

# Firearm homicides among hispanics and white non-hispanics: measuring disparities

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## ABSTRACT

Firearm homicides are increasing in the United States, and firearm homicides are a critical driver of racial health disparities. One such disparity that has received limited attention is excess firearm homicides among Hispanics, relative to White Non-Hispanics; comprehensively characterising this disparity is the purpose of this brief report. Using data from CDC WONDER, we examined temporal trends (2012–2021) in firearm homicide rate disparities between Hispanics and White Non-Hispanics in the U.S. Focusing on recently elevated rates (2018–2021), we estimated this disparity across demographics (gender, age, urbanicity, and race), and across U.S. states. These data clearly show nearly universal excess firearm homicide among Hispanics, relative to White Non-Hispanics, with larger differences among men, younger age groups, and in metropolitan areas. Similarly, nearly all states show higher rates of firearm homicide among Hispanics, relative to White Non-Hispanics, though the magnitude of the difference varies substantially.

## INTRODUCTION

Firearm homicide rates in the United States (U.S.) rose 47% from 2018 to 2021 and have outpaced other developed nations.<sup>1 2</sup> The burden of gun homicides, however, is not distributed equally among the population. Firearm homicides are higher among men, younger age groups, in urban areas, and among Black non-Hispanics.<sup>3</sup> Moreover, the racial/ethnic patterning of firearm homicides have been documented.<sup>4</sup>

Among Hispanics, firearm homicides constitute 75% of total homicides and 61% of firearm-related deaths.<sup>1</sup> Yet, most of the research on racial/ethnic disparities in firearm homicides have focused on differences between White and Black non-Hispanics,<sup>5 6</sup> and remains limited for Hispanics, the most populous minority group in the U.S (19% of the U.S. population).<sup>7</sup> Understanding this disparity through descriptive epidemiology can guide research and policies to achieve the Healthy People 2030 goal of eliminating health disparities.<sup>8</sup> In this report, we aim to comprehensively characterise the Hispanic/White Non-Hispanic disparity in firearm homicide, and how it varies demographically. Specifically, we will estimate temporal trends in the Hispanic/White Non-Hispanic firearm homicide disparity and, focusing on the most recent time period (2018–2021), we will estimate how that difference varies with demographics, urbanicity, and across states.

## WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Firearm homicides in the United States have increased in recent years, particularly from 2019 to 2021.
- ⇒ Firearm-related violence in the United States disproportionately affects racial minorities and racial disparities have widened from 2019 to 2020.
- ⇒ There are limited studies that focus on disparities between Hispanics and White non-Hispanics.

## WHAT THIS STUDY ADDS

- ⇒ We evaluate differences in firearm homicide rates between Hispanics and White non-Hispanics across time, demographics, urbanicity, and states.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ Our findings can help prioritise policies and research to reduce health disparities among Hispanics.

## METHODS AND ANALYSIS

### Data description

We analysed data from the Centre for Diseases Control and Prevention's Wide-ranging Online Data for Epidemiologic Research (CDC WONDER). Our analyses used the Multiple Cause of Death, 2018–2021, single race dataset (data for single race rates are not available before 2018) and bridged-race data set from 2012 to 2017. The later adjusts data containing certain race categories to make it consistent with datasets that contain different categories.<sup>9</sup> We did not use the bridged-race data for the full analysis because it was unavailable for 2021. Data includes demographic information of the deceased as well as geographic information of the incident. Data is presented by causes of death in accordance with the International Classification of Disease, Version 10. Rates reported are based on deaths certified as firearm homicides, including legal intervention (ICD-10 codes: X93-X95, Y35.0, U01.4).

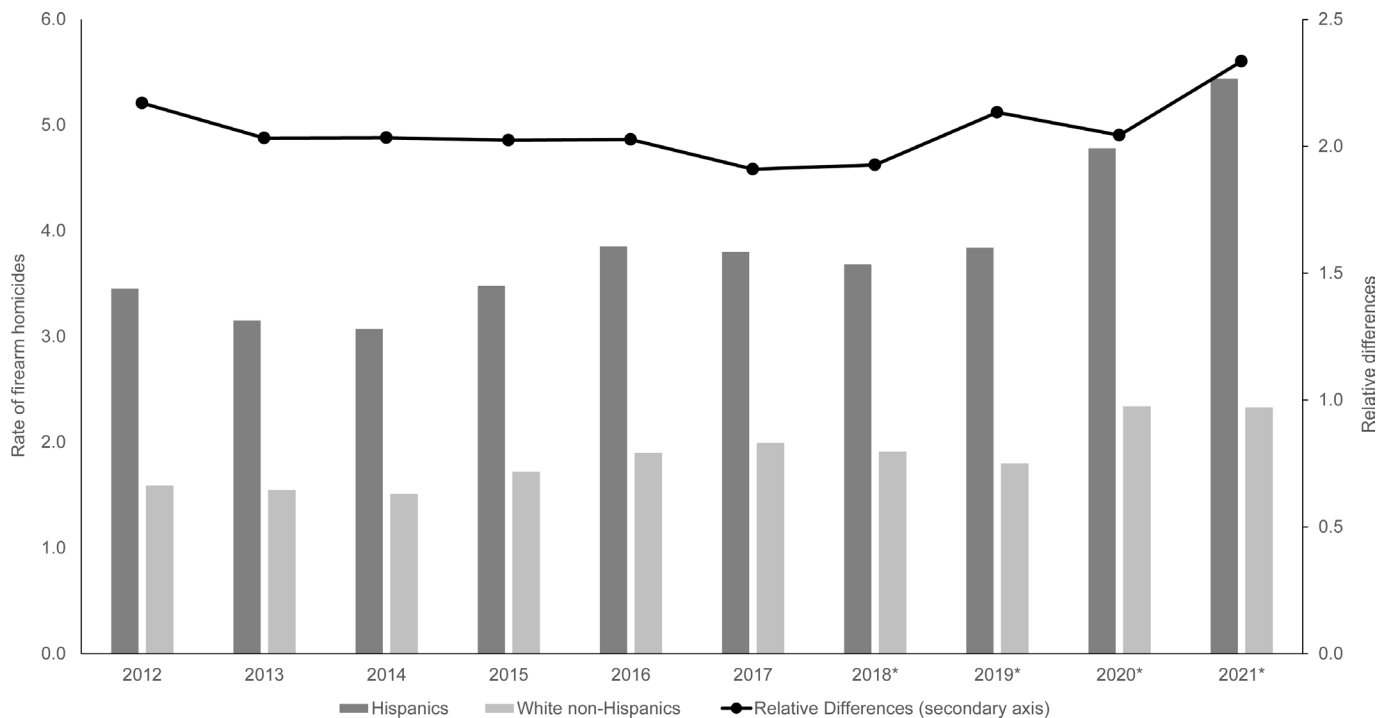
### Data analysis

First, we assessed temporal trends in firearm homicide age-adjusted rates for Hispanics and Non-Hispanic Whites from 2012 to 2021. To do so, we incorporated the single race dataset from 2018 to 2021 and the bridged race dataset from 2012 to 2017. All subsequent analyses focused on age-adjusted rates (with two exceptions examining crude-rates, age groups and urbanicity) for Hispanics and White Non-Hispanics,



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**Figure 1** Annual age-adjusted rates of gun homicides among Hispanics and White non-Hispanics, 2012–2021 (\*Based on single race rates). Source: Authors' analysis of data for 2012–2021 from the Wide-ranging Online Data for Epidemiologic Research (WONDER) of the Centres for Disease Control and Prevention. \*Figures from 2018 to 2021 are based on single race data (vs bridged race data from 2012 to 2017). For years where both bridged-race and single-race data were available (2018–2020), we found discrepancies in the rates of Non-Hispanic White firearm homicide deaths to be minimal (less than 0.02 incidents per 100 000 population in all years). All Hispanic firearm homicide rates were identical.

aggregated across 2018–2021. We estimated variation in these disparities across sex, age groups (ten-year age intervals starting with ages 5 to 14 and ending with ages 75 to 84), and across the six categories of urbanisation based on the 2013 NCHS Urban-Rural Classification.<sup>10</sup> We then examined differences in firearm homicide rates between all race categories for Hispanics included in CDC WONDER (White, Black, Asian, American Indian/Native Alaskan, Native Hawaiian/Pacific Islander, or multiple races) and White non-Hispanics. We characterised geographic variability in this disparity by mapping the relative difference (Hispanic firearm homicide rate divided by the White Non-Hispanic firearm homicide rate) across states. In the state-level summaries, twelve states and the District of Columbia are excluded from the analysis due to rates being suppressed or unreliable within the CDC WONDER system.

## RESULTS

From 2012 to 2021, firearm homicides among Hispanics increased at a higher rate than White non-Hispanic, particularly from 2018 to 2021 (figure 1). While rates of gun homicides among White non-Hispanics increased 22% from 2018 to 2021, rates among Hispanics rose 48%. In 2021, the rate of firearm homicides among Hispanics was 2.33 times higher than White non-Hispanics, the largest disparity between these groups since 2012 (figure 1). Focusing in on the most recent date (2018 to 2021), 11 397 Hispanics died by firearm homicides in the U.S. The rate of firearm homicides among Hispanics was 4.42/100K, 2.11 times higher than the rate among White non-Hispanics.

### Trends by age, gender, and urbanicity

From 2018–2021, firearm homicide rates were higher among Hispanics than Non-Hispanic Whites in nearly every age group,

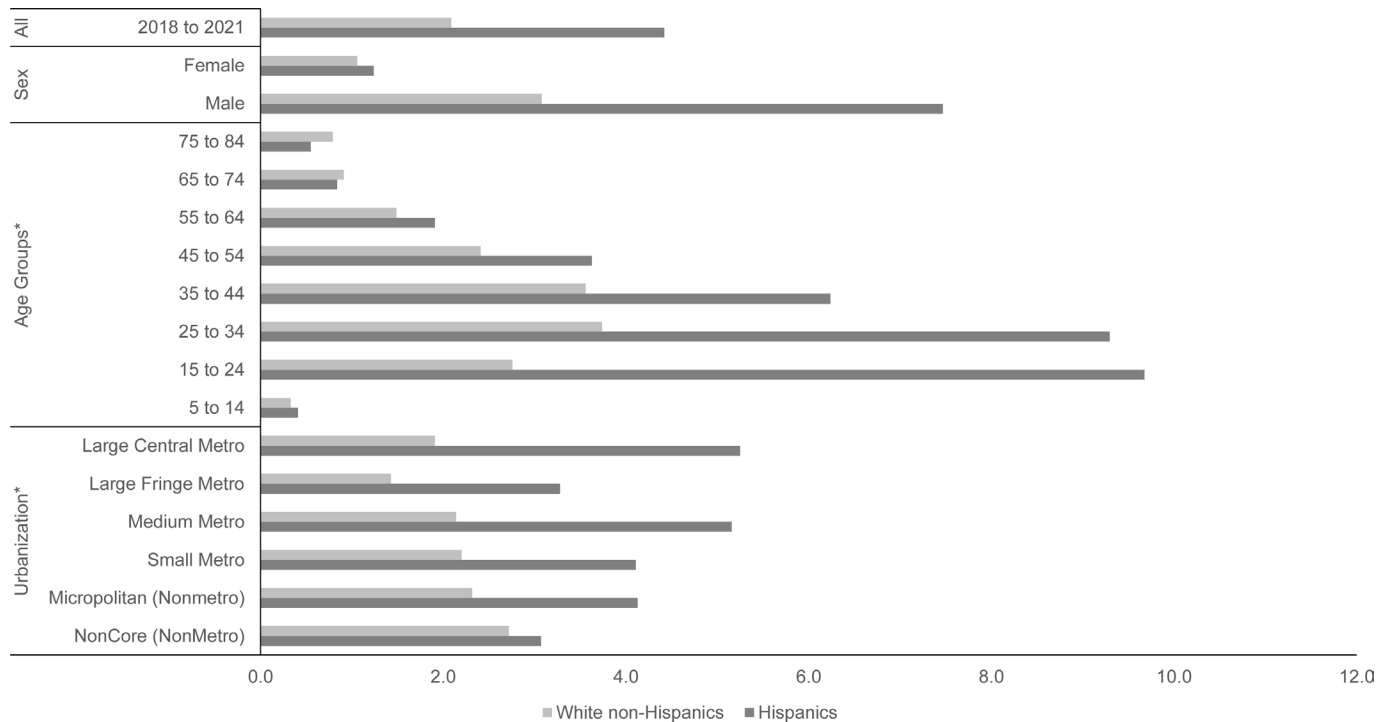
sex, and urbanicity category (figure 2). The age-adjusted rate of firearm homicides among Hispanic men was 7.47/100K, and 2.43 times higher than White non-Hispanic men. Disparities in rates among women were smaller, with Hispanic women presenting a rate 1.17 times higher than White non-Hispanic women.

Across age groups, the largest disparities were observed among adolescents and young adults. The crude rate of firearm homicides among Hispanics was 9.68/100K, 3.51 times higher than White non-Hispanics within that same age category. Disparities between Hispanics and White non-Hispanics decreased with age, with the relative rate differences gradually decreasing from 2.49 (age 25–34), to 1.75 (age 35–44), to 1.51 (age 45–54), to 1.28 (age 55–64), before reversing, with Hispanics over 65 years of age showing marginally lower firearm homicides than their White non-Hispanic counterparts.

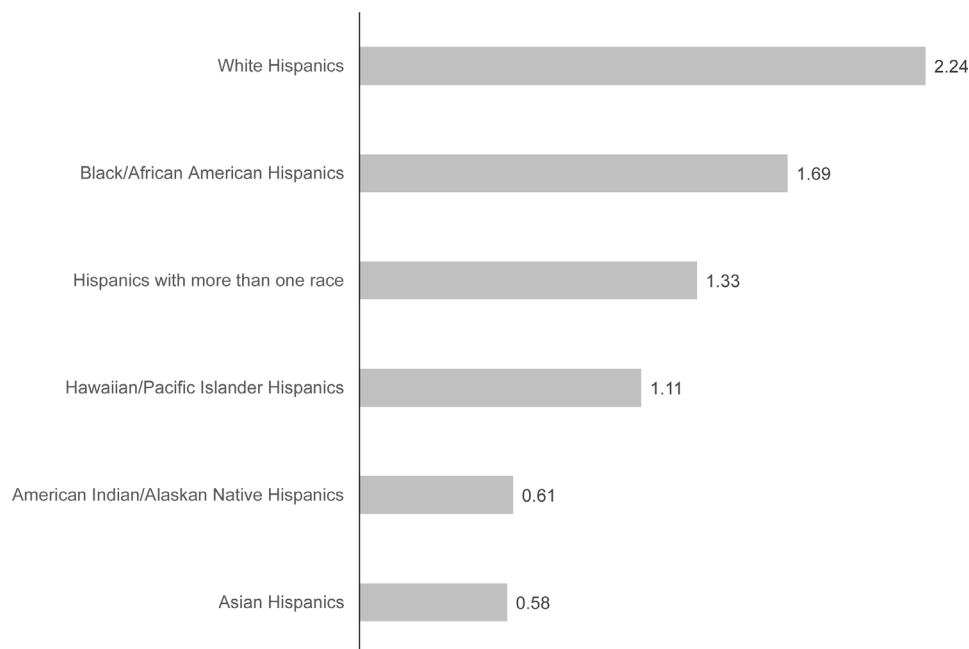
Disparities were higher in urban counties, as firearm homicide rates in large central metropolitan areas were nearly three times as high among Hispanics than White non-Hispanics. The magnitude of this disparity marginally decreased with greater rurality, with relative rates of 2.29 (Large Fringe Metro), 2.41 (Medium Metro), 1.87 (Small Metro), and 1.78 (Micropolitan). In NonCore counties, rates were more similar, with Hispanics showing only 13% higher rates than White Non-Hispanics.

### Trends across six hispanic race categories

We further analysed disparities in age-adjusted rates of firearm homicides between Hispanics (broken down by six race categories portrayed in CDC WONDER) and White non-Hispanics (figure 3). Disparities were highest when comparing White Hispanics to White non-Hispanics (age-adjusted rate 2.24 times higher). Black and multiracial Hispanics had firearm homicide rates 1.69 and 1.33 times higher than White non-Hispanics, respectively. Two



**Figure 2** Rates of gun homicides among Hispanics and white non-Hispanics by demographics, 2018–2021. (\*Based on crude rates). Source: Authors' analysis of data for 2018–2021 from the Wide-ranging Online Data for Epidemiologic Research (WONDER) of the Centres for Disease Control and Prevention.



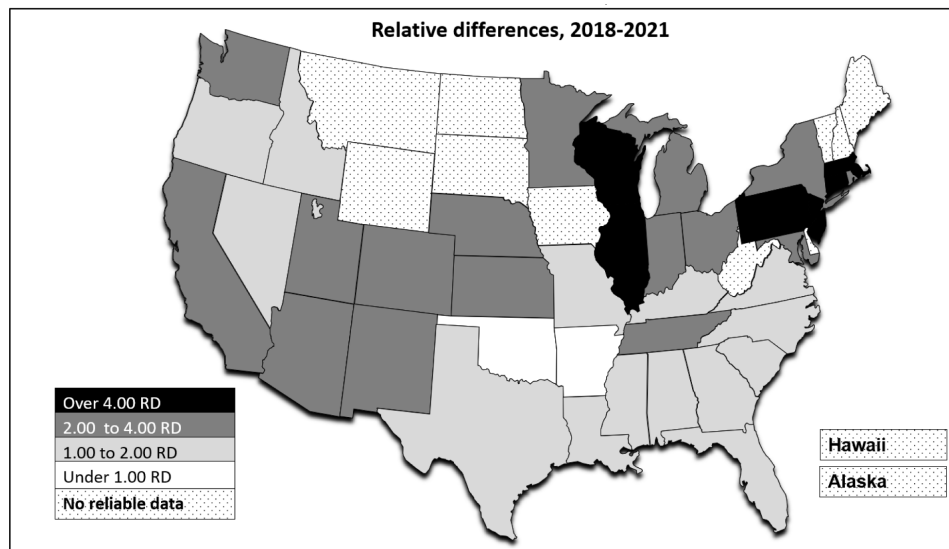
**Figure 3** Relative differences in age-adjusted rates of gun homicides between Hispanics (broken down by race) and White non-Hispanics, 2018–2021. Source: Authors' analysis of data for 2012–2021 from the Wide-ranging Online Data for Epidemiologic Research (WONDER) of the Centres for Disease Control and Prevention.

racial categories of Hispanics (Asian and American Indian/Native Alaskan) presented rates of firearm homicides lower than White non-Hispanics.

### Geographic trends

A map displaying the relative differences in firearm homicide rates among Hispanics and White non-Hispanics across

states is shown in figure 4. There was substantial heterogeneity in this disparity, with the relative rate from 6.55 (Massachusetts) to 0.67 (Arkansas). Overall, 36 out of 38 states analysed (AK and OK being the only exceptions) showed higher firearm homicide rates among Hispanics; roughly 58% showed rates at least twice as high, and 16% of states showed rates more than 4 x higher (figure 4). While



**Figure 4** Disparities in age-adjusted rates of gun homicides between Hispanics and White non-Hispanics across states, 2018–2021. Source Authors' analysis of data for 2018–2021 from the Wide-ranging Online Data for Epidemiologic Research (WONDER) of the Centres for disease control and prevention.

northeastern states tend to present higher relative differences, states in the south tend to present lower relative differences. The exact rates in each of the 38 states analysed, along with the relative differences mapped in figure 4, are shown in online supplemental appendix table 1.

## DISCUSSION

Disparities in rates of firearm homicides between Hispanics and White non-Hispanics reached a ten year high during 2021 and were most pronounced among men and youth. Given that the highest overall rates of firearm homicide overall are among males and young adults,<sup>3 4</sup> this finding suggests disparities are most pronounced among demographics that are most affected by firearm violence. Similarly, disparities were also higher in metropolitan counties (when compared with non-metropolitan counties), particularly in large central metropolitan areas, which also show higher overall rates. These results signal the highest priority areas in demographics and regions for addressing firearm homicide disparities for Hispanic and White Non-Hispanics.

There was substantial variation in firearm homicide rates across racial categories among Hispanics, with White Hispanics presenting the highest disparity in firearm homicide relative to White non-Hispanics. While Black Hispanics presented rates of firearm homicides higher than White non-Hispanics, the disparity is considerably smaller than those presented between Black non-Hispanics and White non-Hispanics in other work.<sup>5</sup> Rates of firearm homicides among American Indian/Native Alaskan and Asian Hispanics from 2018 to 2021 were lower than rates among White non-Hispanics. Research that explores race differences in Hispanic firearm homicide rates could elucidate the substantial variation across races in firearm homicide rates among Hispanics. In service to this, it is crucial to have better data around Hispanics broken down by race and/or countries of origin.

Disparities vary across states. Relative differences tend to be higher in states with low rates of firearm homicides among White non-Hispanics (MA, CT, NJ, NY). These states may be implementing policies to reduce firearm homicides that are more effective at reducing rates among White non-Hispanics but not necessarily among Hispanics. Studies have found

heterogeneity in the link between state gun laws and rates of firearm homicides among Hispanics as well as Black and White non-Hispanics.<sup>11 12</sup> Results from these analyses could elucidate reasons for these disparities. Southern states tend to present low relative differences (low disparities). In fact, two states (Oklahoma and Arkansas) present rates of firearm homicides among Hispanics that are lower than White non-Hispanics. However, the reason for this low disparity may be largely attributed to high rates of gun homicides among White non-Hispanics in southern states (see online supplemental appendix table 1).

There are limitations to this study. Analysed data are counts of death certificates and contain limited information surrounding the deaths, making it impossible to analyse individual, family, or community level factors. Nonetheless, our descriptive epidemiological approach is a fundamental first step in identifying high priority areas for future research. Second, while we acknowledge heterogeneity within Hispanics (eg, country of origin/birth or reasons for moving to the U.S.), we were not able to assess disparities across these taxonomies.

Future research could complement our findings. First, while we examined disparities across firearm homicides, other studies could explore disparities in rates of firearm suicides or non-fatal shootings. Other studies could analyse disparities in rates of homicides against women perpetrated by an intimate partner. Sources such as the National Violent Death Reporting System (NVDRS) could be analysed to conduct these complementary studies. Finally, researchers could consider exploring disparities between Hispanics and other racial groups such as Black non-Hispanics.

## CONCLUSION

Disparities in firearm homicides between Hispanics and White non-Hispanics have increased and they vary across demographics and states. Disparities may be mitigated by reducing differences in economic and social opportunities between these groups. More studies are needed to understand community and individual level factors that affect these disparities.

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