Latinx Black persons but dropped for the other 2 groups after the pandemic onset. None of the ethnoracial subgroups showed significant increases in suicide or motor vehicle crash death rates.

Conclusions: Non-Latinx Black persons showed disproportionately high and sustained increased rates of unintentional overdose and homicide death rates after the 2020 COVID-19 surge in New York State. Fatality review and death scene investigation research is needed to better understand these disparities.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) accounted for 345,323 deaths in the U.S. in 2020,¹ with higher death rates in ethnoracial minority groups.^{2–4} The 2020 COVID-19 surge was also associated with increases in non-natural cause mortality, with higher than expected deaths due to drug overdose, homicide, and motor vehicle crashes.^{5,6} Excess non-natural deaths similarly varied across ethnoracial groups: Blacks had the highest rates of excess deaths due to homicide and transportation-related events, whereas American Indian/Alaska Natives had the highest rate of excess overdose deaths, although Blacks, Latinx, and Whites showed similar increased rates.^{6,7} Suicide mortality counts did not increase during the COVID-19 surge.

In this study, we offer new insights into the timing and duration of the shifts in non-natural causes of death across ethnoracial groups in relation to the pandemic onset. We examined month-to-month patterns of non-natural deaths in New York State (NYS), excluding New York City (NYC), from before the first wave of COVID-19 in March 2020 through December 2020, focusing on mortality rate trends stratified by ethnoracial groups. This month-to-month analysis further elucidates how the COVID-19 surge impacted specific ethnoracial groups.

METHODS

Study Sample

We used 2019–2020 NYS mortality records and 2019 data from the U.S. Census Bureau, NYS, to examine mortality rates for NYS residents outside of NYC. The mortality database contains records of all reported deaths in NYS, excluding NYC, for the period from January 1, 2019, through December 31, 2020. Non-natural deaths were first considered overall and then stratified by unintentional overdose, suicide, motor vehicle crashes, falls, homicides, other non-natural causes, and unknown. March 2020 was selected as the period of COVID-19 onset in NYS.

Measures

We first plotted annualized monthly mortality rates per 100,000 population for total non-natural causes of death overall and stratified by subgroups. We then calculated mean annualized mortality rates per 100,000 persons during the presurge (January 2019–February 2020) and postsurge (March–December 2020) periods. Mortality rates were calculated for total non-natural deaths, for each of the 6 non-natural causes of interest, and for ethnoracial groups (non-Latinx Black, non-Latinx White, Latinx, and other) within each non-natural cause of mortality. The research team used ethnoracial categories from the NYS mortality records

database. Deaths attributed to non-Latinx Asian, American Indian/Alaska Native, and other populations were combined into our other category owing to low sample sizes.

Statistical Analysis

Segmented regression, interrupted time series ordinary least squares regression analyses compared trends in total non-natural death rates and each subcategory, specifically monthly averages (level) and changes during the period (slope) before and after the onset of the COVID-19 surge. Results were seasonally adjusted by calendar month. All analyses were performed using SAS software, version 9.4. The project used deidentified data and was determined to be exempt from human subjects review by the New York State Psychiatric Institute IRB.

RESULTS

Total NYS deaths during the January 2019–December 2020 period varied between 7,397 and 16,011 per month. [Tables 1](#) and [2](#) list counts and percentages of total non-natural as well as unintentional overdose deaths each month throughout 2019–2020, stratified by ethnoracial group. The monthly percentage of total NYS deaths due to non-natural causes varied from 5.5% to 7.7% during the January 2019–February 2020 presurge period before dropping to 3.5% during April 2020, when COVID-19 deaths peaked. The non-natural cause monthly mortality percentage began to increase in June 2020 and peaked at 8.4% in October 2020.

Mortality rates increased significantly from the pre- to postsurge periods for unintentional overdose and homicide deaths but not for suicide or motor vehicle crash deaths. The total mean annualized monthly unintentional overdose rate per 100,000 increased from 17.45 in the presurge period to 23.19 in the postsurge period (mean difference=5.73, 95% CI=3.82, 7.65; $p<0.001$), and the mean monthly homicide death rate per 100,000 increased from 2.34 before surge to 3.55 after surge (mean difference=1.20, 95% CI=0.60, 1.81; $p<0.001$). The postsurge increase in homicide rates was largely accounted for by non-Latinx Black persons, whose homicide rate per 100,000 increased from 13.4 in January 2019 to 33.4 in September 2020 and remained elevated at 21.2 in December 2020.

Interrupted time series analyses compared trends in slope lines of monthly average mortality rates during the presurge period with those in the postsurge periods. Among the non-natural mortality subcategories, the only significant change involved unintentional overdose deaths. [Figure 1](#) shows mean monthly mortality rates for the total unintentional overdose mortality category as well as for the ethnoracial groups. The total

Table 1. Number and Percentage of Total Non-Natural and Unintentional Overdose Deaths in New York State (Excluding New York City) by Ethnoracial Status in 2019

Non-natural deaths (total and by ethnoracial group)	January 2019		February 2019		March 2019		April 2019		May 2019		June 2019		July 2019		August 2019		September 2019		October 2019		November 2019		December 2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
	Total non-natural deaths	514		484		523		436		526		510		585		585		495		553		536		557
White non-Hispanic	410	79.8%	380	78.5%	430	82.2%	355	81.4%	427	81.2%	418	82.0%	466	79.7%	466	79.7%	373	75.4%	441	79.7%	433	80.8%	444	79.7%
Black non-Hispanic	52	10.1%	54	11.2%	45	8.6%	32	7.3%	51	9.7%	35	6.9%	70	12.0%	58	9.9%	69	13.9%	48	8.7%	48	9.0%	53	9.5%
Hispanic	29	5.6%	36	7.4%	37	7.1%	33	7.6%	30	5.7%	44	8.6%	34	5.8%	47	8.0%	42	8.5%	38	6.9%	34	6.3%	41	7.4%
Unintentional overdose deaths	133		147		183		120		148		156		189		178		140		168		163		170	
White non-Hispanic	98	73.7%	117	79.6%	140	76.5%	93	77.5%	121	81.8%	128	82.1%	148	78.3%	135	75.8%	97	69.3%	129	76.8%	127	77.9%	129	75.9%
Black non-Hispanic	12	9.0%	12	8.2%	22	12.0%	11	9.2%	14	9.5%	9	5.8%	24	12.7%	20	11.2%	24	17.1%	16	9.5%	21	12.9%	16	9.4%
Hispanic	13	9.8%	13	8.8%	21	11.5%	12	10.0%	11	7.4%	17	10.9%	14	7.4%	19	10.7%	18	12.9%	16	9.5%	9	5.5%	21	12.4%

Note: Data for Other population are not included because monthly counts for unintentional overdose deaths were all <10.

Table 2. Number and Percentage of Total Non-Natural and Unintentional Overdose Deaths in New York State (Excluding New York City) by Ethnoracial Status in 2020

Non-natural deaths (total and by ethnoracial group)	January 2020		February 2020		March 2020		April 2020		May 2020		June 2020		July 2020		August 2020		September 2020		October 2020		November 2020		December 2020	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
	Total non-natural deaths	551		515		625		557		627		627		603		655		614		587		582		581
White non-Hispanic	425	77.1%	420	81.6%	497	79.5%	438	78.6%	503	80.2%	456	72.7%	447	74.1%	505	77.1%	457	74.4%	464	79.0%	453	77.8%	429	73.8%
Black non-Hispanic	67	12.2%	43	8.3%	51	8.2%	70	12.6%	63	10.0%	85	13.6%	87	14.4%	72	11.0%	84	13.7%	57	9.7%	75	12.9%	80	13.8%
Hispanic	39	7.1%	39	7.6%	56	9.0%	36	6.5%	42	6.7%	63	10.0%	55	9.1%	58	8.9%	58	9.4%	50	8.5%	41	7.0%	48	8.3%
Unintentional overdose deaths	189		174		235		235		244		220		217		236		178		191		200		204	
White non-Hispanic	135	71.4%	137	78.7%	186	79.1%	177	75.3%	188	77.0%	149	67.7%	153	70.5%	180	76.3%	120	67.4%	150	78.5%	141	70.5%	151	74.0%
Black non-Hispanic	31	16.4%	19	10.9%	19	8.1%	32	13.6%	31	12.7%	31	14.1%	39	18.0%	29	12.3%	30	16.9%	25	13.1%	32	16.0%	31	15.2%
Hispanic	15	7.9%	16	9.2%	27	11.5%	20	8.5%	19	7.8%	33	15.0%	19	8.8%	22	9.3%	23	12.9%	12	6.3%	21	10.5%	15	7.4%

Note: Data for Other population are not included because monthly counts for unintentional overdose deaths were all <10.



Figure 1. Rates of unintentional overdose deaths by race/ethnicity before and after the 2020 COVID-19 periods in New York State, excluding New York City, including observed versus expected rates with 95% UCIs and LCIs. LCI, lower CI; UCI, upper CI.

unintentional overdose slope was 0.28 in the presurge period and -0.58 in the postsurge period (change = -0.87 , 95% CI = -1.31 to -0.42 ; $p < 0.001$). Non-Latinx White persons accounted for most of this difference, with a presurge slope of 0.24 and postsurge slope of -0.72 (change = -0.97 , 95% CI = -1.55 to -0.39 ; $p < 0.004$). Latinx persons had pre and postsurge slopes of 0.14 and -0.88 (change = -1.02 , 95% CI = -2.05 to 0.00; $p < 0.007$), respectively. Non-Latinx Black persons had a presurge slope of 0.92 and a postsurge slope that continued positive at 0.44 (change = -0.48 , 95% CI = -1.99 to 1.03; $p = 0.54$).

DISCUSSION

Our findings are consistent with national trends documenting increases in overdose deaths during the COVID-19⁵⁻⁷ surge and shed further light on trends in non-natural deaths across ethnoracial groups during this period. Unintentional overdose death rates continued to increase for non-Latinx Black persons during the 9 months after the onset of the COVID-19 pandemic, whereas they decreased for non-Latinx White and Latinx persons after the initial surge. A national survey found that 13% of adult respondents started or increased substance use to cope with COVID-19–related stress

and noted that Latinx and Black respondents were more likely to report substance use than White and Asian respondents.⁸ Social isolation along with decreased access to substance use treatment and diminished availability of harm reduction interventions such as naloxone may have contributed to these trends.⁹

Persons of color are more likely than non-Latinx White individuals to experience job loss, reduced hours, and financial stress during economic crises.¹⁰ This disproportionate impact of pandemic-induced economic hardships on persons of color also may have contributed to an increase in substance use¹¹ and overdose deaths.¹² It is not clear what factors may have contributed to increased homicide deaths among non-Latinx Blacks. Further research, for example, examinations of homicides involving domestic violence, is needed to understand these associations.

Limitations

Limitations of this study include potential misclassification of non-natural death certifications. The COVID-19 pandemic contributed to certification delays, and lack of available tests to confirm COVID-19 early in 2020 may have caused inaccurate classification of cause of death. We did not examine motor vehicle crash data by miles driven, which decreased during the COVID-19 surge. Population-based measures do not account for fewer miles driven, potentially underestimating the true impact of COVID-19 on motor vehicle crash death risk. We do not report data from NYC, which are maintained in a separate vital records database that we were unable to access. However, our sample included downstate NYS counties surrounding NYC that were strongly impacted by the initial 2020 COVID-19 surge as well as several medium and large urban and rural NYS communities. Finally, although group differences were observed in some sources of mortality before/after COVID-19, the results do not conform to 2-part trend lines, leaving open the possibility of other secular explanations.

CONCLUSIONS

The initial COVID-19 surge and public health response coincided with differential trends in non-natural deaths across ethnoracial groups, with non-Latinx Black persons appearing to be more vulnerable to factors that increase the risk of unintentional overdose death. Policymakers should be aware of potential ethnoracial disparities and be prepared to scale up efforts to target services and supports to specific populations during pandemic surges and associated economic downturns.

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