

HARRIS COUNTY HOMELESSNESS MORTALITY REPORT (2023)

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PREPARED BY
BEN KING, PH.D., M.P.H.
VISHAKA VARSHNEY
CARLIE STRATEMANN
SHRIYA SWAMY
RYAN WONG
SHAYA KHORSANDI

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Vishaka Varshney

UT Austin, Public Health Program

Carlie Stratemann

UTHealth Houston School of Public Health

Shriya Swamy

UT Austin, Public Health Program

Ryan Wong

Tilman J. Fertitta Family College of Medicine

Shaya Khorsandi

LSU Health Sciences Center New Orleans - School of Public Health

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INTRODUCTION

In Harris County, deaths among people experiencing homelessness continue to increase, even as the number of unsheltered individuals holds relatively steady.[1] This emphasizes the ongoing challenges and hazards faced by this extremely-vulnerable population. Data from the Harris County Institute of Forensic Sciences (HCIFS) reveals that in 2023 alone, 242 individuals experiencing homelessness lost their lives—equating to an average of one death every 36.2 hours, or 2 deaths every 3 days.

This report investigates and characterizes the causes and circumstances of these deaths, including reporting on the demographics, manners of death, and underlying health and social factors that contributed to these terrible outcomes. As you likely know if you're reading this, people in homelessness often face compounded challenges, including chronic health and mental health disorders, substance use, and environmental hazards, exacerbated by fragmented access to healthcare and social services. The findings in this report offer implications for public health initiatives, non-profit organizations, and other service providers aiming to improve the well-being and reduce mortality of people in homelessness.

LIMITATIONS

In this third annual report, it is still necessary for us to revisit the same limitations, which provide important context herein as before. Due to limitations on medicolegal jurisdiction and our continued reliance on medical examiner data, it is nearly certain that our data represents an undercount of total deaths in homelessness occurring in Harris County. Yet we still expect that this data includes the vast majority of such deaths and can serve as a reasonable representation of county homeless death trends overall.

Due to anticipated geographic variation in the trends for causes of death, like risk behaviors, environmental and social hazards, medical care access, and availability of health and social resources, we do not recommend generalizing these findings to other localities. We also suggest caution in using this report to evaluate success of targeted housing or health interventions between various municipalities. There are simply too many factors to control for. Instead, we would encourage every community to develop a process such as this, based on the information sources available to them.

Our report found that acute drug toxicity deaths continued to rise within the homeless community, through 2022[2] and 2023. This category of causes continues to be the highest leading non-natural and overall cause of death for this group in Harris County. This contrasts with a 2024 report by CDC's National Center for Health Statistics, which reported a nationwide 3% decrease in opioid deaths from 2022 to 2023 (dropping for the first time in 20 years).[3] As these populations differ vastly in scale, we believe acute drug toxicity and overdose prevention should still be emphasized in any discourse on the health and well-being of those experiencing homelessness.

What's more, hypertensive cardiovascular disease continues to be the leading natural cause of death and second highest overall cause of death in 2022 and 2023. This problem is not isolated to the homeless community of course; with 86.2% of counties in the United States are experiencing increases in cardiovascular deaths stemming from hypertension in adults (35-64 years).[4] This, once again, points to the critical need for tailored and targeted efforts to improve detection and control of hypertension for this uniquely vulnerable and underserved part of our community.

NEXT STEPS

Through the course of developing this and our prior homelessness mortality reports, we maintained a focus on opportunities for prevention of these deaths. We plan to introduce future improvements to our mortality reporting process by incorporating CDC resources, enabling county-level cause-of-death comparisons and the calculation of excess mortality statistics specifically related to homelessness. Additionally, we are looking to improve standards around the definition of homelessness used by medical examiners through partnerships with national organizations. Standardization across jurisdictions will improve the consistency and comparability of mortality data nationwide, creating a stronger foundation for systemic change. Finally, we plan to link mortality data from 2021-2023 with health information exchanges to analyze healthcare utilization among individuals experiencing homelessness. This linkage will help identify gaps in care, patterns of emergency department use, and missed opportunities for intervention.

-Vishaka Varshney, Ryan Wong, Ben King, PhD MPH

Homelessness in Harris County

Table 1. Demographic data from Point-In-Time Counts for Harris County in 2023 and 2024

Race/Ethnicity	2023 (n)	2023 (%)	2024 (n)	2024 (%)
American Indian or Alaska Native	30	1%	22	0.7%
Asian	30	1%	28	1%
Black or African American	1644	55%	1719	58%
Hispanic/Latino	448	15%	377	13%
Multi-Racial	60	2%	60	2%
Native Hawaiian or Other Pacific Islander	9	0.3%	6	0.2%
White, Non-Hispanic/Latino*	768	26%	727	25%
Total	2989	100%	2939	100%

*From HUD HDX; Hispanic ethnicity is subtracted from every other racial group total

In January of both 2023 and 2024, more than half of the population experiencing homelessness in Harris County was composed of Black or African American individuals, a proportion even higher than the national average [1,5]. In 2023, 37% of people experiencing homelessness (PEH) in the U.S. were Black, a slight decrease from 39.4% in 2020[6]. By contrast, only 21% of Houston’s population is Black, highlighting the significant overrepresentation of Black individuals in homelessness [7]. This disparity underscores the systemic factors that contribute to homelessness and disproportionately affect certain demographic groups.

On the other hand, the proportion of Hispanic individuals in homelessness over 2023 was estimated to be between 13 and 15%. This lies in contrast to the estimated 44.1% of Harris County with Hispanic ethnicity in that same year [7], demonstrating an underrepresentation of Hispanic individuals in homelessness.

Between 2023 and 2024, the estimated percentage of Hispanic/Latino individuals experiencing homelessness decreased by 2 points, while the proportion of Black individuals rose by 3 percentage points. The percentage of white PEH remained relatively unchanged.

Demographics

Figure 1. Histogram of age distribution

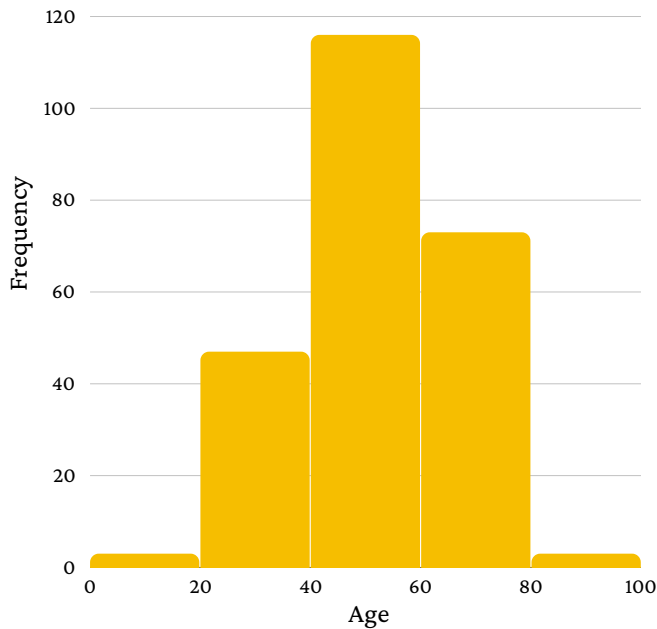
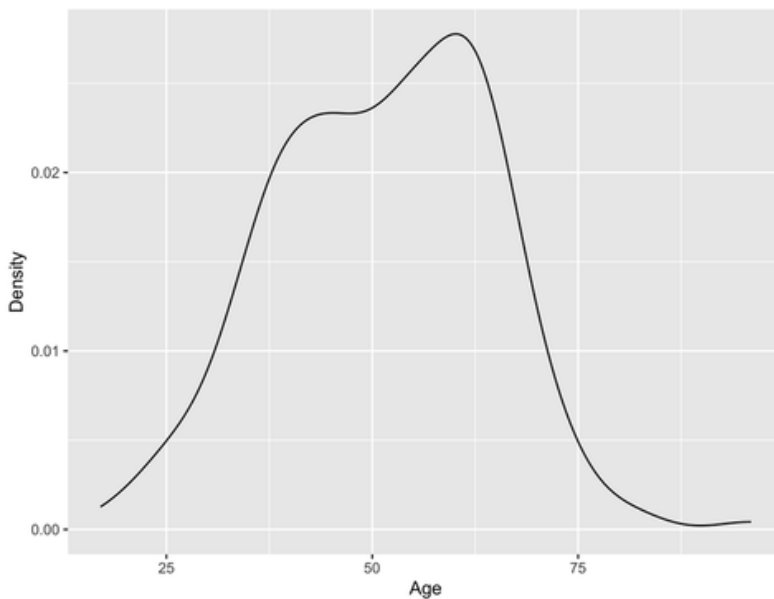


Figure 2. Kernel density plot of age distribution



Age

The figures above show the age distribution of decedents who died while experiencing homelessness in 2023. The mean age of these individuals was 51, with a median age of 52 [Interquartile Range = 41 to 61 years]. The kernel density plot (Figure 2) reveals two prominent peaks in the distribution between ages 30 and 65, indicating that the majority of deaths occurred within this age range.

Note: A kernel density plot estimates the probability density function of a continuous variable, allowing you to understand its distribution and where values are most concentrated. Here's how to interpret it:

- **Peak Location:** Where each line has its highest point (peak) shows where most values are concentrated for that group. Different peak locations mean different central tendencies between groups.
- **Peak Height:** Higher peaks indicate more frequent values in that range for a group.
- **Shape and Spread:** Wider shapes mean more spread (variability) in values for that group; narrow shapes mean values are closer together.

Figure 3. Kernel density plot of age distribution for deaths in homelessness and Harris County general population

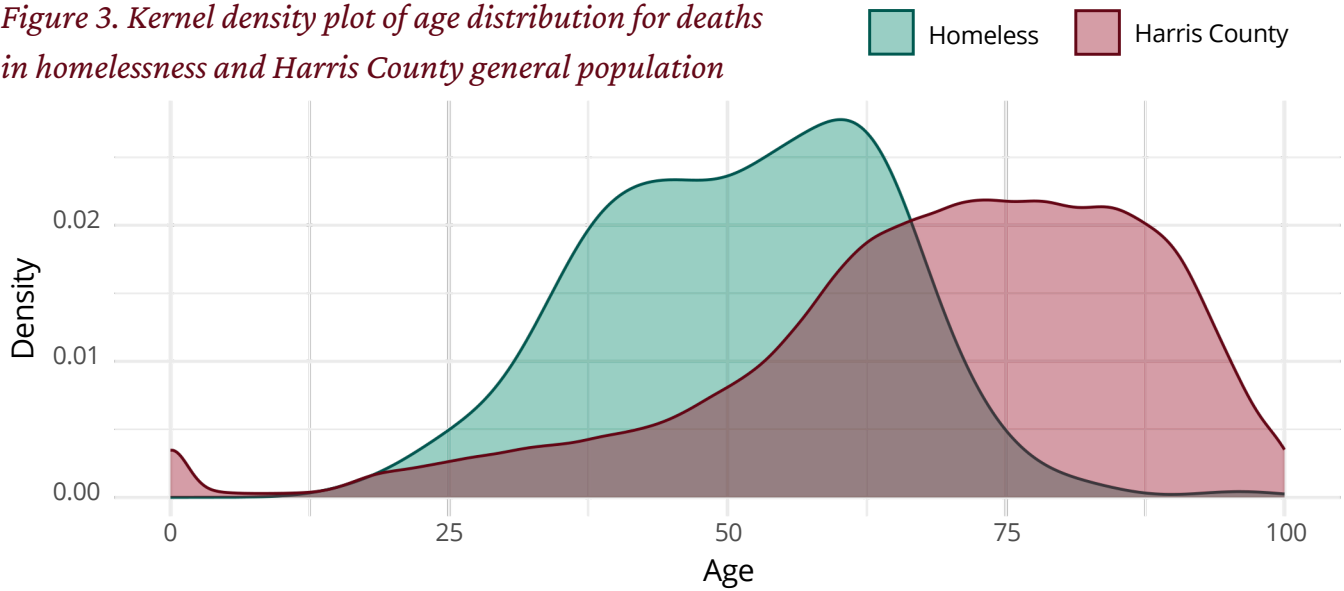
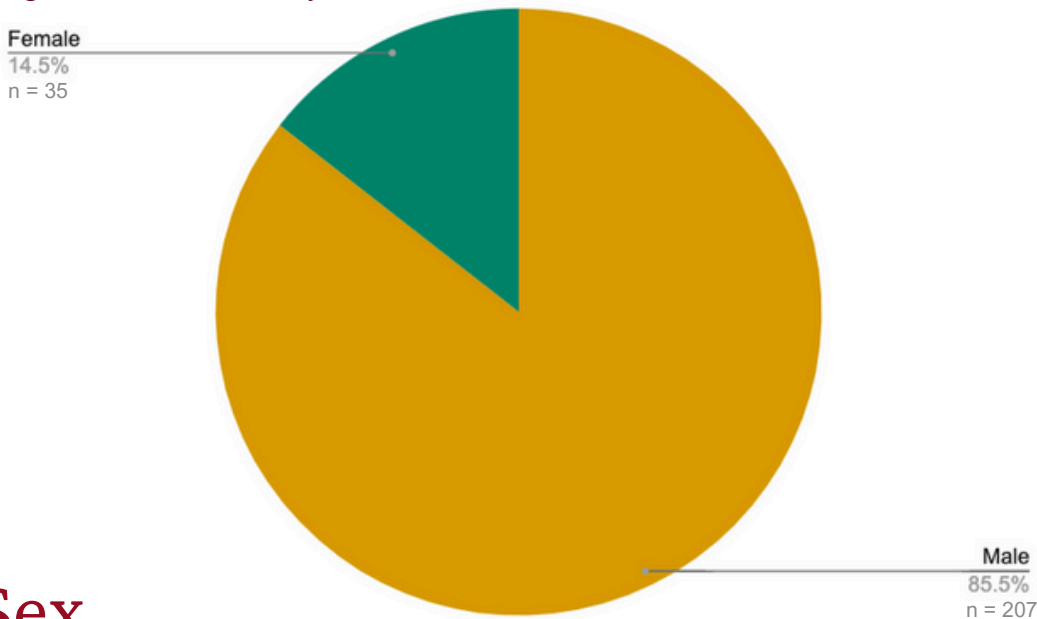


Figure 3 shows the kernel density plot of age at death distributions for those who died in homelessness in Harris County, compared to the age at death for the Harris County general population. The data for the general population was obtained from the CDC WONDER database, which compiled data from 2018-2022 [8]. It is evident that those who die in homelessness tend to die at significantly younger ages than the general population in Harris County.

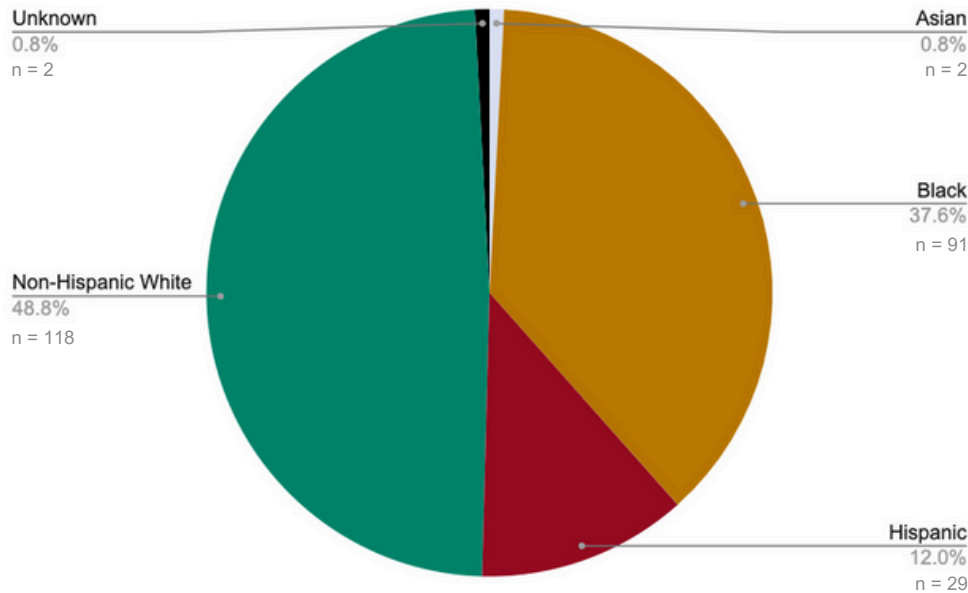
Figure 4. Distribution of sex



Sex

The chart above shows the distribution of sex among individuals who died while experiencing homelessness. The majority (85.5%) of people who died while experiencing homelessness were male, a 3% increase from 2022, whereas only 14.5% were female. Considering that males make up 49.6% of the general population in Harris County [7], this highlights a significant overrepresentation of males in homeless mortality statistics.

Figure 5. Distribution of race and ethnicity



Race & Ethnicity

Figure 5 and Table 2 show the racial and ethnic distribution of individuals who died while experiencing homelessness. Nearly half (48.8%) of the decedents were non-Hispanic White, followed by Black (37.6%) and Hispanic individuals (12.0%). Compared to the overall demographics of Harris County, both Black and non-Hispanic White individuals were disproportionately overrepresented in homeless mortality, while Hispanic individuals were significantly underrepresented.

Table 2. Racial distribution of homeless deaths compared to the population experiencing homelessness and the general population [5]

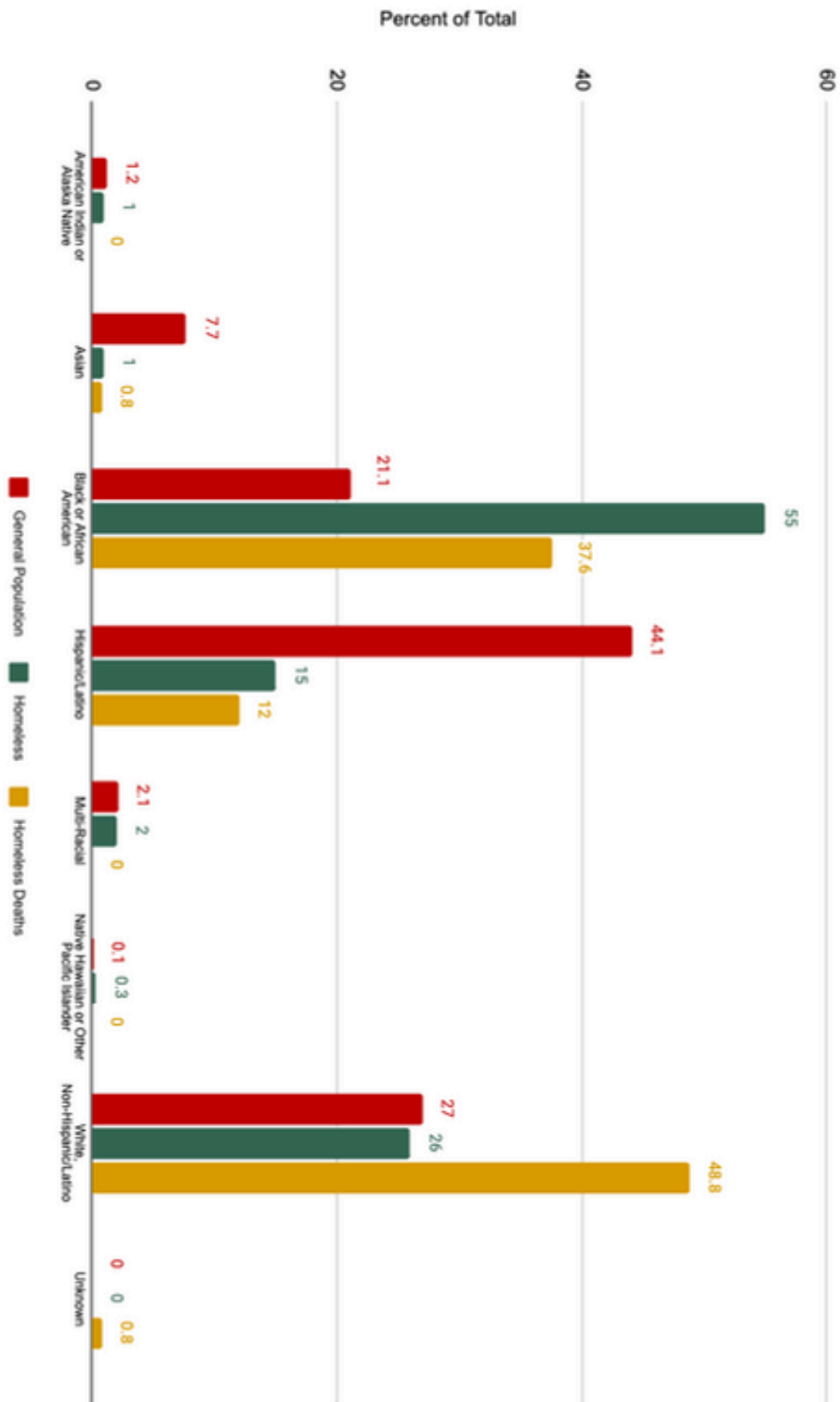
Race/Ethnicity	General Population	Homelessness (January 23, 2023)	Homeless Deaths (2023)
American Indian or Alaska Native	1.2%	1%	0%
Asian	7.7%	1%	0.8%
Black or African American	21.1%	55%	37.6%
Hispanic/Latino	44.1%	15%	12%
Multi-Racial	2.1%	2%	0%
Native Hawaiian or Other Pacific Islander	0.1%	0.3%	0%
White, Non-Hispanic/Latino*	27%	26%	48.8%
Unknown	0%	0%	0.8%

*From HUD HDX; Hispanic ethnicity is subtracted from every other racial group total

Notes:

- The point-in-time data collected more detailed racial/ethnic group categories than the medical examiner data permits. The appearance of 0 deaths may be due to a lack of data specificity at that time.
- The general population estimates are from July 1, 2023 (US Census Bureau, 2023).

Figure 6. Racial/ethnic distribution of homeless deaths compared to the homeless population and general population



Figures 6 and 6a illustrate the racial and ethnic composition of Harris County's general population, the population experiencing homelessness, and those who died while experiencing homelessness.

These figures highlight significant disparities between the general population, those experiencing homelessness, and homeless mortality. Asian and Hispanic individuals are notably underrepresented in homelessness compared to their proportions in the general population, with Asians representing 7.7% of the general population but only 1% of the homeless population, and Hispanics making up 44.1% of the general population but only 15% of those experiencing homelessness. In contrast, Black individuals are significantly overrepresented in homelessness, comprising 21.1% of the general population but 55% of those experiencing homelessness [5].

When comparing the population experiencing homelessness to homeless mortality, non-Hispanic White individuals are disproportionately represented among decedents, making up 26% of the homeless population but 48.8% of those who died while experiencing homelessness. Conversely, Black and Hispanic individuals are underrepresented in homeless mortality, with Black individuals comprising 55% of the population experiencing homelessness but only 37.6% of those who died in homelessness, and Hispanic individuals making up 15% of the population experiencing homelessness but only 12% of homeless deaths.

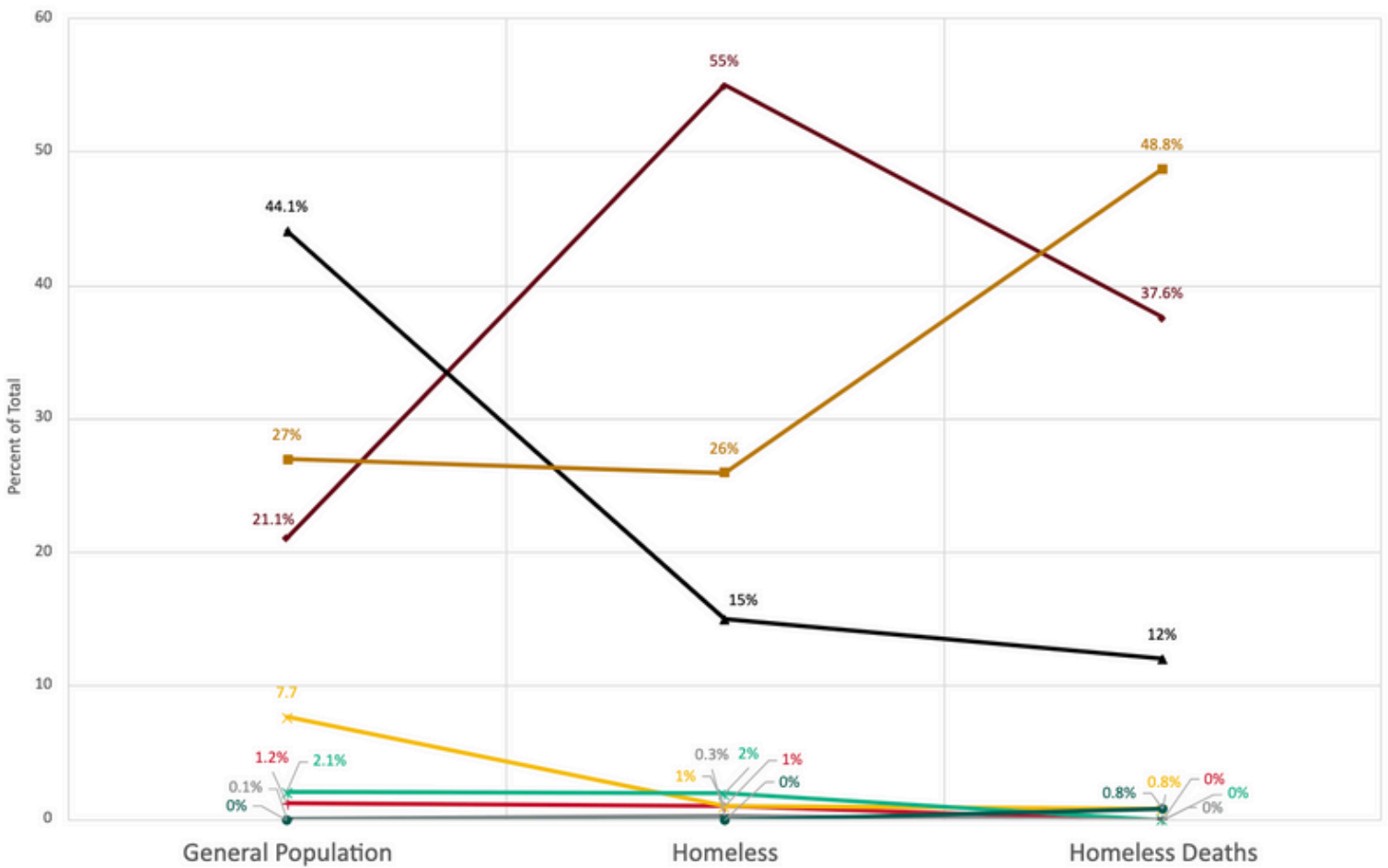
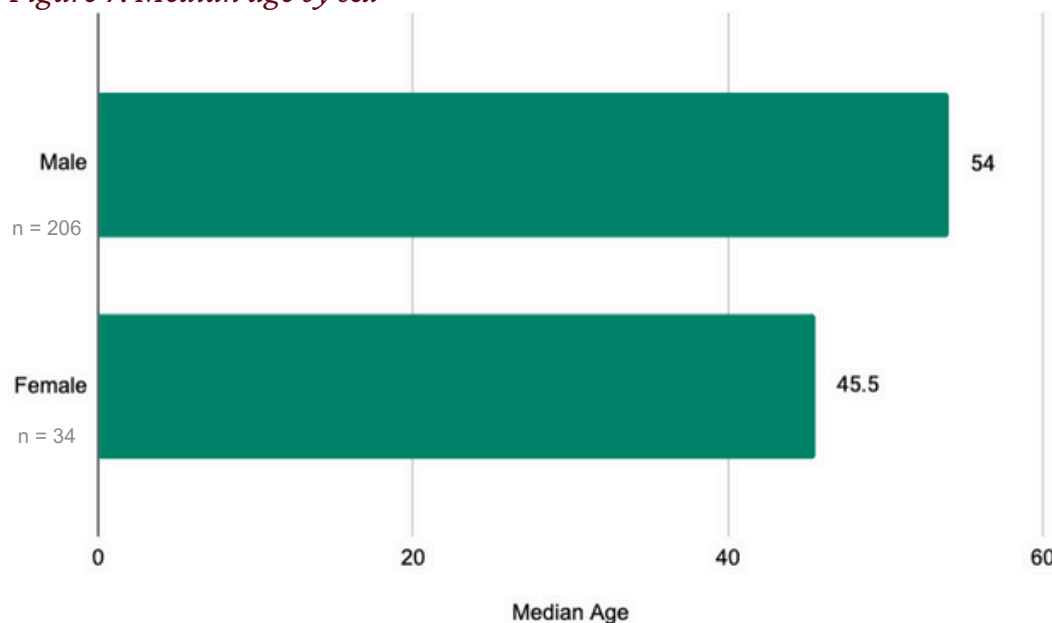


Figure 6a. Racial/ethnic distribution of homeless deaths compared to the homeless population and general population



Demographic Comparisons

Figure 7. Median age by sex



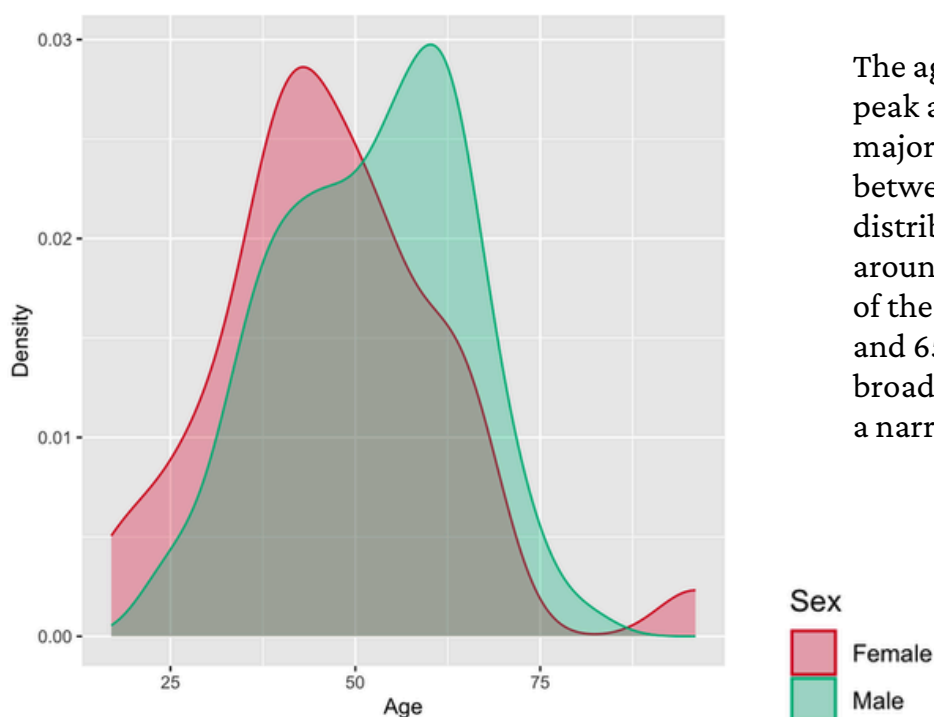
Note:

Two males with an age of 0 (representing unknown ages) were excluded from the analysis to ensure accurate representation of age distributions.

Age by Sex

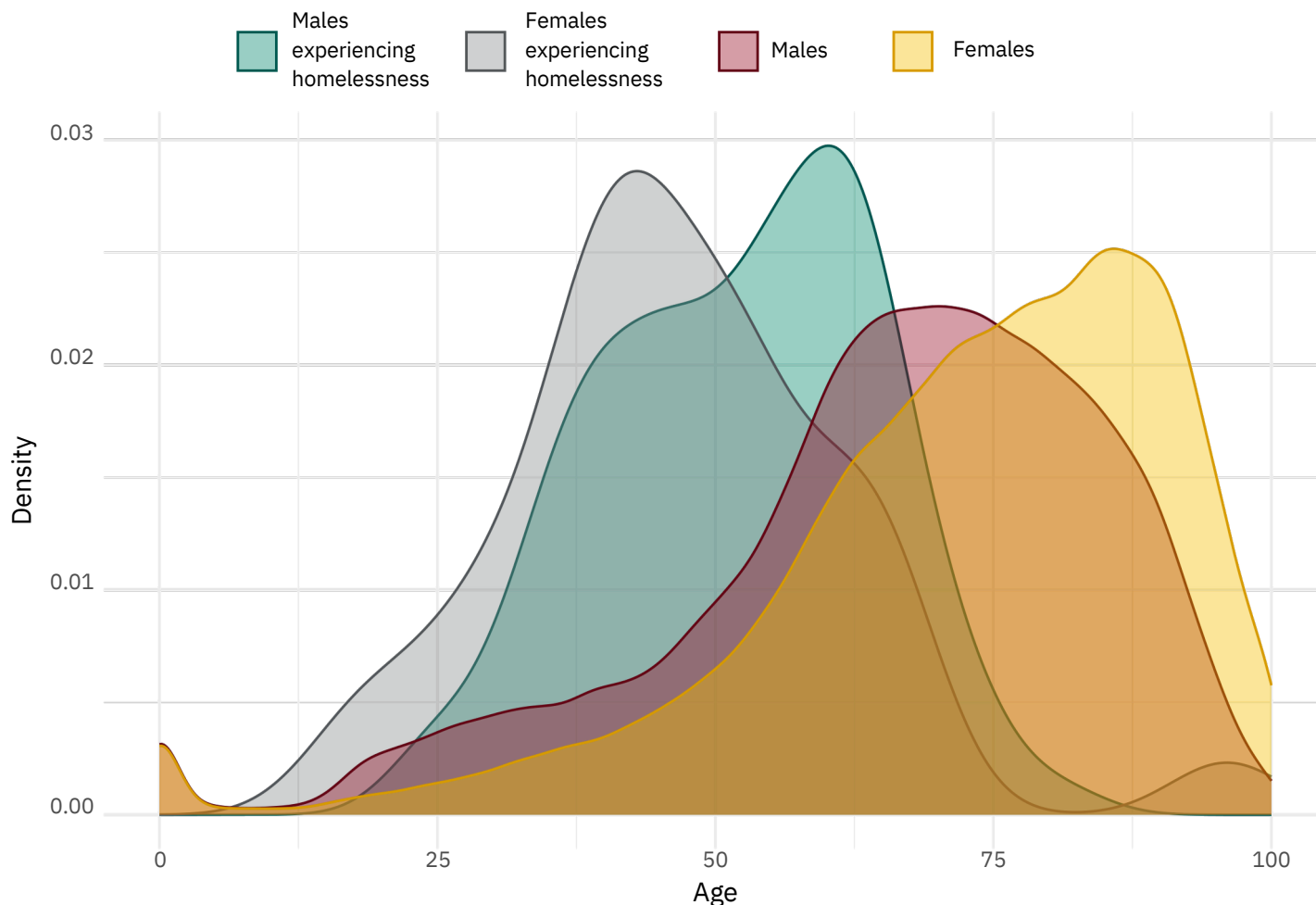
Females experiencing homelessness had a lower median age at death compared to males. As discussed later in the report, females were more likely than males to die from accidental causes, which may contribute to their younger median age of death. This effect from competing mortality risks is a common thread throughout this report.

Figure 8. Age by sex kernel density plot



The age distribution for males shows a peak around the age of 60, with the majority of the density concentrated between 40 and 70 years old. The age distribution for females shows a peak around the age of 44, with the majority of the density concentrated between 35 and 65 years old. Males have a slightly broader age range, while females show a narrower distribution.

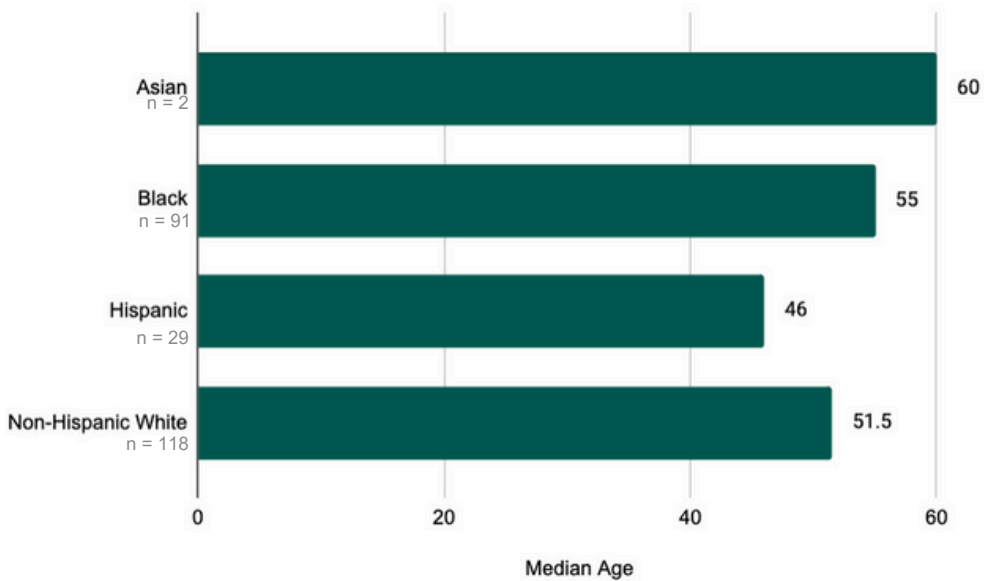
Figure 9. Age by sex kernel density plot of deaths in homelessness and Harris County general population



The figure above illustrates age-specific kernel density estimates for deaths among males and females who died while experiencing homelessness, compared to the age at death in the general population of Harris County. Data for the general population were obtained from the CDC WONDER database, which compiled underlying cause-of-death data from 2018-2022 [8].

For males who died in homelessness, the distribution peaks around middle age, between 50 and 60 years, significantly earlier than that of males in the general population, whose peak density occurs later, between 60 and 75 years. Similarly, for females, the distribution of deaths among those experiencing homelessness peaks much earlier, around 30-35 years, while in the general population, female deaths are more concentrated in older age groups, peaking closer to 80-85 years. This disparity highlights the premature mortality associated with homelessness, with individuals who die in homelessness exhibiting a distinctly younger age profile compared to the general population of the same region.

Figure 10. Median age by race/ethnicity



Age by Race/Ethnicity

Figure 10 shows the median age at death by race/ethnicity. Asian and Black decedents had the highest median age of death, at 60 and 55 years respectively, while Hispanic decedents had the lowest median age of death at 46 years.

Note: Two individuals with undetermined races and ages of 0 (representing unknown ages) were excluded from the analysis to ensure accurate representation of age distributions.

Figure 11. Age by race/ethnicity kernel density plot

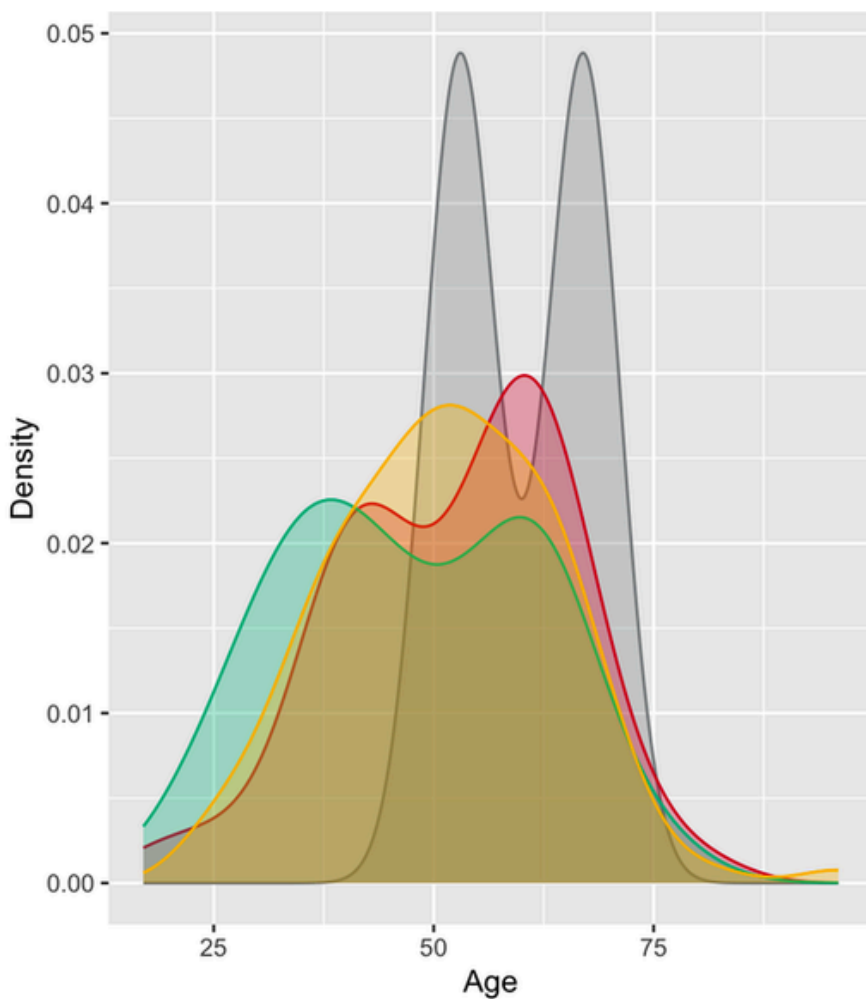
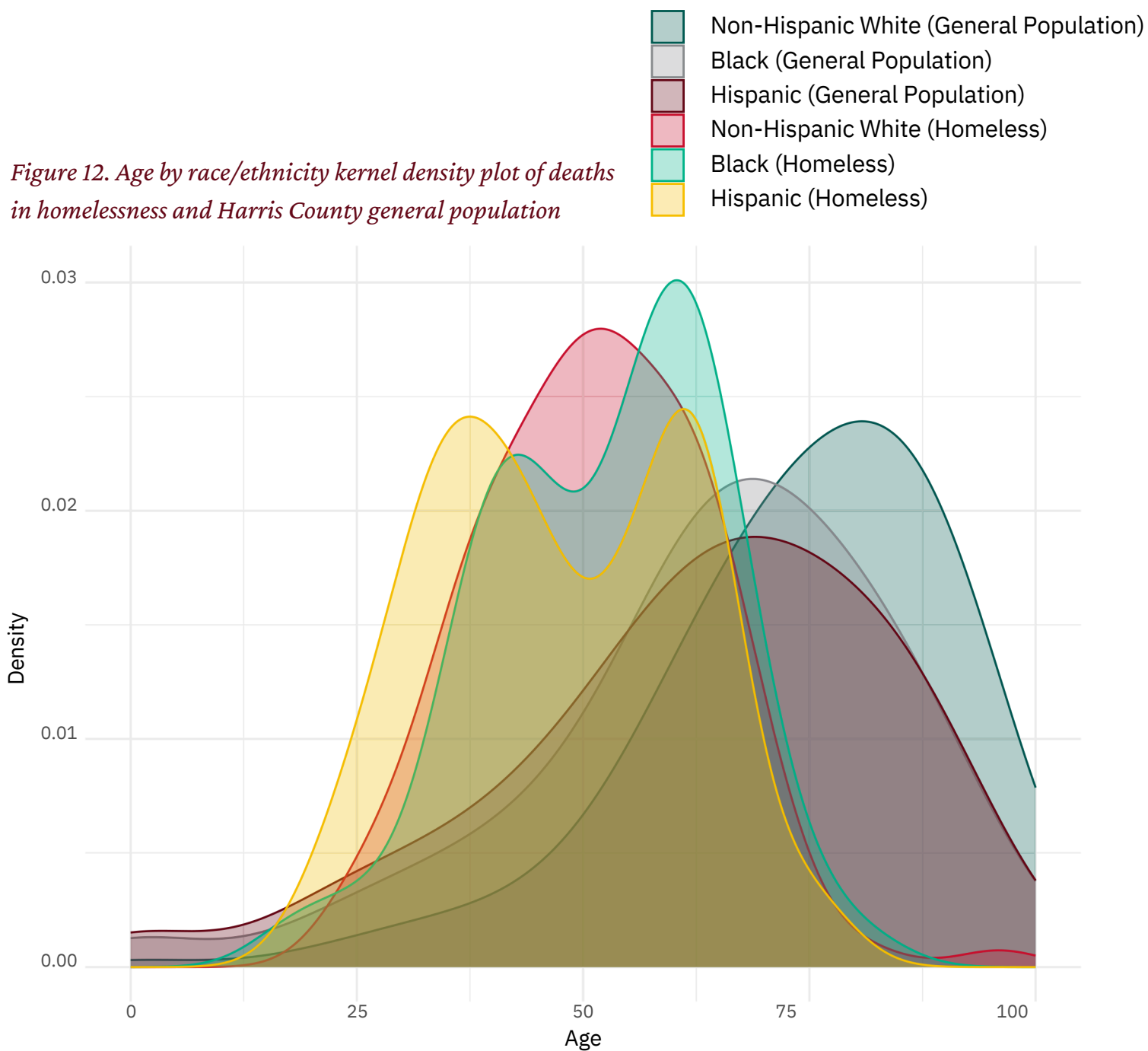


Figure 11 illustrates the age distribution of decedents by race and ethnicity. Non-Hispanic White individuals show a single, prominent peak at approximately 52 years, with most deaths occurring between 40 and 70 years. In contrast, Black individuals exhibit a bimodal distribution, with peaks around 50 and 65 years. Hispanic individuals also display a bimodal pattern but with a younger first peak around 30 years and a secondary peak near 65, spanning a wider age range compared to other groups. The bimodal distribution for Asian decedents appears more abnormally distributed, likely due to smaller sample sizes.

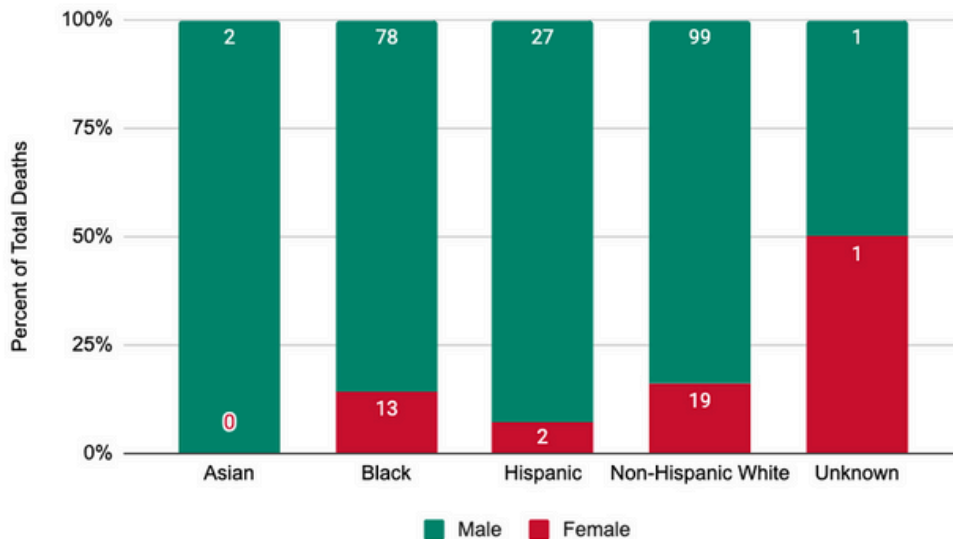
Figure 12. Age by race/ethnicity kernel density plot of deaths in homelessness and Harris County general population



The figure above presents kernel density plots for age at death by racial/ethnic group among individuals who died in homelessness in Harris County compared to the county’s general population. The analysis includes only non-Hispanic White, Black, and Hispanic individuals, as the small sample size of Asian individuals who died in homelessness precluded meaningful comparison. Data for the general population were obtained from the CDC WONDER database, which compiled underlying cause-of-death data from 2018–2022 [8].

Across all racial/ethnic groups, individuals who died in homelessness exhibit a markedly younger age at death than their counterparts in the general population. The density plots for non-Hispanic White, Black, and Hispanic individuals in homelessness peak at earlier ages (between 35-70 years) compared to their general population counterparts, whose age-at-death distributions are shifted toward older age groups, peaking between 70 and 85 years. s and improve survival outcomes for individuals experiencing homelessness.

Figure 13. Count of race/ethnicity by sex

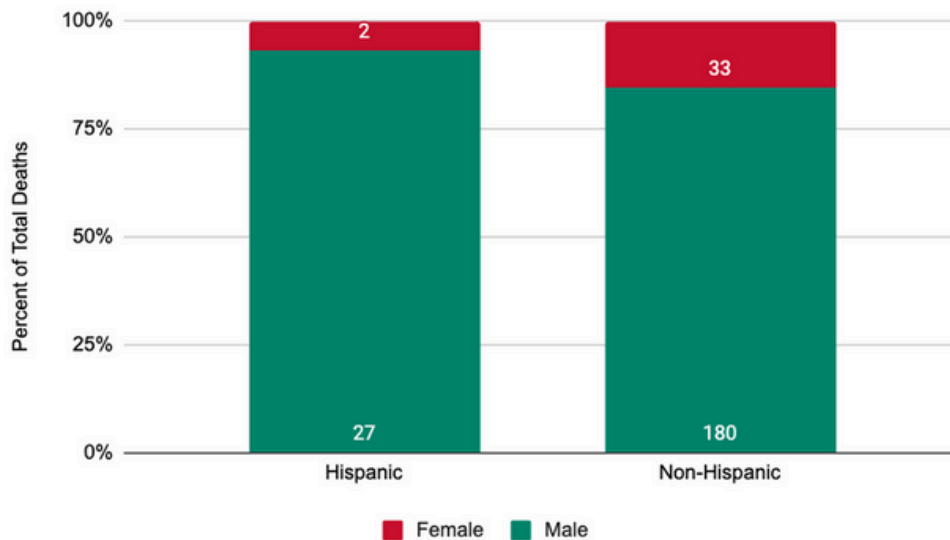


* The data labels show the counts of deaths of each race by sex.

Race/Ethnicity by Sex

Across all racial/ethnic groups, males represent the vast majority of deaths, with females comprising less than 25% of decedents in each category. There was little variation in the proportion of each sex based on racial or ethnic group. Overall, this figure underscores a consistent sex disparity in mortality, with males significantly overrepresented in deaths across all racial and ethnic groups.

Figure 14. Count of ethnicity by sex

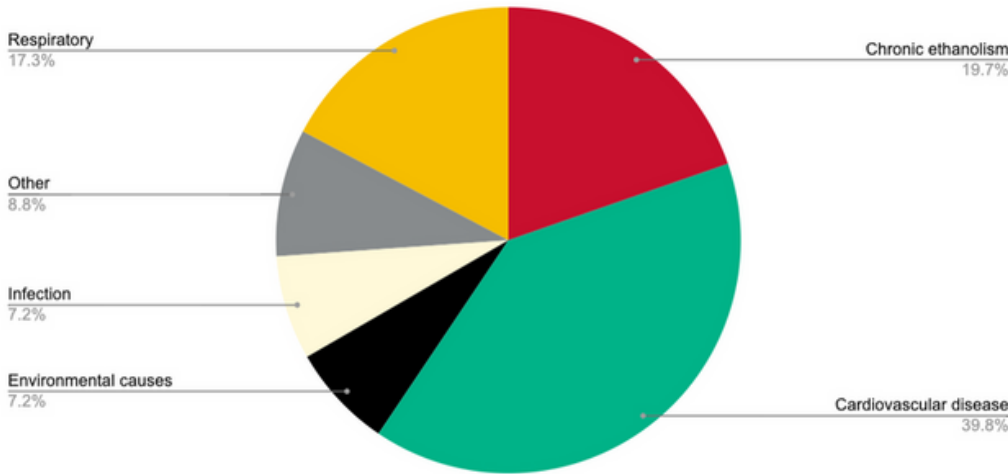


* The data labels show the counts of deaths of each ethnicity by sex.

The figure above illustrates the distribution of deaths among individuals experiencing homelessness, broken down by ethnic group and sex. Among Hispanic decedents, females accounted for approximately 7% of the total deaths, highlighting a significant gender disparity within this group. In contrast, among non-Hispanic decedents, females represented a higher proportion, making up about 21% of the total deaths.

Manner of Death Overview

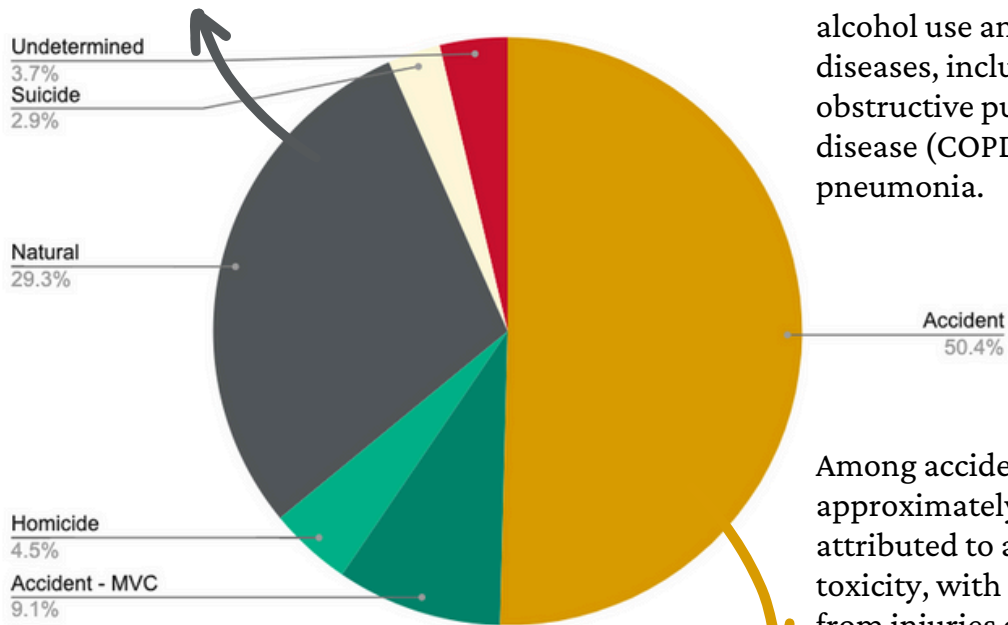
Figure 15. Distribution of manners of natural death



Figures 15-17 depict the distribution of manners of death among decedents. Nearly half of the deaths were classified as accidental, excluding motor vehicle accidents, followed by natural causes.

For natural deaths, around 40% were caused by cardiovascular disease, followed by conditions associated with chronic alcohol use and respiratory diseases, including chronic obstructive pulmonary disease (COPD) and pneumonia.

Figure 16. Distribution of manners of death



Among accidental deaths, approximately 70% were attributed to acute drug toxicity, with others resulting from injuries or trauma, such as blunt force trauma.

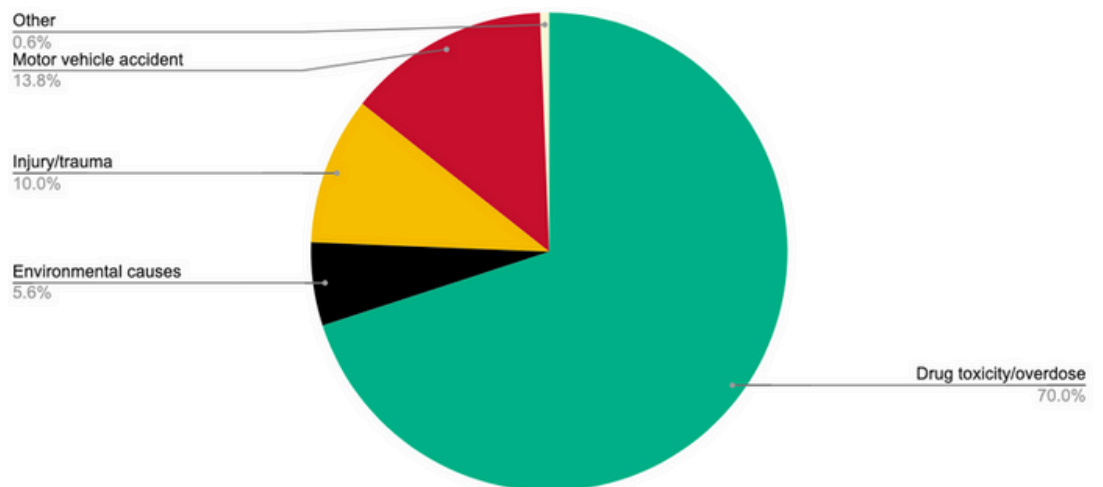
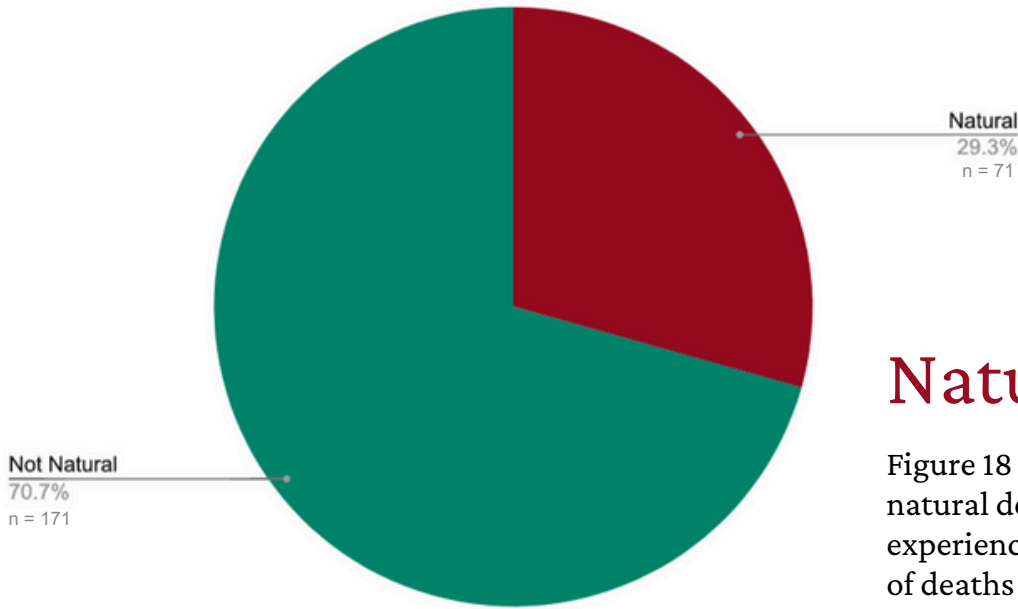


Figure 17. Distribution of manners of accidental death

Figure 18. Percent of natural deaths



Natural Deaths

Figure 18 illustrates the distribution of natural deaths among individuals experiencing homelessness. Only 29.3% of deaths were attributed to natural causes, while the remaining 70.9% were classified as unnatural deaths, including accidents, suicides, and homicides.

Accidental Deaths

Figure 19. Percent of accidental deaths

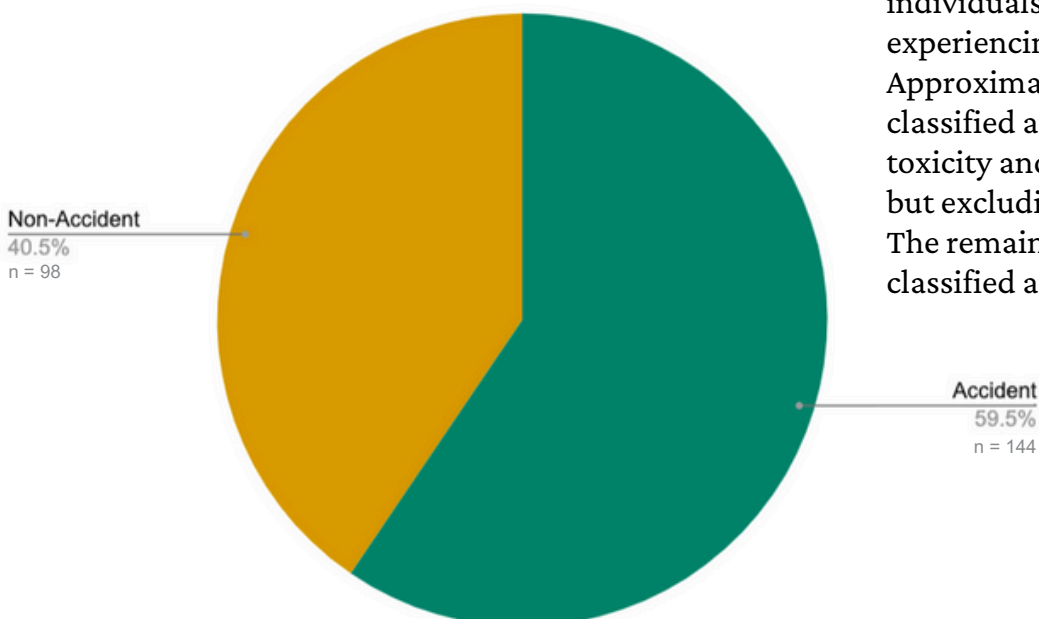


Figure 19 shows the distribution of natural and accidental deaths among individuals who died while experiencing homelessness. Approximately 60% of the deaths were classified as accidental, including acute toxicity and motor vehicle accidents, but excluding suicides and homicides. The remaining 41% of deaths were classified as non-accidental.

Demographics by Manner of Death

Race/Ethnicity and Manner of Death

Figure 20. Proportions of manner of death by race/ethnicity

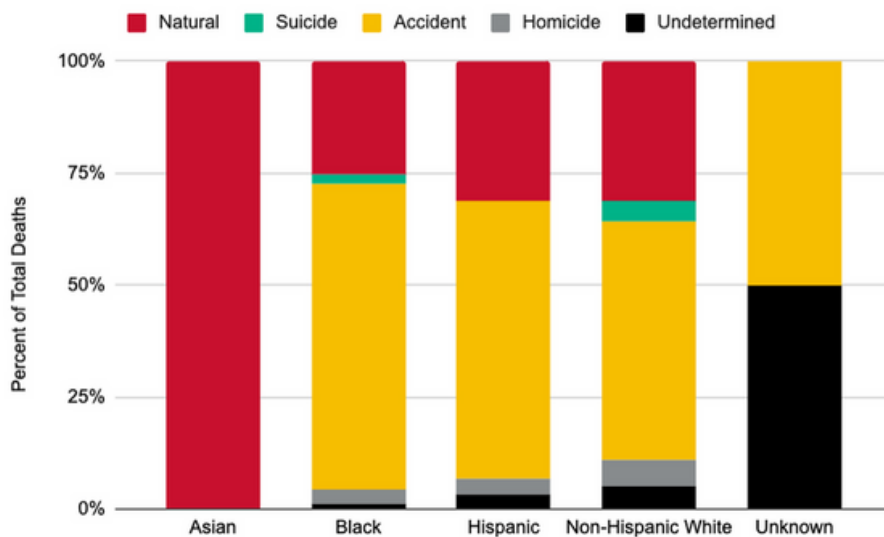
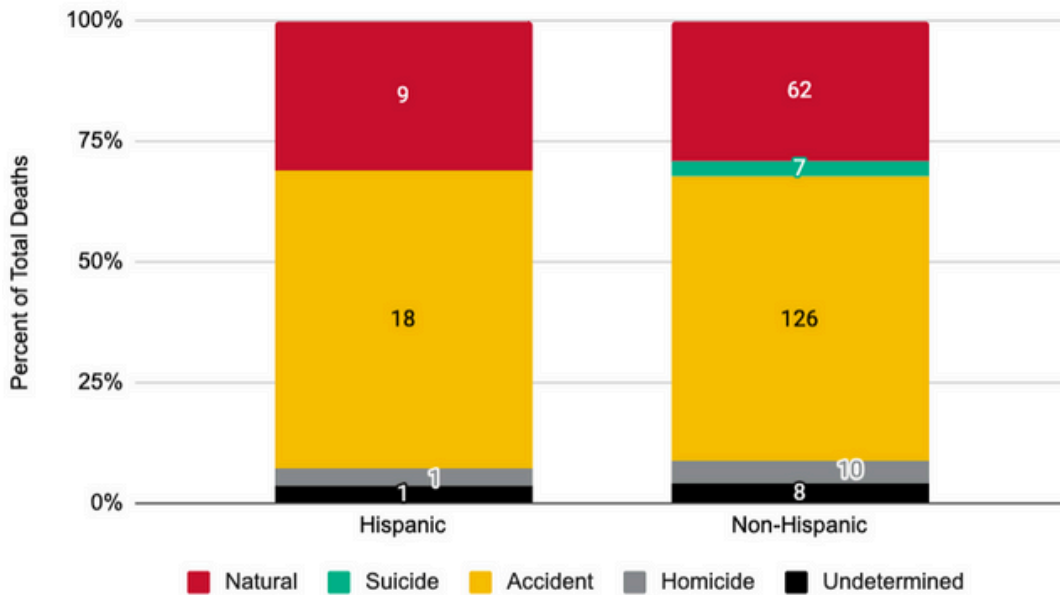


Figure 20 and Table 3 present the proportions and counts of manner of death by race/ethnicity, respectively. Natural deaths are the most common manner of death across all racial/ethnic groups, particularly among Asian individuals; however, this trend may be influenced by a small sample size. Black, Non-Hispanic White, and Hispanic individuals exhibit high proportions of accidental deaths and homicides, with accidents accounting for over half of all deaths across these groups. Furthermore, White individuals show a higher proportion of suicides and homicides compared to other racial/ethnic groups.

Table 3. Counts of manner of death by race/ethnicity

Race/Ethnicity	Manner of Death				
	Undetermined	Homicide	Accident	Suicide	Natural
Asian	0	0	0	0	2
Black	1	3	62	2	23
Hispanic	1	1	18	0	9
Non-Hispanic White	6	7	63	5	37
Unknown	1	0	1	0	0

Figure 21. Proportions of manner of death by ethnicity

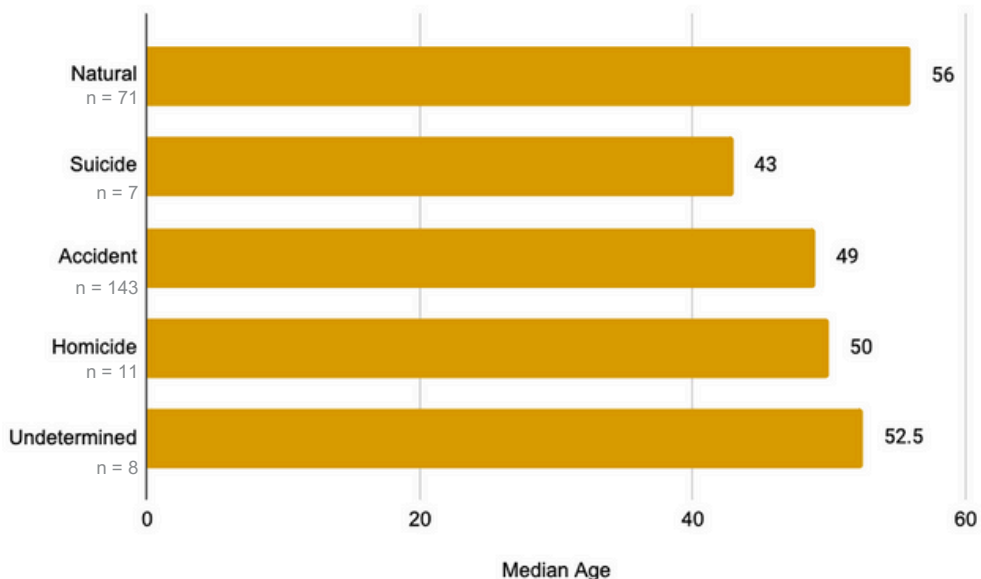


* The data labels show the counts of deaths of each manner of death by ethnicity.

Ethnicity and Manner of Death

The figure above shows the proportions of manners of death among decedents by ethnicity. Non-Hispanic and Hispanic individuals had similar distributions of natural deaths, accidental deaths, homicides, and undetermined deaths. However, a small proportion of suicides was observed among non-Hispanic individuals, while no suicides were reported among Hispanic individuals. This absence may be attributed to the smaller sample size of Hispanic decedents compared to their non-Hispanic counterparts.

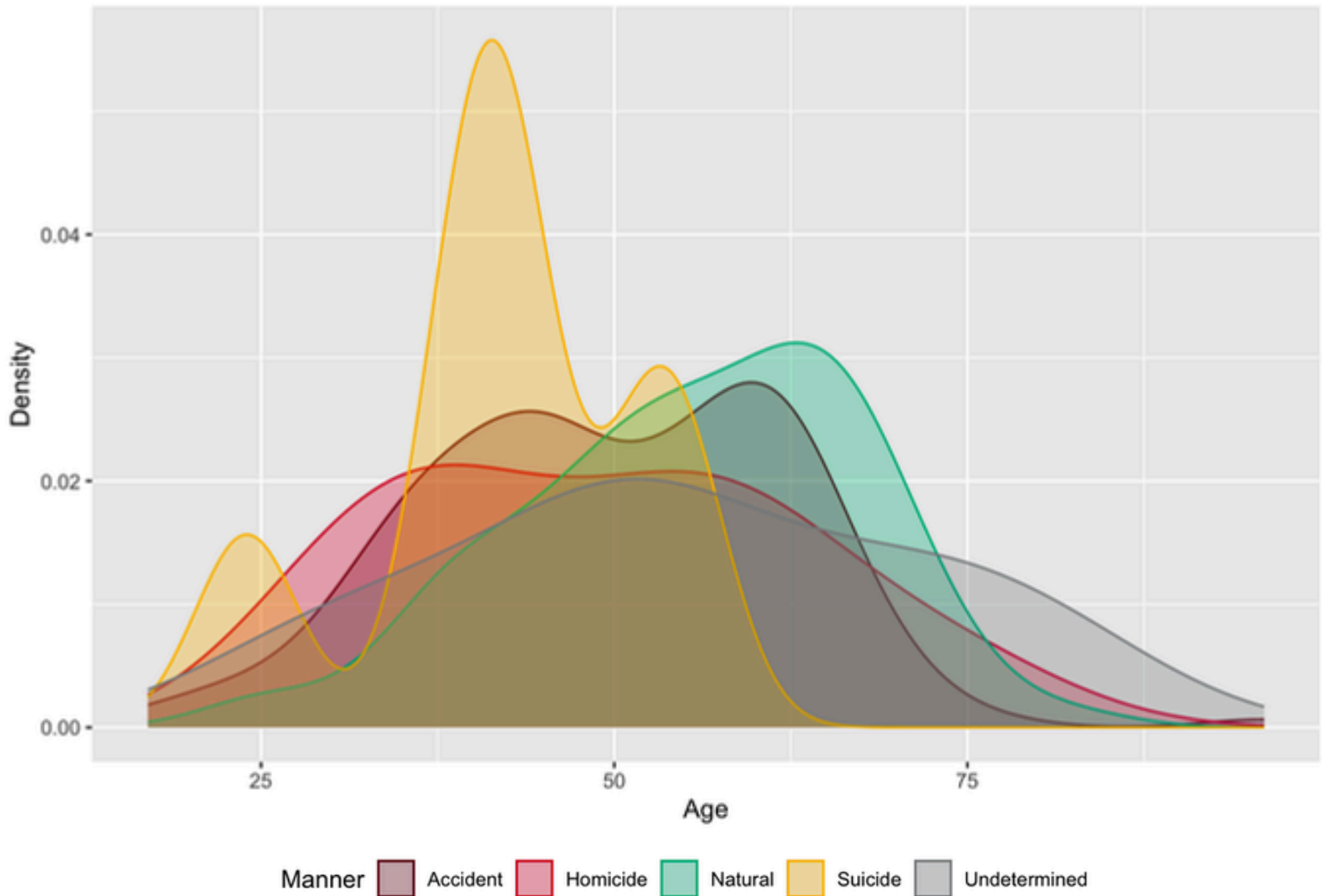
Figure 22. Median age by manner of death



Age and Manner of Death

The median age of death varied significantly by manner of death, with natural deaths having the highest median age at 56 years, compared to 49 years for accidents, 50 years for homicides, and 43 years for suicides. Suicides had the lowest median age among all manners of death, while accidents and homicides exhibited similar median ages.

Figure 23. Median age by manner of death kernel density plot



Note: Two individuals with ages of 0 (representing unknown ages) were excluded from the analysis to ensure accurate representation of age distributions.

Figure 23 presents a kernel density plot illustrating the distribution of median age at death by manner of death among individuals who died while experiencing homelessness. The data reveal distinct age patterns for different causes of death.

Deaths from natural causes were predominantly observed among older individuals, with the highest concentration occurring between the ages of 50 and 60 years. In contrast, suicides were most frequent among younger individuals, with a sharp peak around the age of 30, indicating a significant burden on this age group. Accidents and homicides both exhibited bimodal distributions, with notable peaks in both the younger age ranges and middle adulthood. Deaths classified as undetermined displayed a broader, more uniform distribution across age groups, which likely reflects the smaller sample size in this category.

Sex and Manner of Death

Figure 24 and Table 4 illustrate the distribution of manner of death by sex, presenting percentages and counts, respectively. Accidents constitute the majority of deaths for both sexes, accounting for approximately 75% of female deaths and over 50% of male deaths. Among males, natural causes are the second most common manner of death (23%), while natural deaths are notably less frequent among females (6%). Homicides, suicides, and undetermined manners of death occur at lower rates for both sexes. However, males consistently exhibit higher absolute counts across all categories, reflecting their substantially larger total number of deaths compared to females.

Figure 24. Manner of death by sex

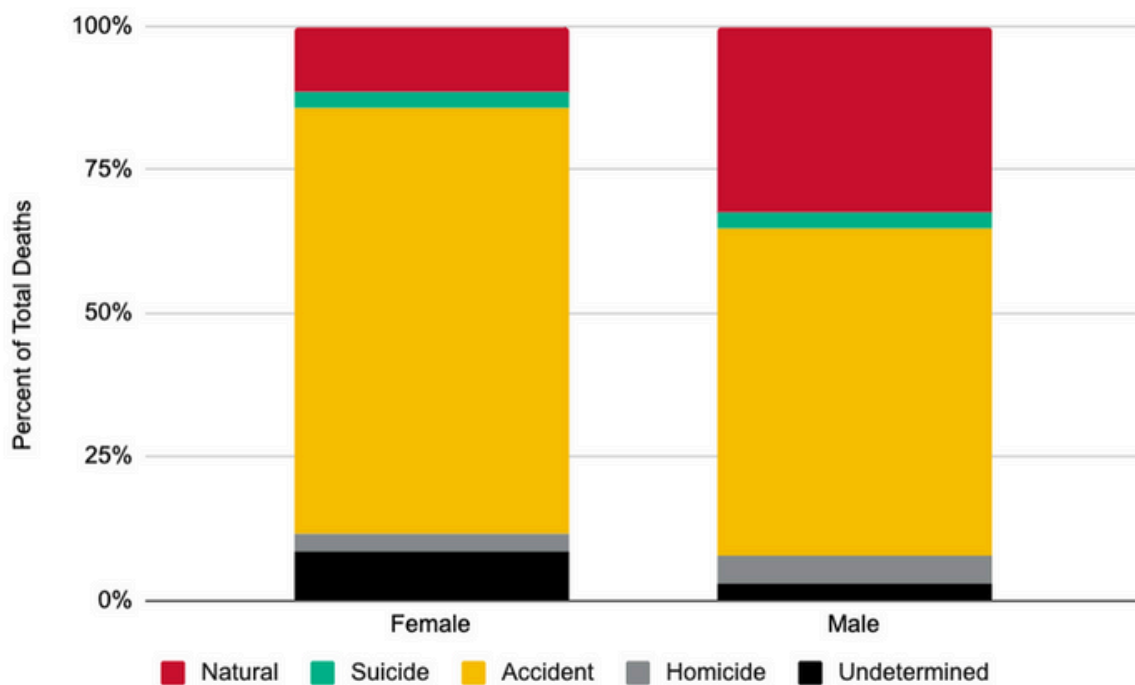


Table 4. Counts of manner of death by sex

Sex	Manner of Death				
	Accident	Natural	Homicide	Suicide	Undetermined
Female	26	4	1	1	3
Male	118	67	10	6	6

Demographics for Natural Deaths

Figure 25. Median age for natural and non-natural deaths

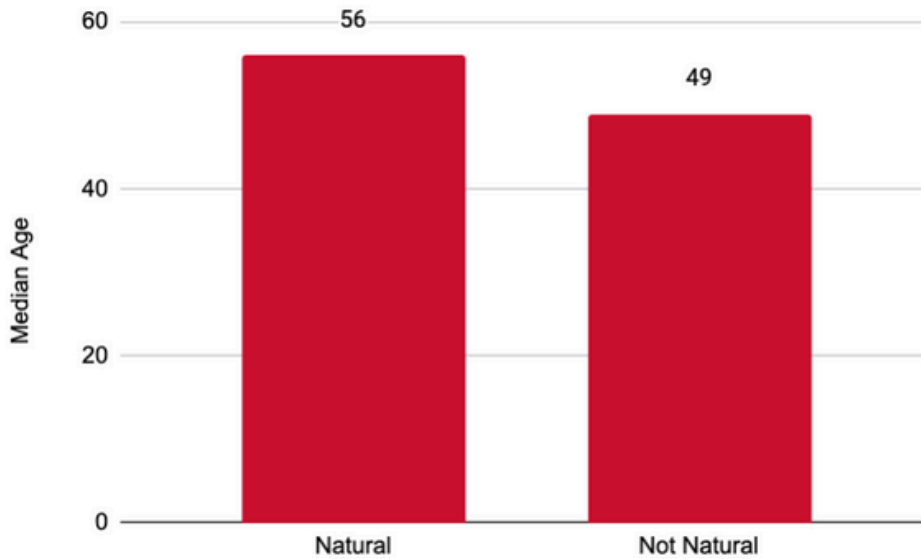


Figure 25 shows the median age for natural and non-natural deaths. The median age for natural deaths (56 years) is higher than that for non-natural deaths (49 years), indicating that non-natural causes, such as accidents, suicides, and homicides, typically result in death at younger ages.

Figure 26. Proportion of natural deaths by sex

Figure 26 displays the proportion of natural deaths by sex. Compared to female decedents, males had a significantly higher proportion of natural deaths, which made up more than a quarter of all male deaths in homelessness.

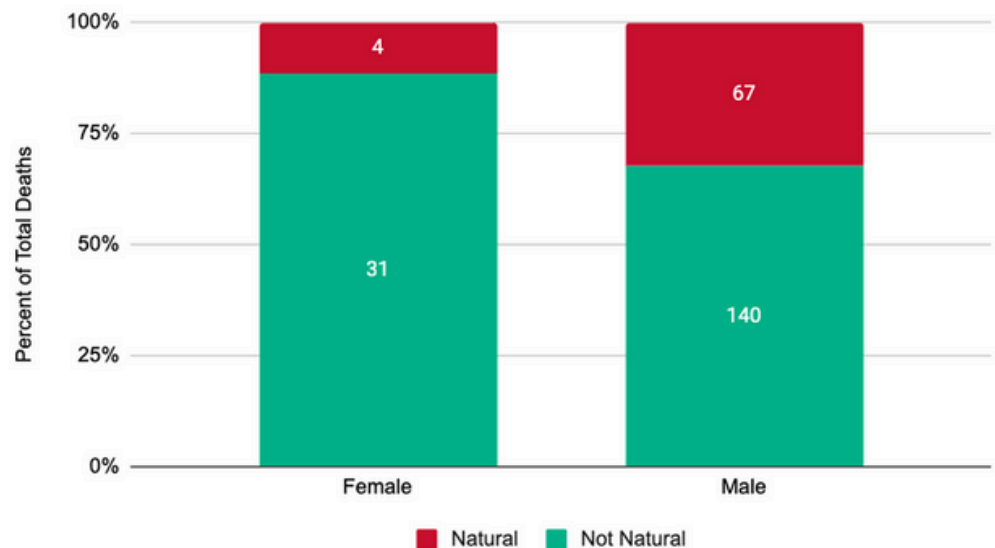
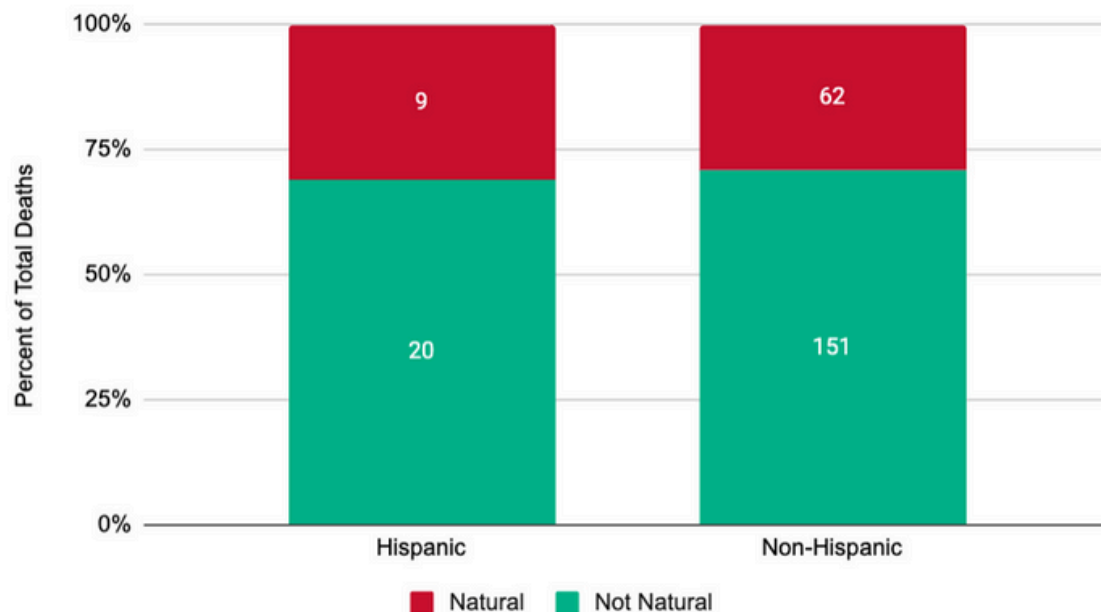


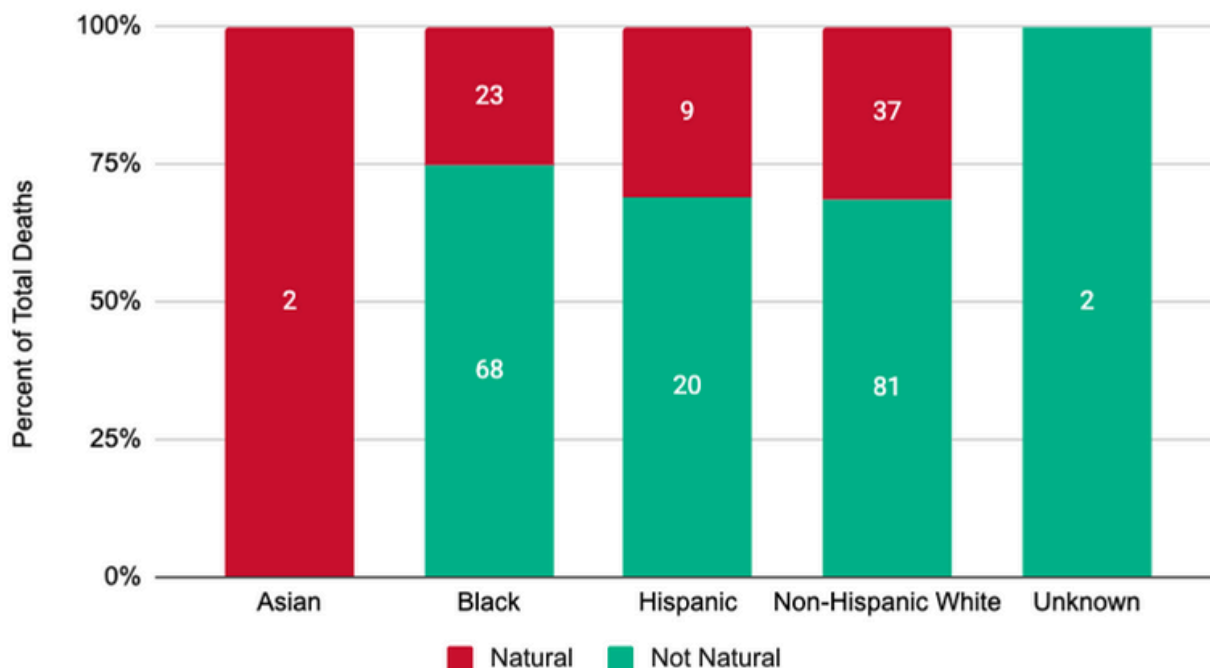
Figure 27. Proportion of natural deaths by ethnicity



* The data labels show the counts of natural vs. not natural deaths by ethnicity.

The figure above depicts the proportion of natural deaths by ethnicity. The proportion of natural deaths was roughly the same for Hispanic and non-Hispanic individuals, with each group accounting for over a quarter of all deaths.

Figure 28. Proportion of natural deaths by race/ethnicity



* The data labels show the counts of natural vs. not natural deaths by race.

Natural deaths accounted for approximately a quarter of all deaths among Black, Hispanic, and non-Hispanic White individuals. In contrast, all deaths among Asian individuals and none of the unknown ethnicity group were natural; however, this is likely influenced by the small sample size.

Demographics for Accidental Deaths

Figure 29. Median age for accidental and non-accidental deaths

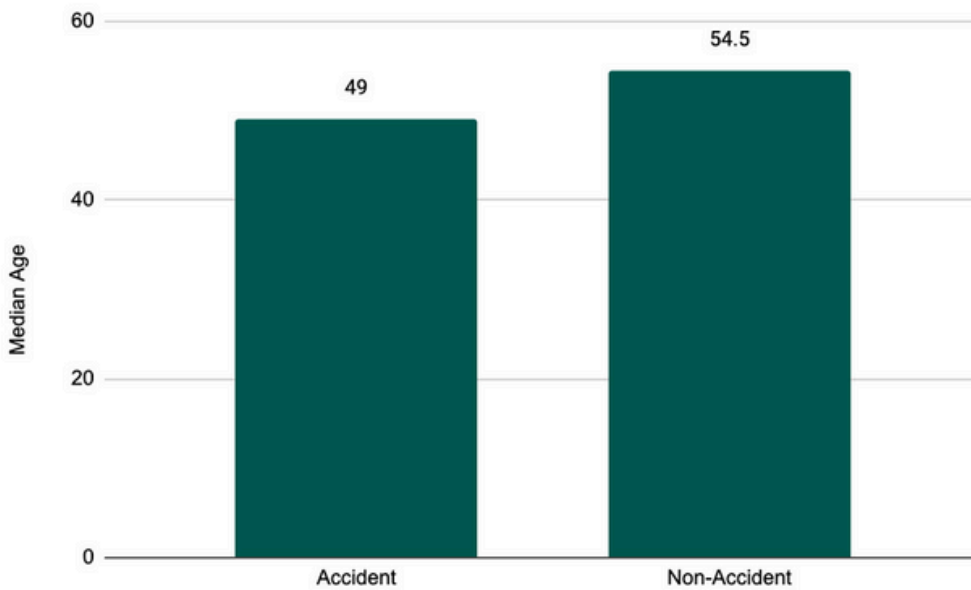
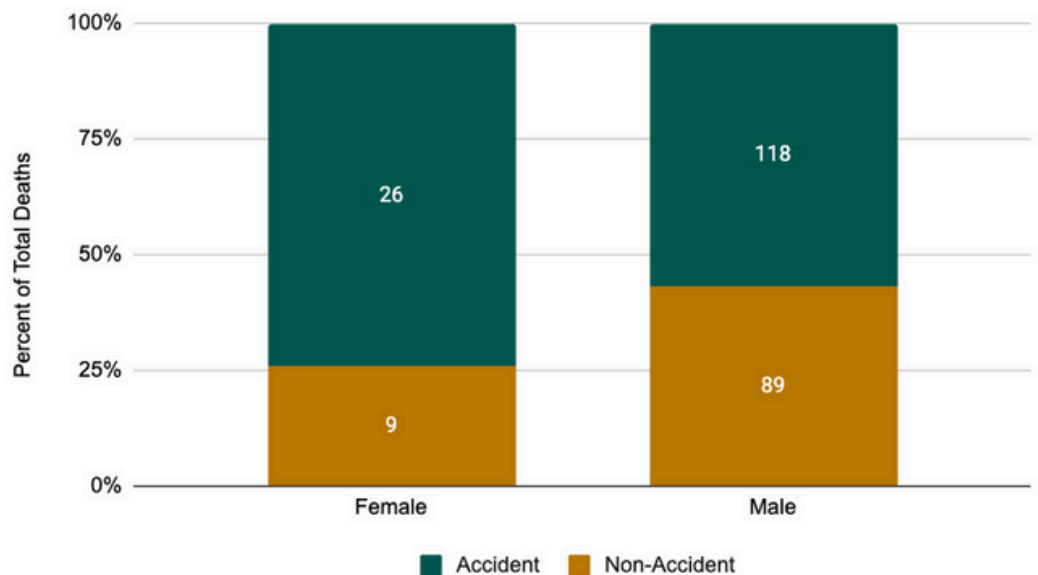


Figure 29 illustrates the median age at death for accidental and non-accidental deaths. The median age for non-accidental deaths was 49, which is lower than the median age for accidental deaths, which was 54.5. Non-accidental deaths include natural deaths, homicides, and suicides. Notably, suicides have the lowest median age among all manners of death, which may affect the interpretability of this comparison.

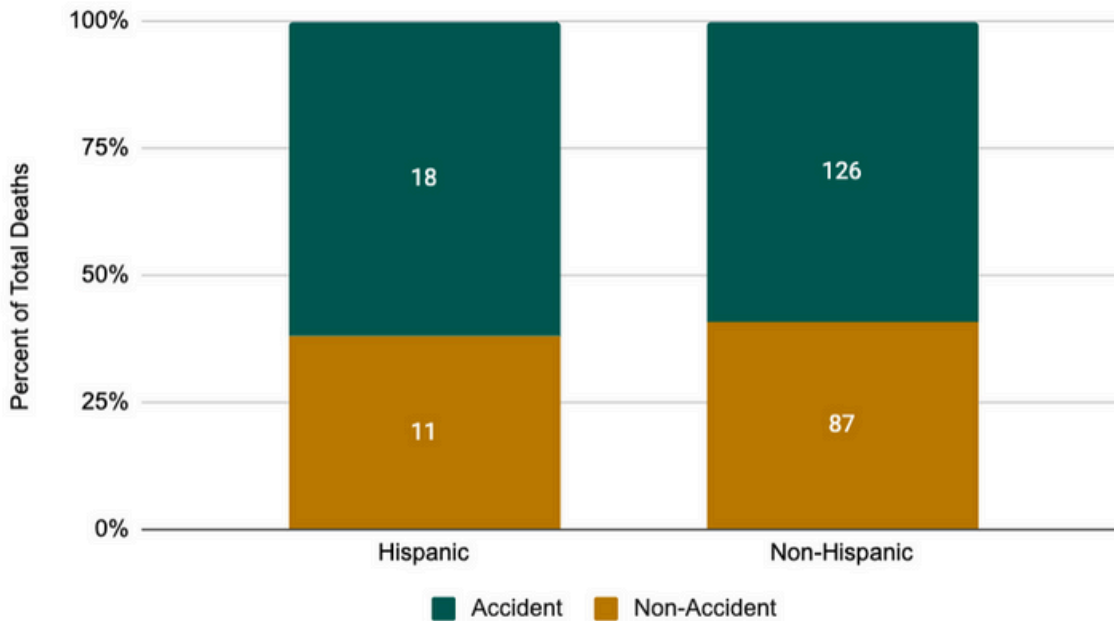
Figure 30 shows the proportion of accidental deaths by sex. Females had a higher proportion of accidental deaths compared to males. This higher proportion of accidental deaths among females may help explain why females had a lower median age at death than males, as accidental deaths generally occur at younger ages than natural deaths. This suggests that the manner of death could be a potential confounding variable.

Figure 30. Proportion of accidental deaths by sex



* The data labels show the counts of accident vs. non-accidental deaths by sex.

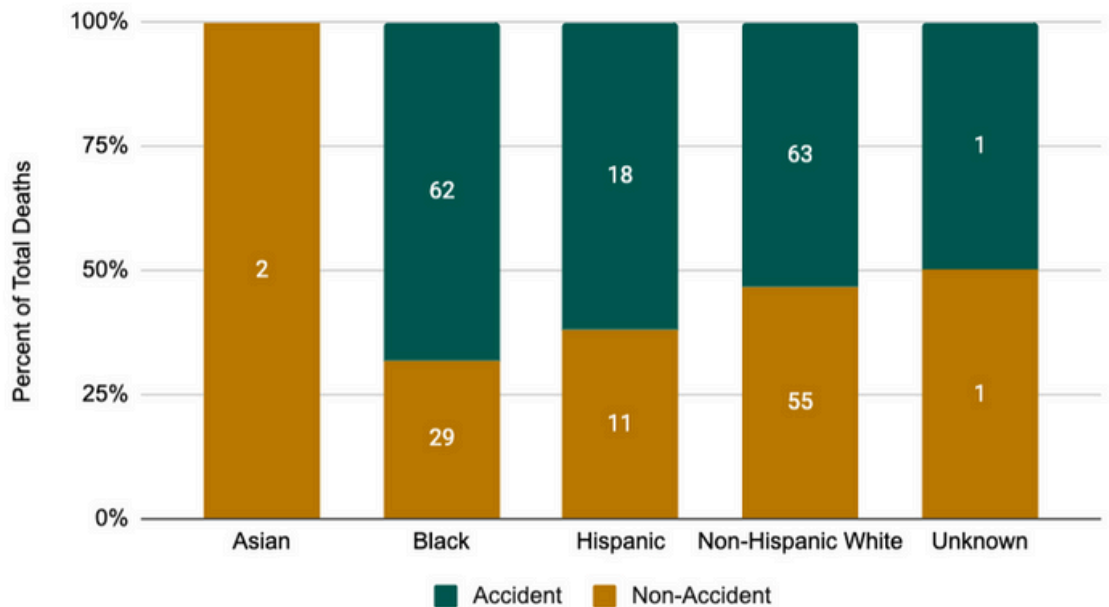
Figure 31. Proportion of accidental deaths by ethnicity



* The data labels show the counts of accident vs. non-accident deaths by ethnicity.

The figure above shows the proportion of accidental deaths by ethnicity. The proportion of accidental deaths, slightly over 50%, was similar for both Hispanic and non-Hispanic individuals who died while experiencing homelessness.

Figure 32. Proportion of accidental deaths by race/ethnicity

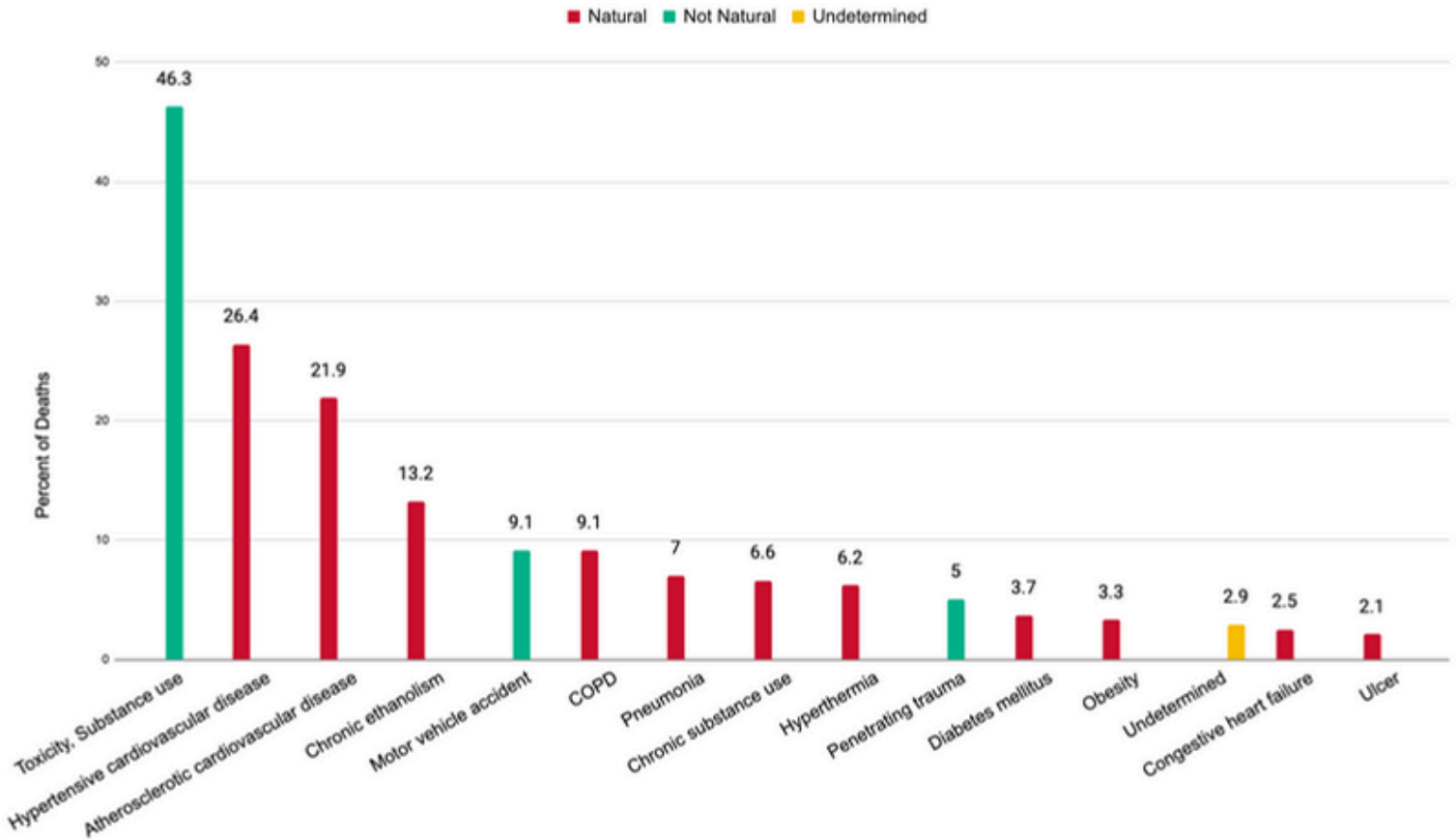


* The data labels show the counts of accident vs. non-accident deaths by race.

Figure 32 depicts the proportion of accidental deaths by race/ethnicity. Hispanic and Black individuals exhibit a lower proportion of accidental deaths compared to non-Hispanic White individuals.

Leading Causes of Death

Figure 33. Leading causes of death among people who died while experiencing homelessness



*Percentages add up to more than 100% due to overlapping causes of death.

The figure above shows the leading causes of deaths among people who died while experiencing homelessness in Harris County in 2023.

The leading cause of death among those who died while experiencing homelessness was acute drug toxicity. Nearly half (46.3%) of all deaths in homelessness were attributed to acute drug toxicity, far exceeding all other leading causes. This was followed by hypertensive cardiovascular disease (26.4%), atherosclerotic cardiovascular disease (21.9%), and chronic ethanolism (13.2%). Many drug toxicity deaths also involved additional primary causes, such as cardiovascular disease and chronic obstructive pulmonary disease (COPD). It remains unclear whether chronic substance use contributes to the development of these conditions or if the presence of underlying health issues increases susceptibility to fatal drug toxicity.

Figure 34. Leading causes of natural death

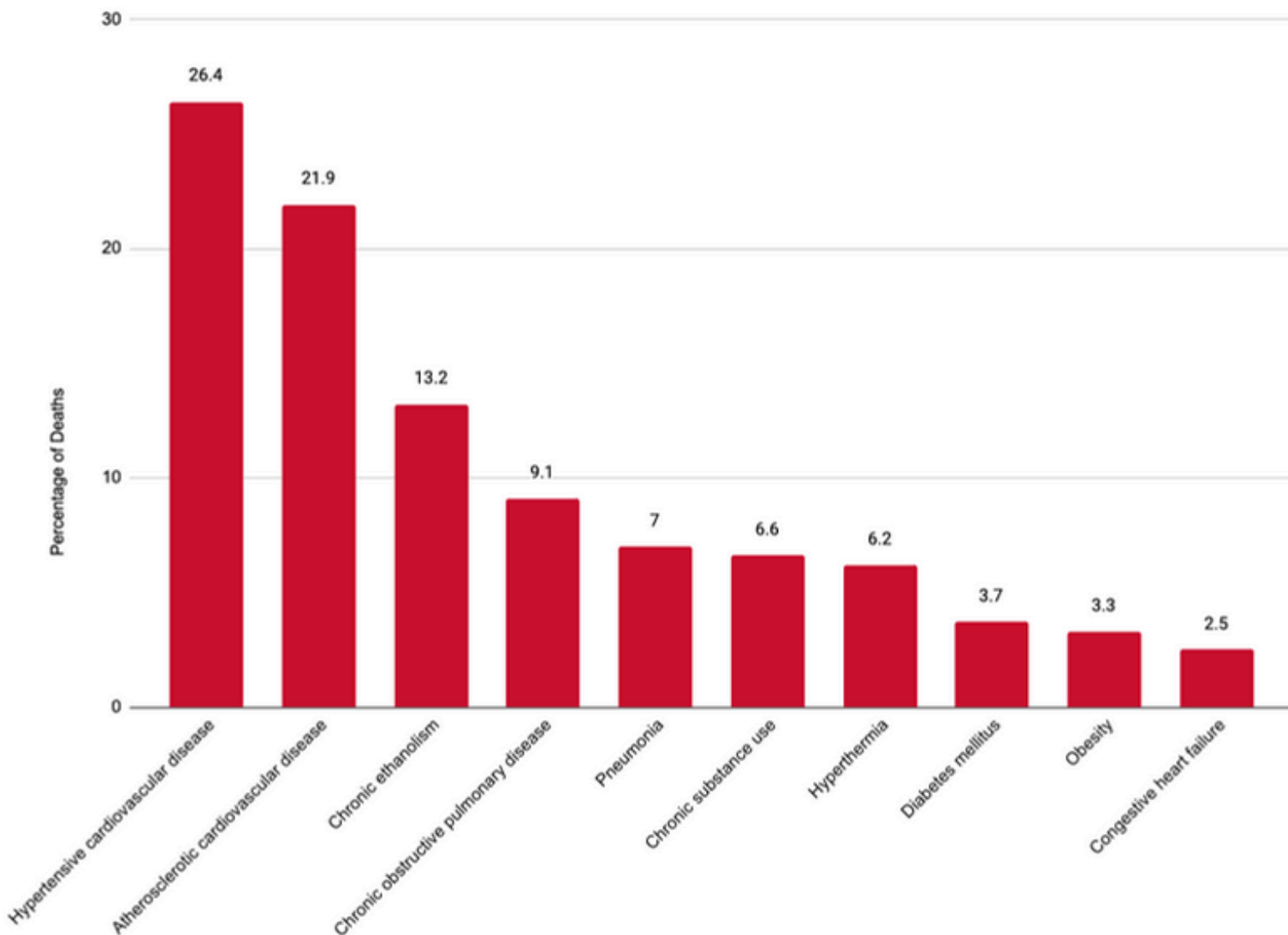


Figure 34 highlights the leading causes of natural deaths among individuals who died while experiencing homelessness, shown as a proportion of all deaths.

Hypertensive and atherosclerotic cardiovascular disease accounted for the largest share of natural deaths (26.4% and 21.9%, respectively), followed by chronic ethanolism (21.9%) and COPD (13.2%). These findings underscore the significant burden of chronic health conditions, particularly cardiovascular disease, within this population.

Figure 35. Leading causes of non-natural death

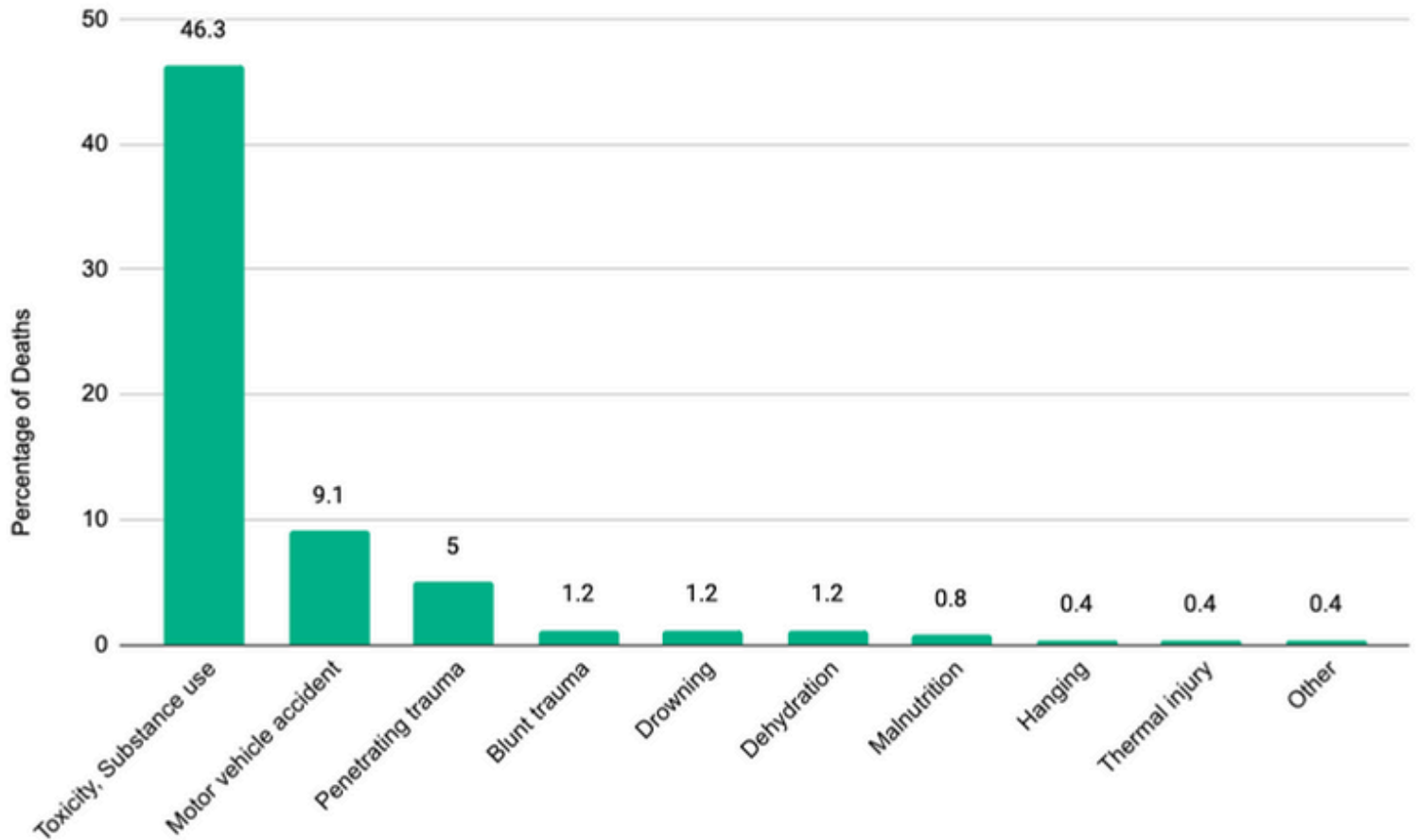
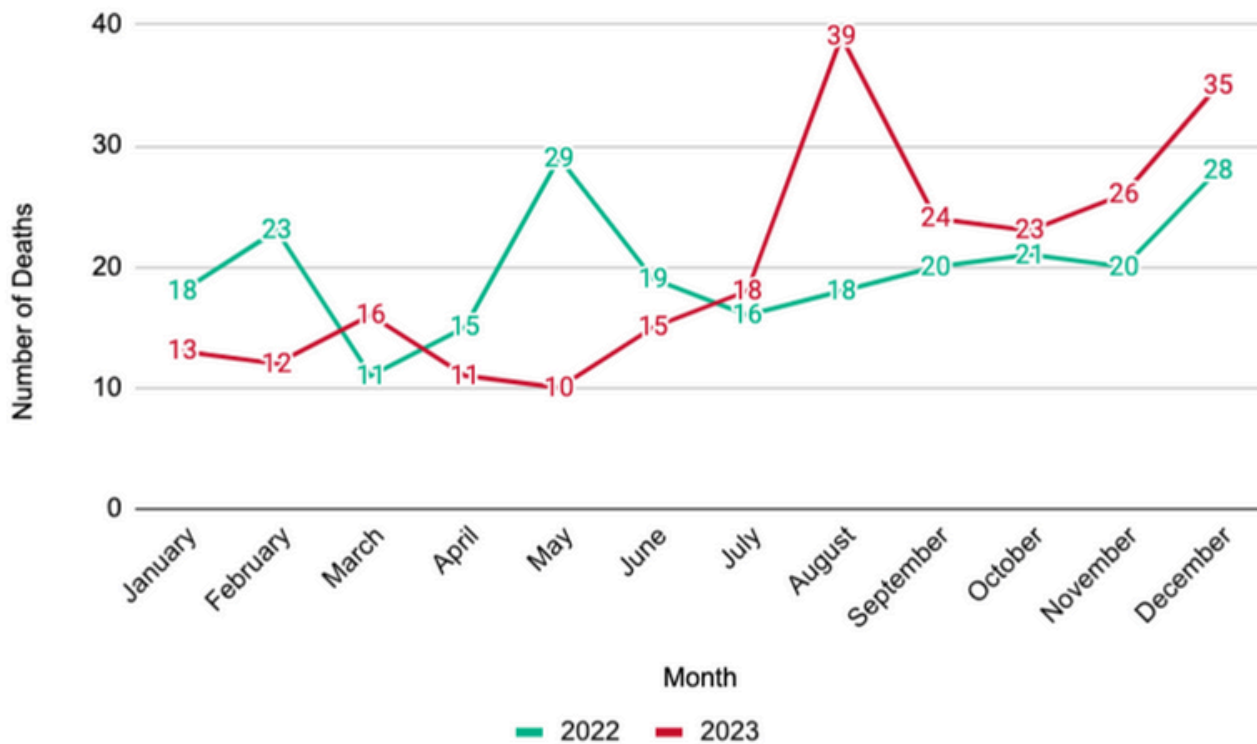


Figure 35 presents the leading causes of non-natural deaths among individuals who died while experiencing homelessness.

Among accidental causes, drug toxicity deaths were the most common by a significant margin, accounting for nearly half of deaths at 46.3%. Other frequently reported causes of non-natural deaths included motor vehicle accidents, penetrating trauma, blunt trauma, drowning, dehydration, malnutrition, hanging, and thermal injury, with each accounting for less than 10% of deaths in this population.

Seasonality of Homeless Mortality

Figure 36. Count of deaths per month during 2022 and 2023



The figure above shows the number of deaths per month during 2022 and 2023. In 2022, there was a peak in deaths in homelessness in May. This was followed by peaks in December and February. March saw the fewest deaths. In 2023, deaths peaked in August, followed by December. Fewer deaths were recorded in May. Overall, the seasonality of deaths appears variable, likely due to the low sample size.

The increase in mortality rates from July to December 2023 may be linked to the unprecedented heat experienced in Houston, Texas, which had its hottest year since 1889 [10]. Houston recorded 45 days with temperatures reaching triple digits in 2023, including 3 days in June, 7 in July, 28 in August, and 7 in September. August, in particular, was the warmest on record, with an average temperature of 91°F. Additionally, the city received only 41.8 inches of rainfall for the year, about 10 inches below the historical average, indicating an especially dry summer [9]. These extreme temperatures and low rainfall may have contributed to increased heat-related stress and health impacts on the homeless population.

Figure 37. Proportions of manner of death by month

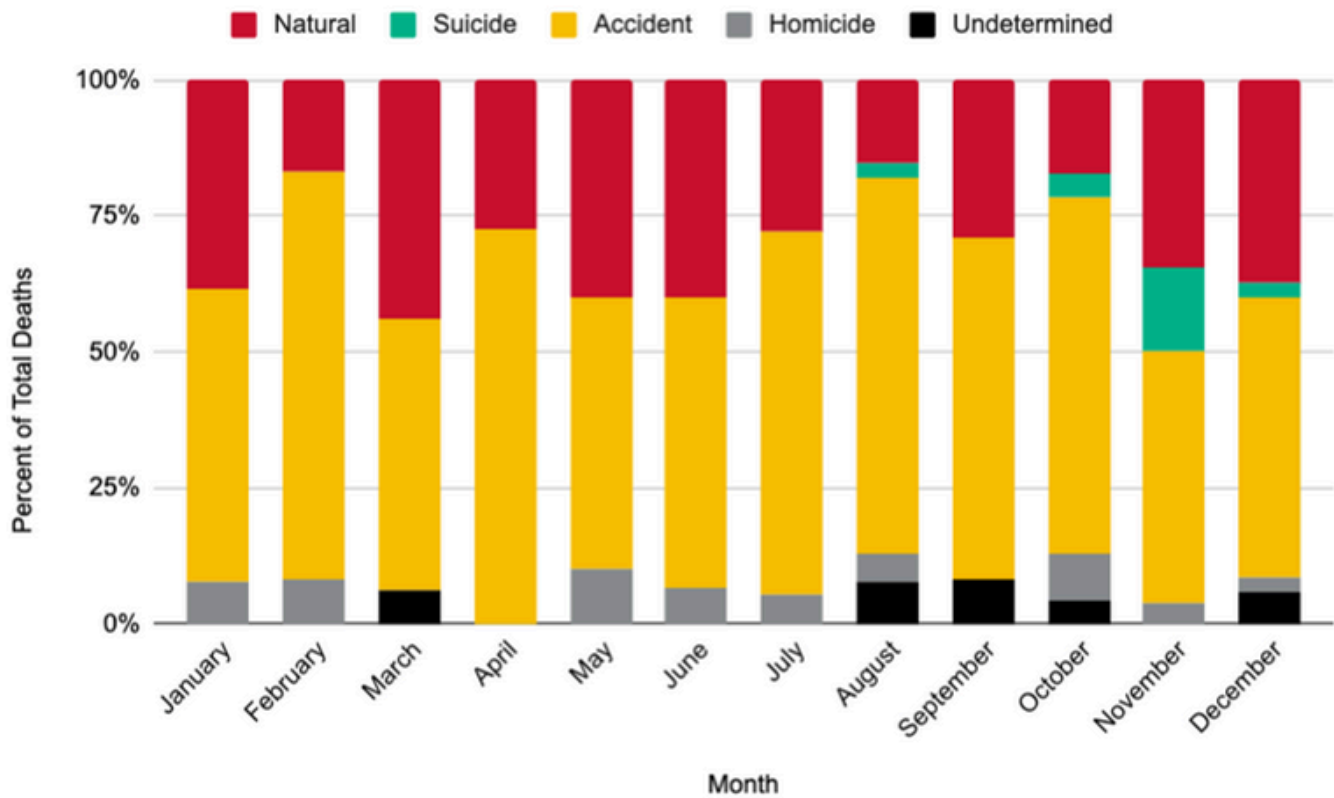


Figure 37 illustrates the monthly proportions of deaths among individuals who died while experiencing homelessness in 2023, categorized by the manner of death.

Accidental deaths consistently accounted for the largest proportion across all months, followed by natural deaths, reflecting the significant health and environmental challenges faced by this population. These two categories together make up the vast majority of deaths, with only slight fluctuations in their proportions over time. Suicides, while generally a smaller proportion of the total, displayed a notable spike in November. Homicides and undetermined deaths consistently represented the smallest proportions throughout the year, highlighting their relative rarity compared to other causes.

Figure 38. Counts of manner of death by month

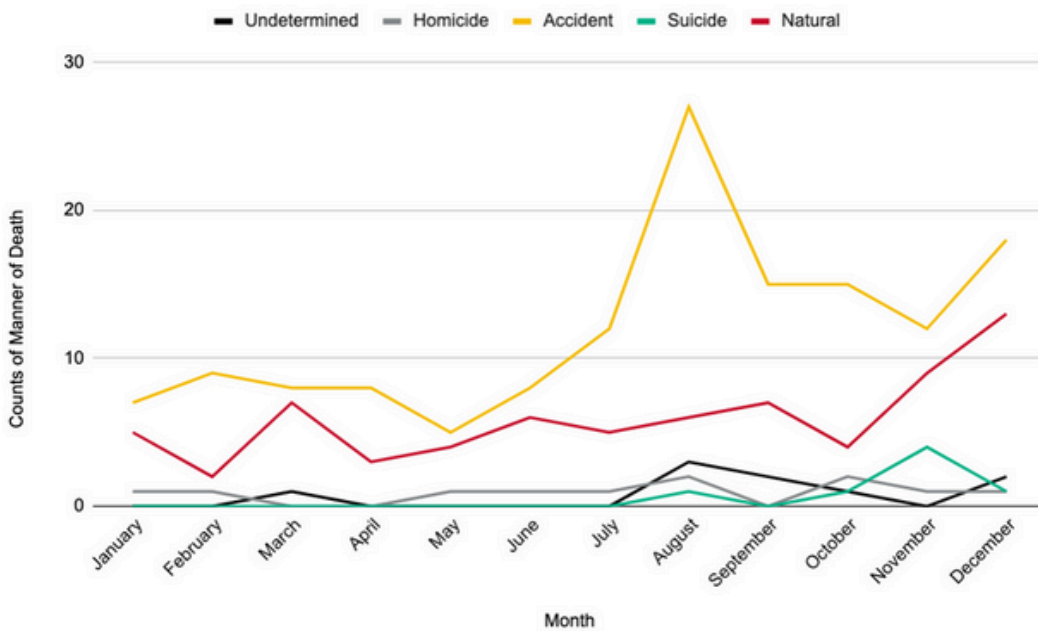


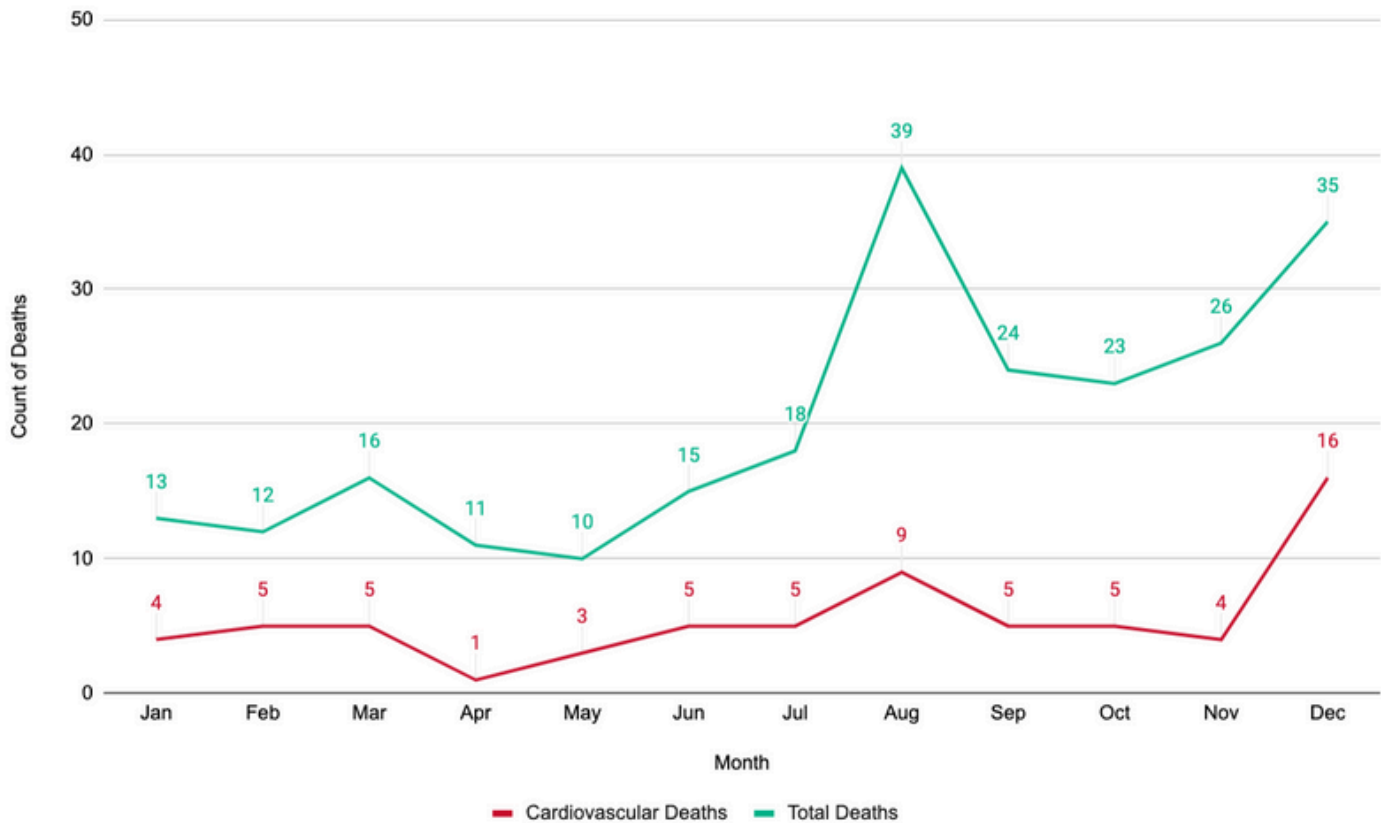
Figure 38 and Table 5 display the counts of manner of death by month. Accidental deaths increased throughout the year, peaking in August with 27 deaths, and have continued to show an upward trend since November. Natural deaths remained relatively stable but began to rise in October. Suicide deaths peaked in November with 4 deaths, though they remained generally consistent throughout the year.

Table 5. Counts of manner of death by month

Month	Manner of Death				
	Undetermined	Homicide	Accident	Suicide	Natural
January	0	1	7	0	5
February	0	1	9	0	2
March	1	0	8	0	7
April	0	0	8	0	3
May	0	1	5	0	4
June	0	1	8	0	6
July	0	1	12	0	5
August	3	2	27	1	6
September	2	0	15	0	7
October	1	2	15	1	4
November	0	1	12	4	9
December	2	1	18	1	13

Cardiovascular Disease Deaths

Figure 39. Counts of total cardiovascular disease deaths by month



The figure above displays the counts of total deaths and cardiovascular disease (CVD) deaths among individuals experiencing homelessness, broken down by month. Both CVD deaths and overall deaths in this population exhibit a similar trend throughout the year, with notable peaks observed in August and December. The spike in total deaths in August is not entirely attributable to CVD deaths, as only 9 of the 39 deaths in that month were linked to cardiovascular causes, accounting for approximately 23% of total deaths.

However, the peak in December appears to be more strongly driven by CVD-related mortality, with 16 out of 35 total deaths, comprising nearly 46% of the total. These patterns suggest a seasonal influence on mortality, potentially linked to environmental factors such as extreme temperatures, limited shelter access, or other vulnerabilities experienced by individuals experiencing homelessness.

Figure 40. Proportions of types of cardiovascular disease deaths by month

Figure 40 shows the proportion of different types of CVD deaths by month. Atherosclerotic and hypertensive disease mechanisms account for the largest proportions of CVD deaths by far. Valvular cardiovascular disease was present in January and December but absent in all other months.

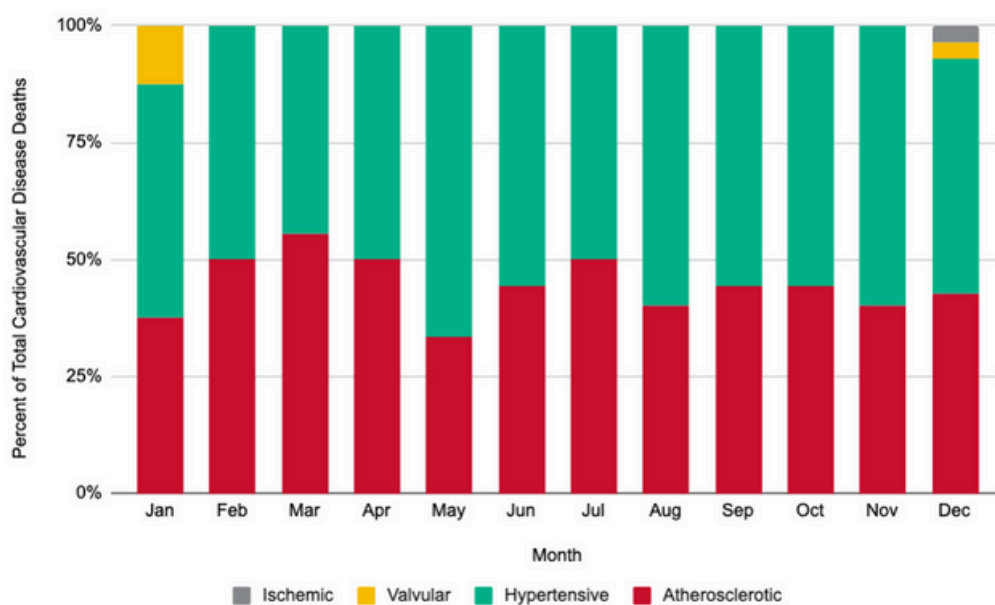


Figure 40a. Counts of types of cardiovascular disease deaths by month

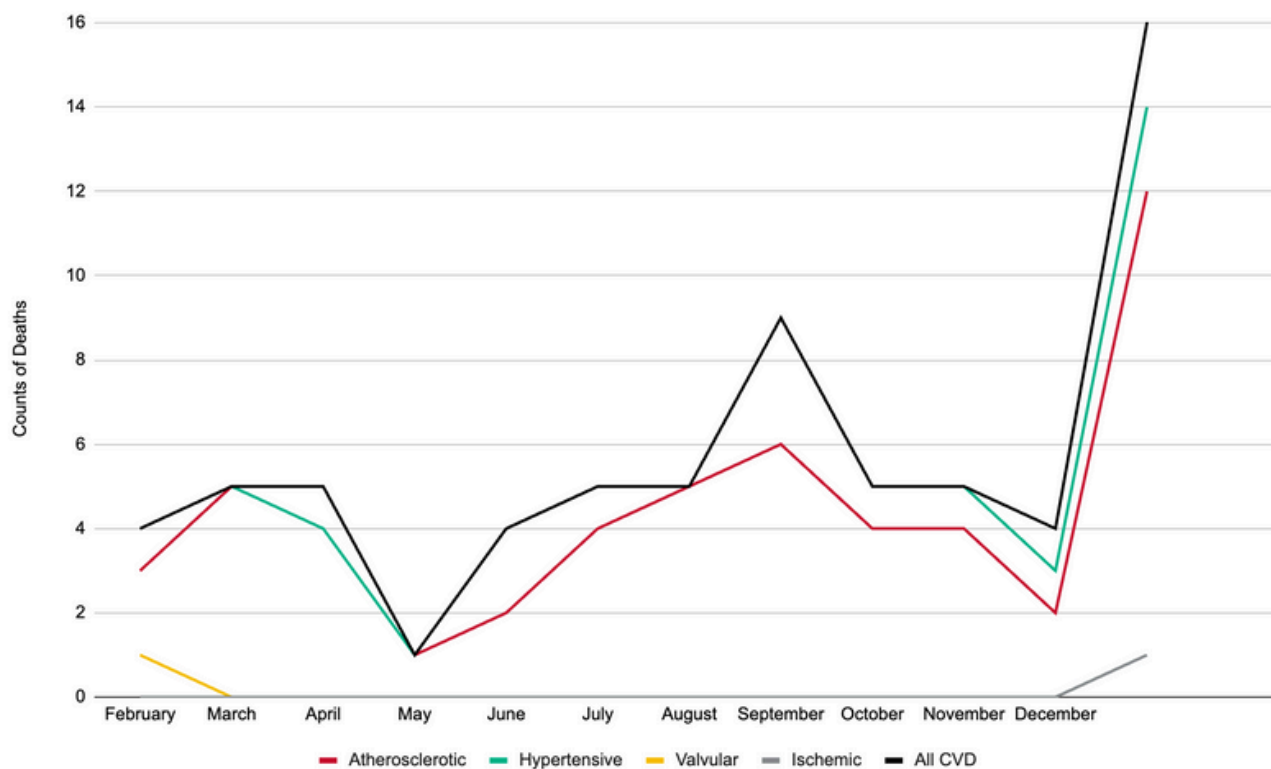


Figure 40a and Table 6 display the counts of different types of CVD deaths in homelessness by month. A significant peak in CVD deaths is observed in December, with a smaller peak in August. April shows a noticeable dip in CVD deaths. Throughout the year, hypertensive CVD deaths account for the largest proportion of total CVD deaths, followed by atherosclerotic CVD deaths. Valvular and ischemic CVD deaths are much less frequent, with most months reporting zero deaths in these categories.

Table 6. Counts of types of cardiovascular disease deaths by month

Month	Type of Cardiovascular Disease Death				
	All CVD	Atherosclerotic	Hypertensive	Valvular	Ischemic
January	4	3	4	1	0
February	5	5	5	0	0
March	5	5	4	0	0
April	1	1	1	0	0
May	3	2	4	0	0
June	5	4	5	0	0
July	5	5	5	0	0
August	9	6	9	0	0
September	5	4	5	0	0
October	5	4	5	0	0
November	4	2	3	0	0
December	16	12	14	1	1

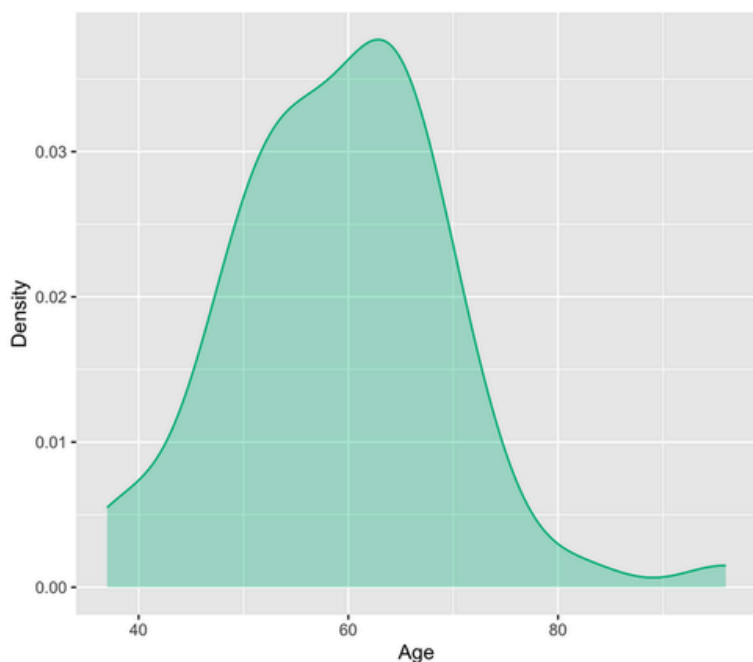
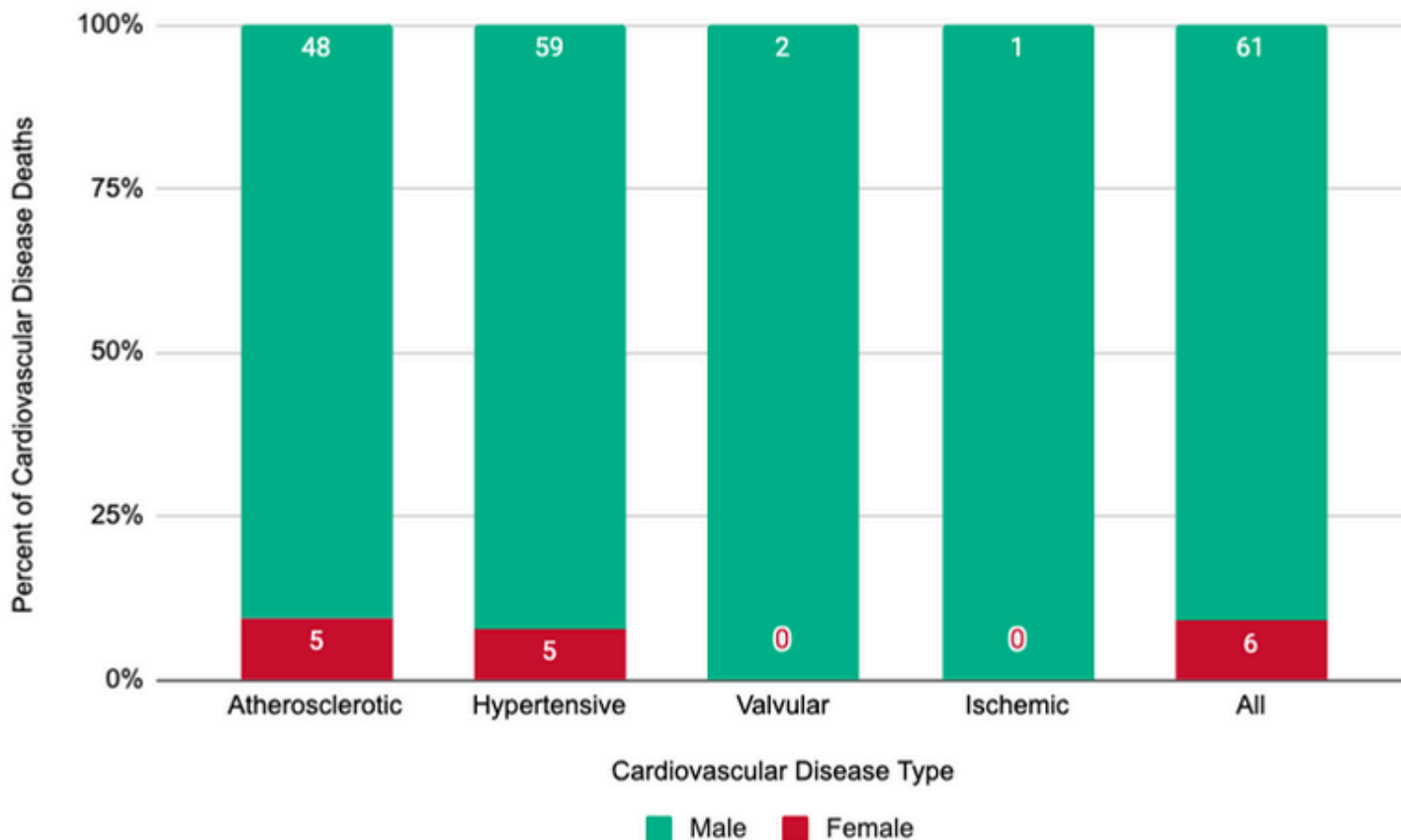


Figure 41. Cardiovascular disease deaths by age kernel density plot

This kernel density plot illustrates the distribution of CVD deaths by age, highlighting that the majority occur between the ages of 50 and 70 years. The density peaks around age 60. The curve tapers off sharply after age 70, indicating fewer deaths in older populations. This is likely an outcome of the excessive early deaths and rarity of living past 70 years of age for those living with heart disease while experiencing homelessness.

Note: One individual with an age of 0 (representing an unknown age) was excluded from the analysis to ensure accurate representation of age distributions.

Figure 42. Proportions of cardiovascular disease deaths by sex



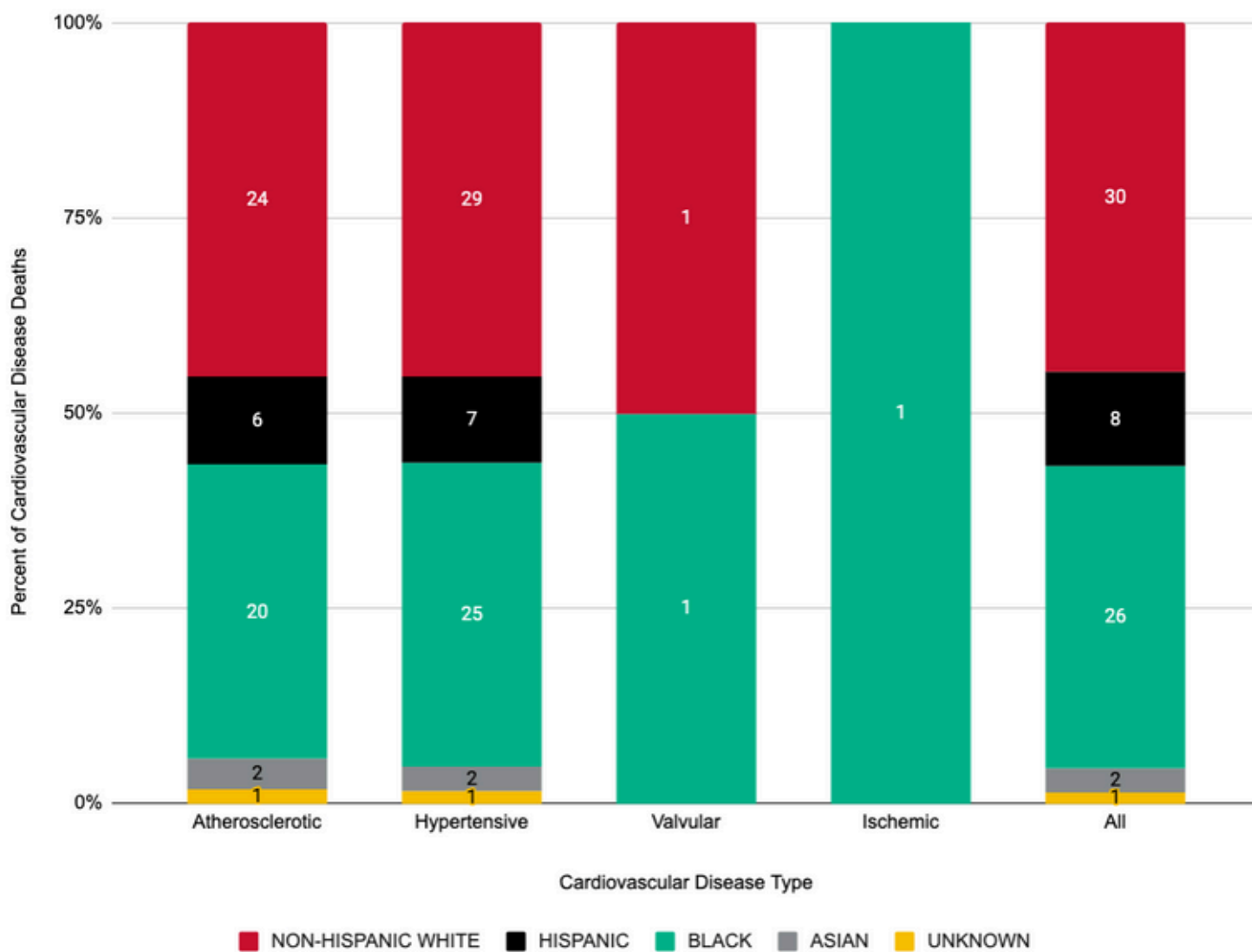
* The data labels show the counts of deaths of cardiovascular disease deaths by sex

Figure 42 shows the proportion of CVD deaths among individuals who died while experiencing homelessness, broken down by sex.

Males consistently accounted for a larger proportion (over 85%) of CVD deaths compared to females across all types of CVD. This gender disparity is partly attributable to the lower overall number of females within the population experiencing homelessness and therefore in the total count of deaths studied herein.

However, it is important to consider that the lower number of female deaths increases estimate variability and the competing risks from other causes of death in females may obscure death from CVD (see pp 14 & 24 for more details on this). Therefore these proportions may not fully reflect the relative risk of CVD in females compared to males in this group.

Figure 43. Distribution of cardiovascular disease deaths by race/ethnicity



* The data labels show the counts of deaths of cardiovascular disease deaths by race/ethnicity

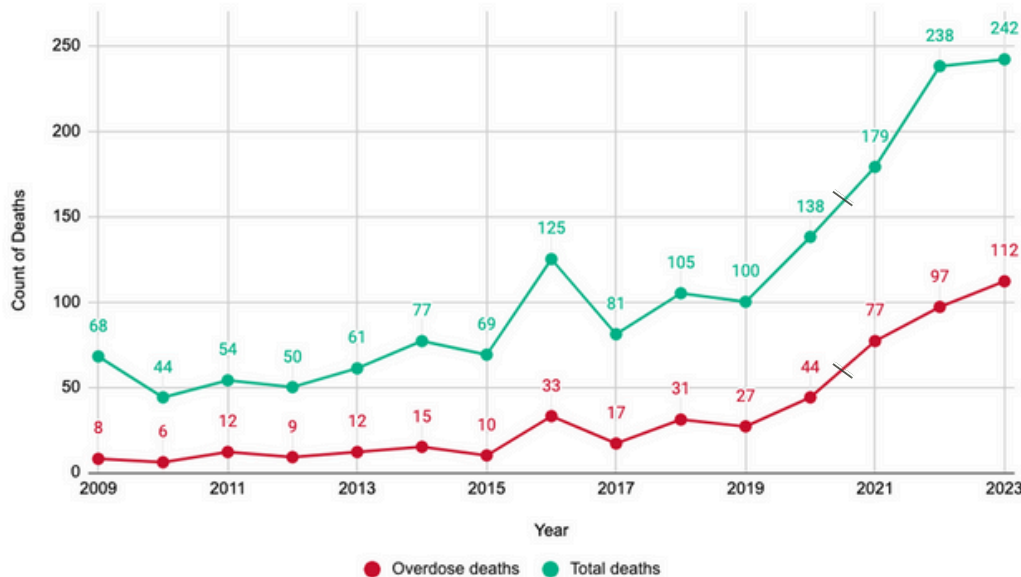
Figure 43 above shows the distribution of racial/ethnicity categories by primary types of CVD deaths in homelessness.

The distribution of racial/ethnic groups remains relatively consistent, with non-Hispanic Whites still accounting for the largest proportion of deaths, followed by Black individuals. However, exceptions include valvular and ischemic deaths, which are likely a result of much smaller sample sizes and only include Black and non-Hispanic White decedents.

Toxicity Deaths

To put the findings on acute toxicity deaths into context, it should be noted that the count of total deaths among people experiencing homelessness over time has significantly increased in recent years. The introduction of an adjudication process has improved case sensitivity for the 2021-2023 data, but previous years' data suggest that the count of deaths would have still increased.

Figure 44. Count of acute toxicity deaths across time



*Methods changed after 2021, resulting in improved case identification

Figure 44 shows how the number of toxicity deaths in homelessness (red line) have steadily risen, with a notable surge starting in 2019, reaching a new peak of 112 deaths in 2023. As the total number of deaths leveled off slightly from 2022 to 2023, the increase in toxicity-related deaths has not flattened in the same way.

Figure 45. Proportion of deaths due to acute toxicity across time

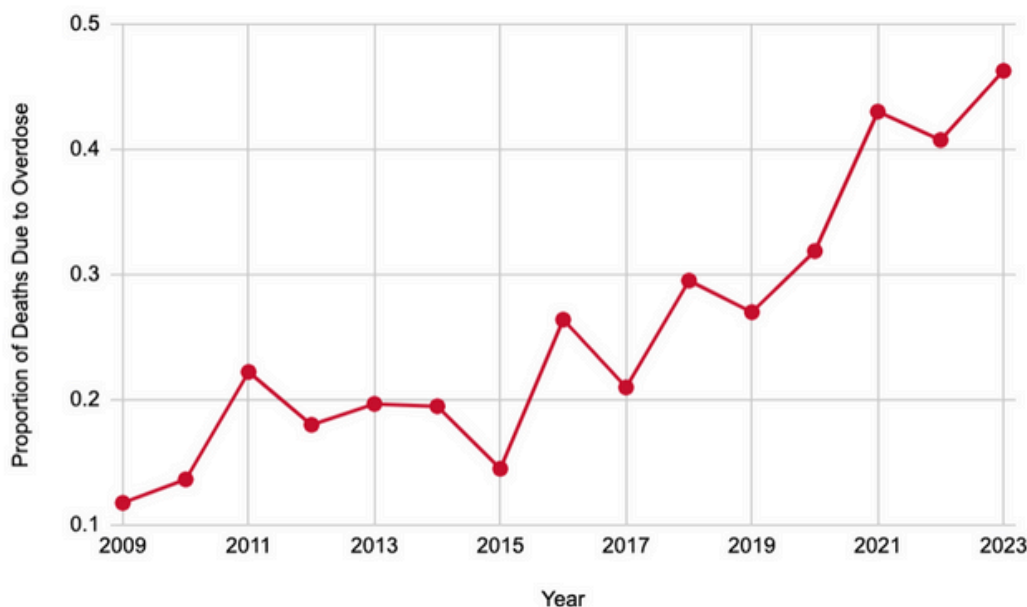


Figure 45 further contextualizes this by showing the proportion of these deaths due to acute toxicity over time. The graph indicates a steady upward trend, rising from approximately 10% in 2009 to nearly 47% in 2023, reflecting the increasing role of toxicity in overall homeless mortality. While some variability is observed in earlier years, the proportion has risen sharply since 2019. This emphasizes that toxicity deaths are not only increasing in count but also constituting a larger share of the total deaths among people experiencing homelessness.

Figure 46. Count of acute toxicity deaths per month

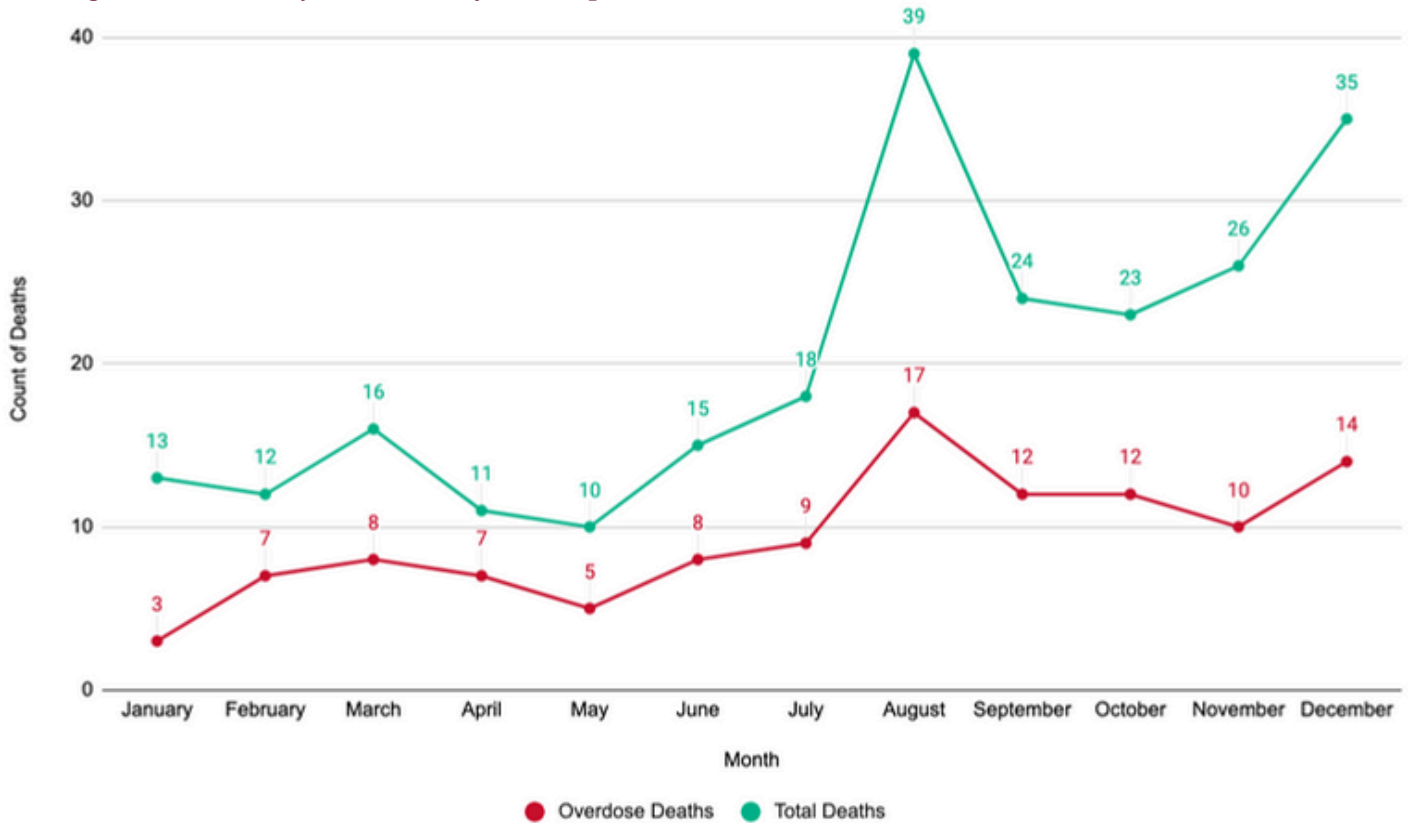


Figure 46 shows how total deaths associated with homelessness fluctuated throughout the year, with a sharp spike observed in August, followed by a decline in subsequent months. Toxicity deaths similarly peak in August, showing a significant rise compared to earlier months. Toxicity deaths remained relatively stable from January to July, with a second increase occurring in December. This seasonal pattern highlights August and December as months with elevated mortality, suggesting potential external factors, such as extreme weather, may influence these trends.

The kernel density plot of toxicity deaths by age shows two prominent peaks, one around ages 40–45 and another around 55–60, indicating that toxicity deaths are most concentrated within these age ranges. The density declines sharply for individuals under 30 and those over 65, suggesting that younger and older age groups experience fewer toxicity-related deaths.

Figure 47. Toxicity deaths by age Kernel Density plot

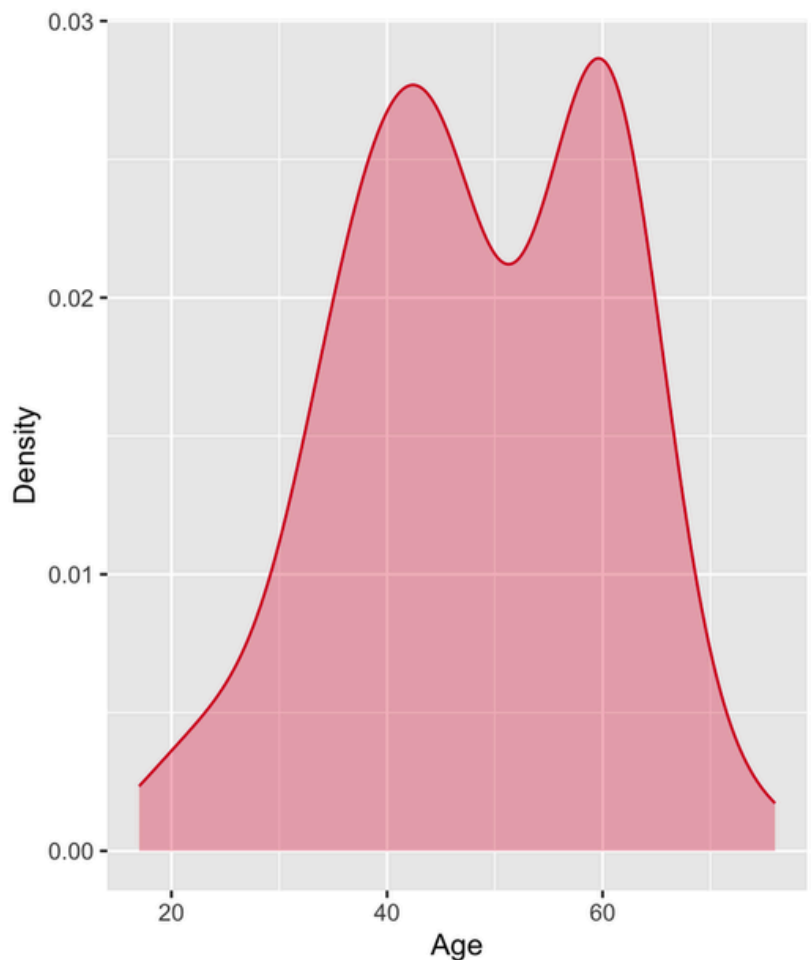
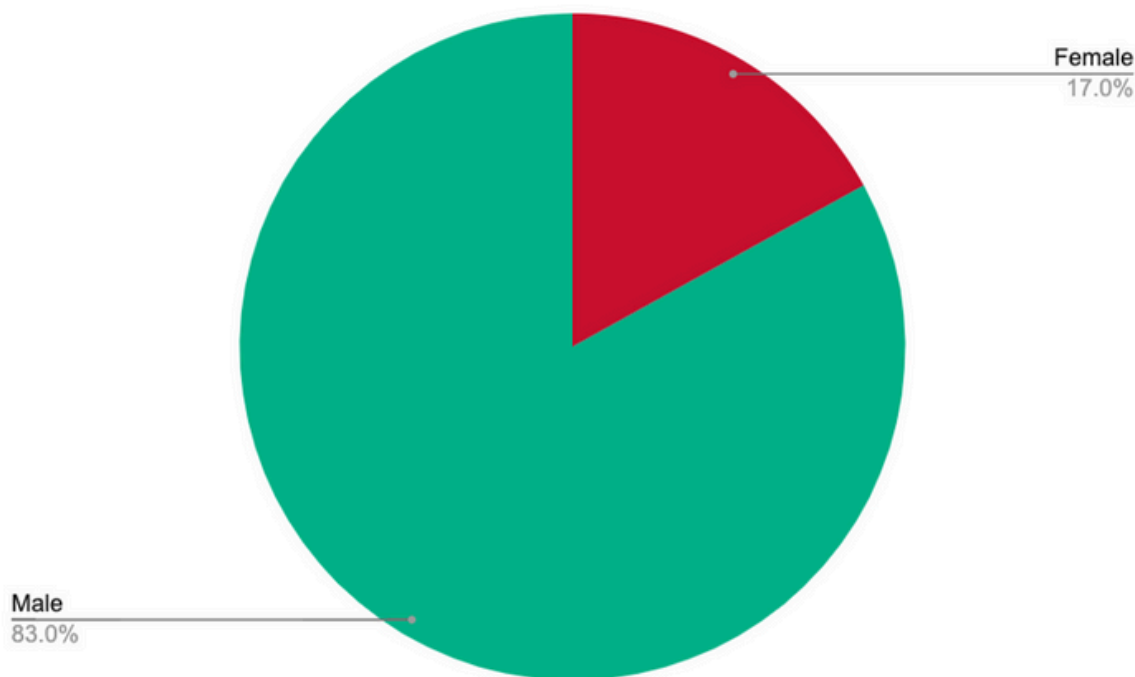


Figure 48. Distribution of acute toxicity deaths by sex



As shown in the figure above, males accounted for the vast majority of acute toxicity deaths at 83.0%, while females made up only 17.0%. This distribution aligns with the fact that females represent a much smaller proportion of overall homeless mortality, as previously discussed.

Figure 49 below illustrates the distribution of acute toxicity deaths by race/ethnicity. Black and non-Hispanic White individuals each accounted for nearly the same proportion of toxicity deaths, while Hispanic individuals represented a significantly smaller proportion, at 11.6%.

Figure 49. Distribution of acute toxicity deaths by race/ethnicity

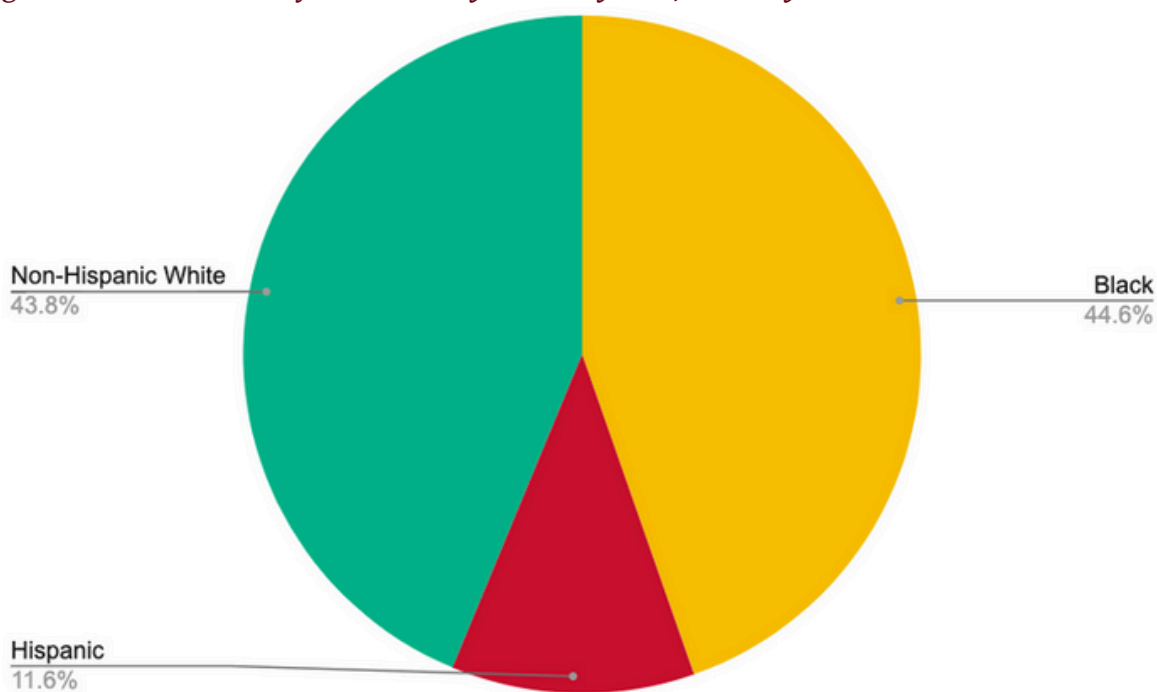
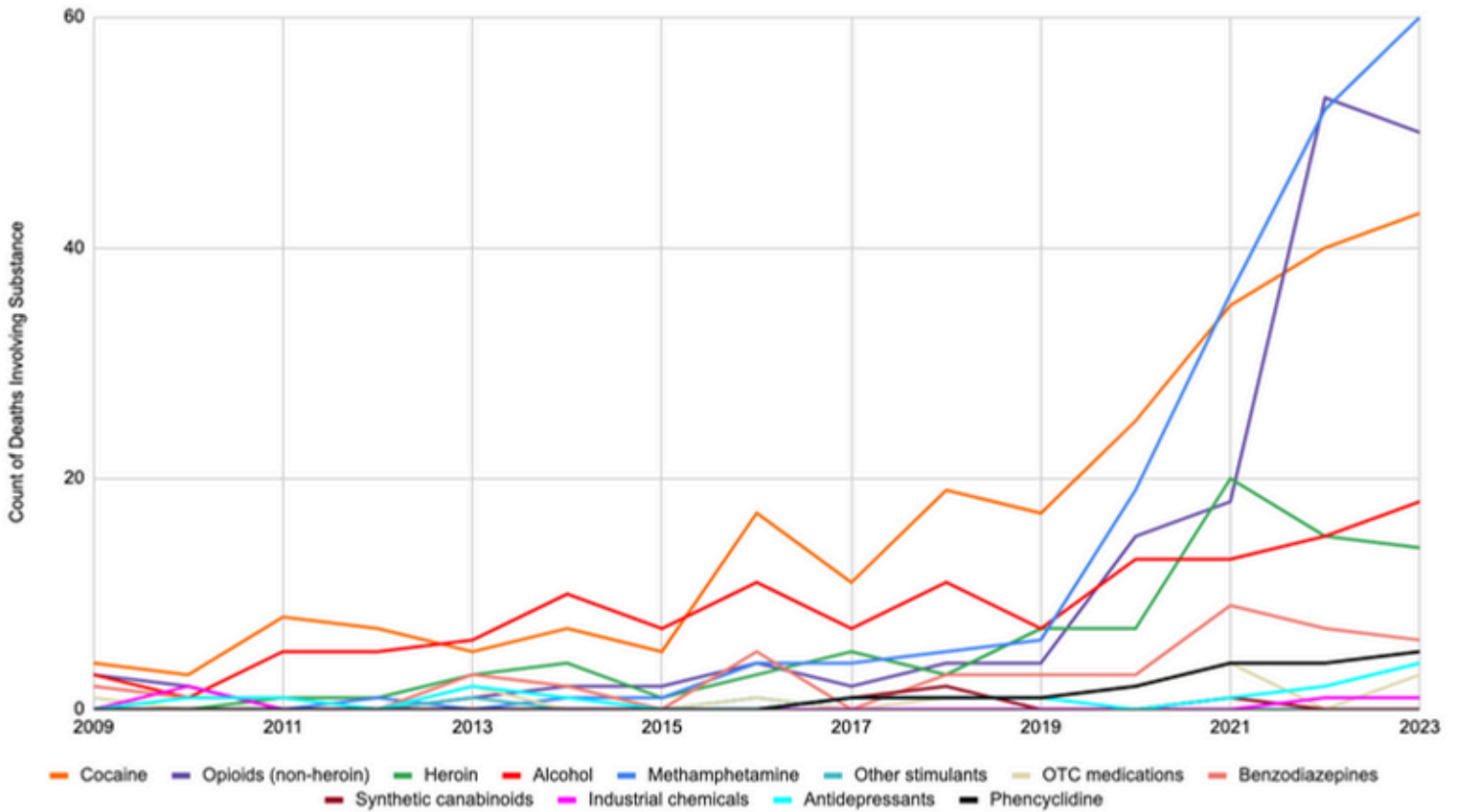


Figure 50. Count of deaths involving specific substances over time



Note:

Opioids (non-heroin) include Fentanyl, Fluorofentanyl, Tramadol, Morphine, and Methadone.
 OTC (over-the-counter) medications include Diphenhydramine.
 Benzodiazepines include Alprazolam and Diazepam.
 Industrial chemicals include 1,1-Difluoroethane.
 Antidepressants include Fluoxetine, Sertraline, Venlafaxine, and Amitriptyline.

Figure 50 shows the count of deaths in homelessness involving specific substances over time.

Deaths related to various substances remained relatively low (less than 20%) and stable until 2019, after which there was a sharp and noticeable increase, particularly for opioids (non-heroin), methamphetamine, and cocaine. Methamphetamine-related deaths show the most significant rise, peaking at nearly 60% of deaths in 2023. Opioid (non-heroin)-related deaths also exhibit a steep increase, surpassing 50% of deaths by 2022, before slightly declining in 2023. Cocaine-related deaths have also increased, but at a slower rate than opioids and methamphetamine, showing a steady upward trend since 2019. Other substances, such as alcohol, show moderate increases over time, while benzodiazepine-related deaths remain lower but still present.

Figure 51. Proportion of acute toxicity deaths involving substances over time

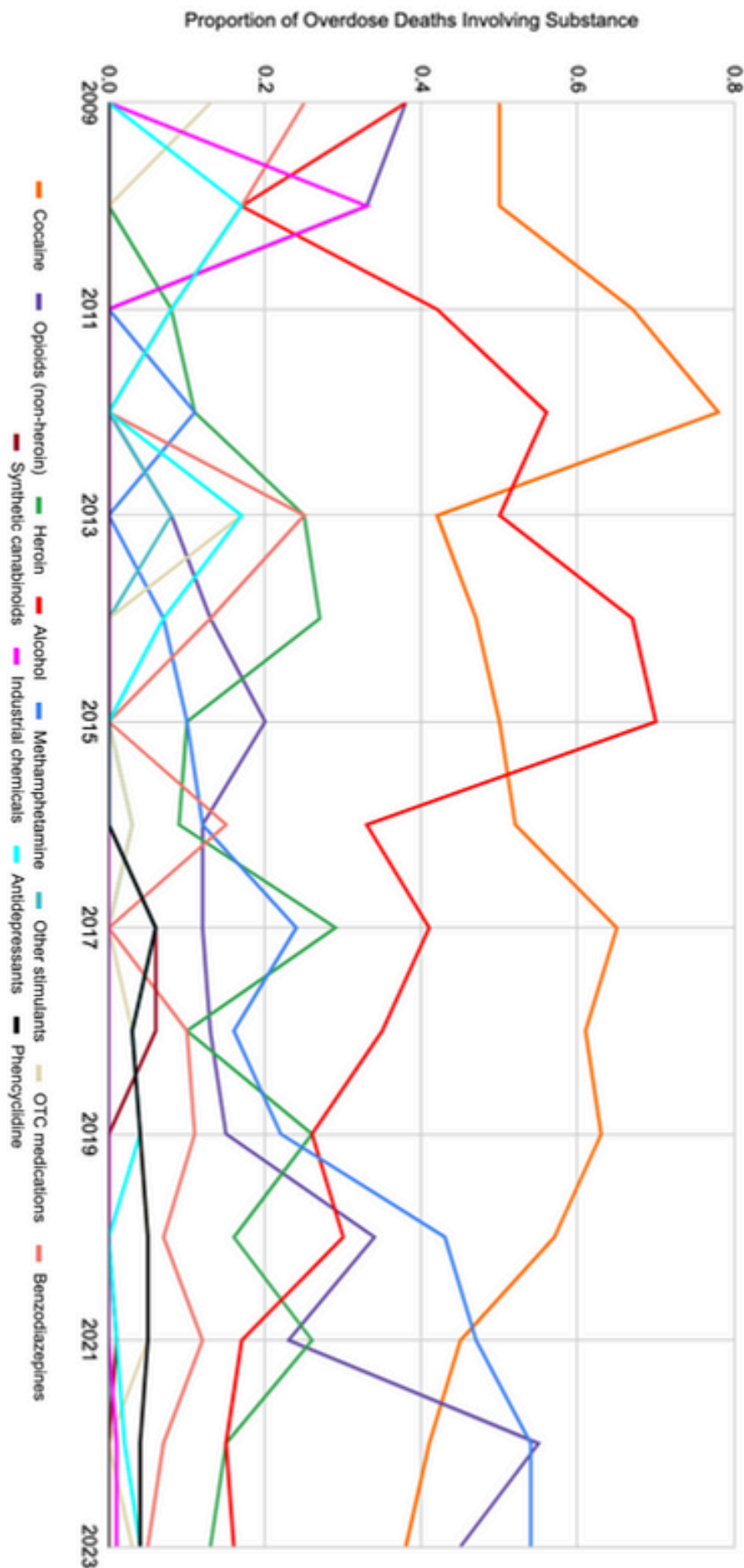
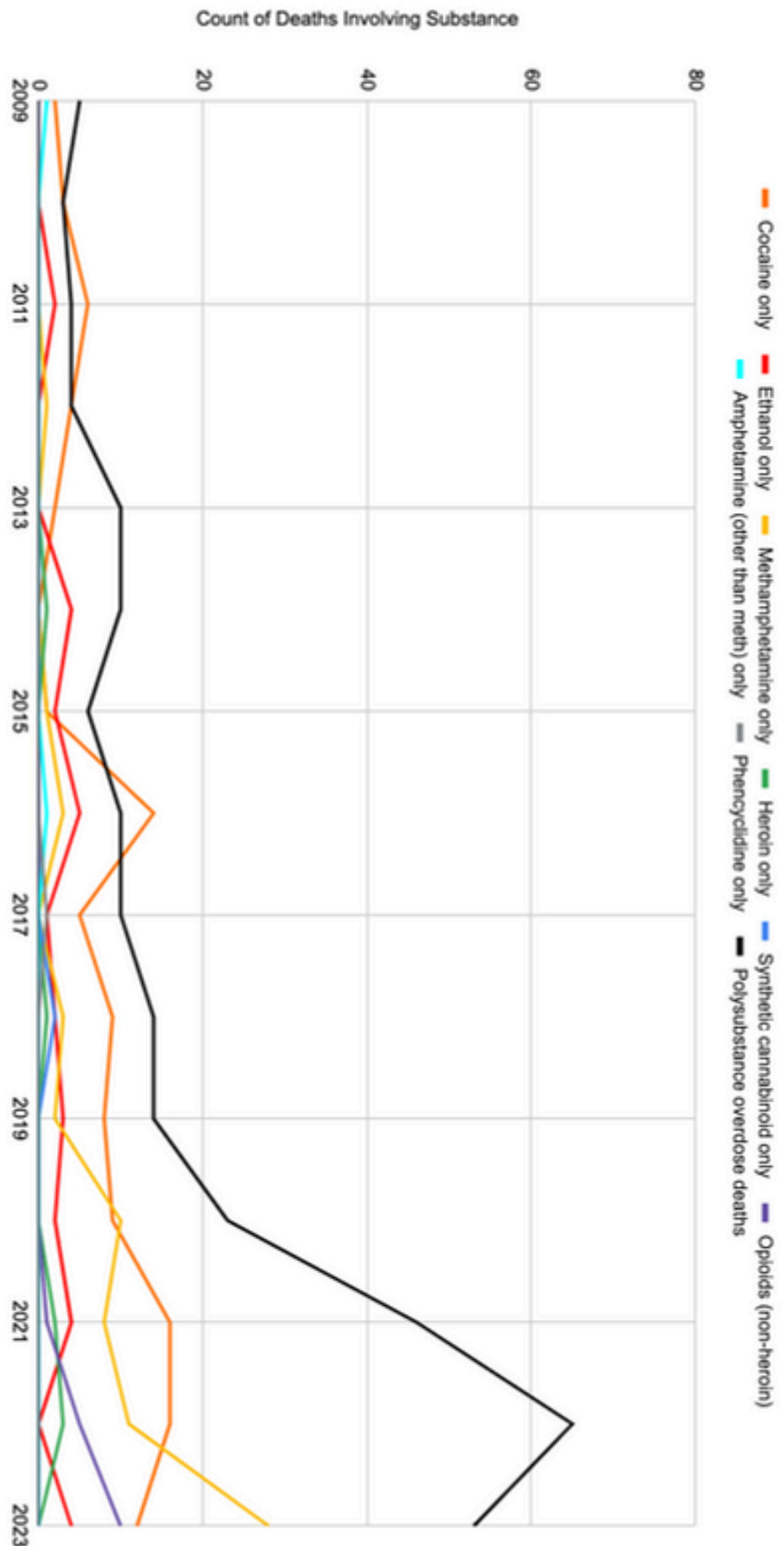


Figure 51 displays the proportion of acute toxicity deaths in homelessness involving specific substances over time. Over the years, cocaine has consistently been involved in a significant proportion of toxicity deaths, remaining above 50% for much of the period before declining after 2019. Meanwhile, methamphetamine and opioid (non-heroin) show sharp increases starting around 2019, both surpassing cocaine by 2022.

Alcohol also demonstrates notable fluctuations, with higher proportions recorded in earlier years (2012–2015), though it declines in recent years. Heroin contributes to smaller, but variable proportions of toxicity deaths over time. This figure highlights the growing role of methamphetamine and opioids (non-heroin) in toxicity deaths, particularly since 2019, and highlights a shifting pattern of substance use, with cocaine and alcohol continuing to contribute but showing relative declines.

Figure 52. Single- versus multiple-substance toxicity deaths over time



While the previous graphs report all substance categories involved in each death, this graph distinguishes between deaths involving a single substance and those involving multiple substances, referred to as polysubstance use or polypharmacy.

This figure clearly shows a sharp increase in deaths due to polysubstance toxicity since 2019, accounting for over 60% of deaths in 2022, followed by a slight dip from 2022 to 2023. This decline should be monitored in future reports to determine whether it signals a potential downward trend. Deaths involving a single substance have also increased over time, but at a more moderate rate.

Longitudinal Age Trends

Figure 53. Median age at death over time

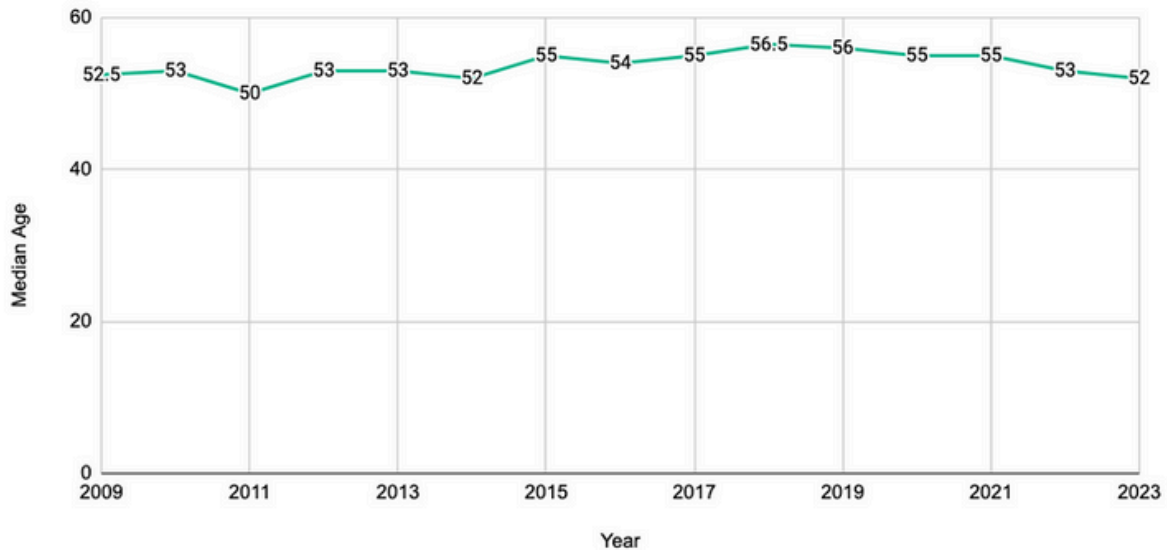


Figure 53 illustrates the median age at death over time. The median age of individuals who died while experiencing homelessness has remained relatively stable since 2009, consistently ranging between 50 and 56.5 years.

Figure 54. Median age by sex over time

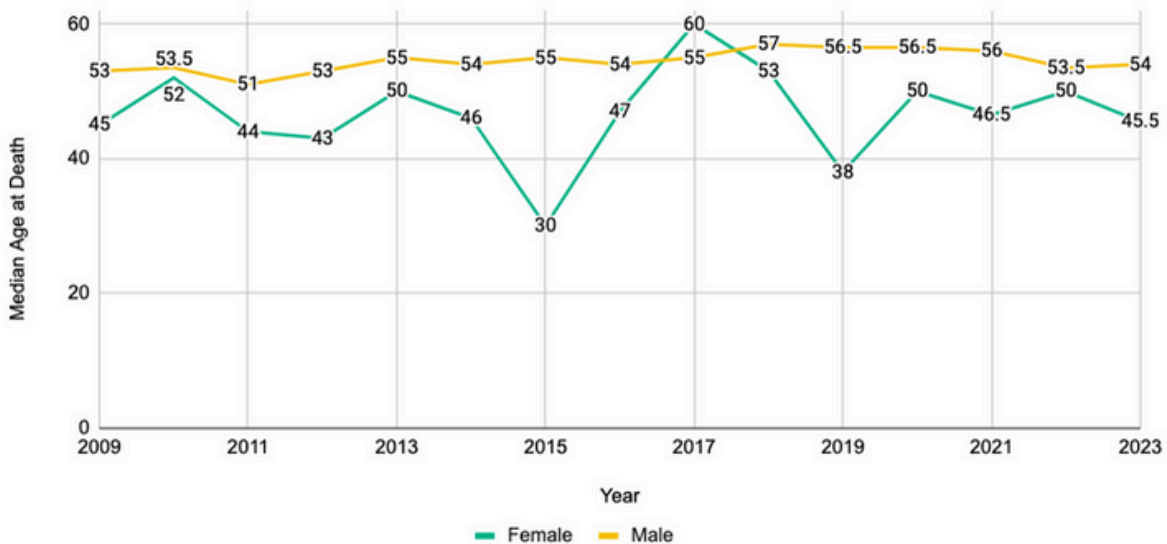


Figure 54 shows the median age at death by sex over time. When stratified by biological sex, the median age for female decedents is consistently lower than males and exhibits significant fluctuations, likely due to the small number of female decedents in the sample. In contrast, the median age of male decedents has remained relatively stable, averaging around 54.5 years since 2009.

Figure 55. Median age by manner of death over time

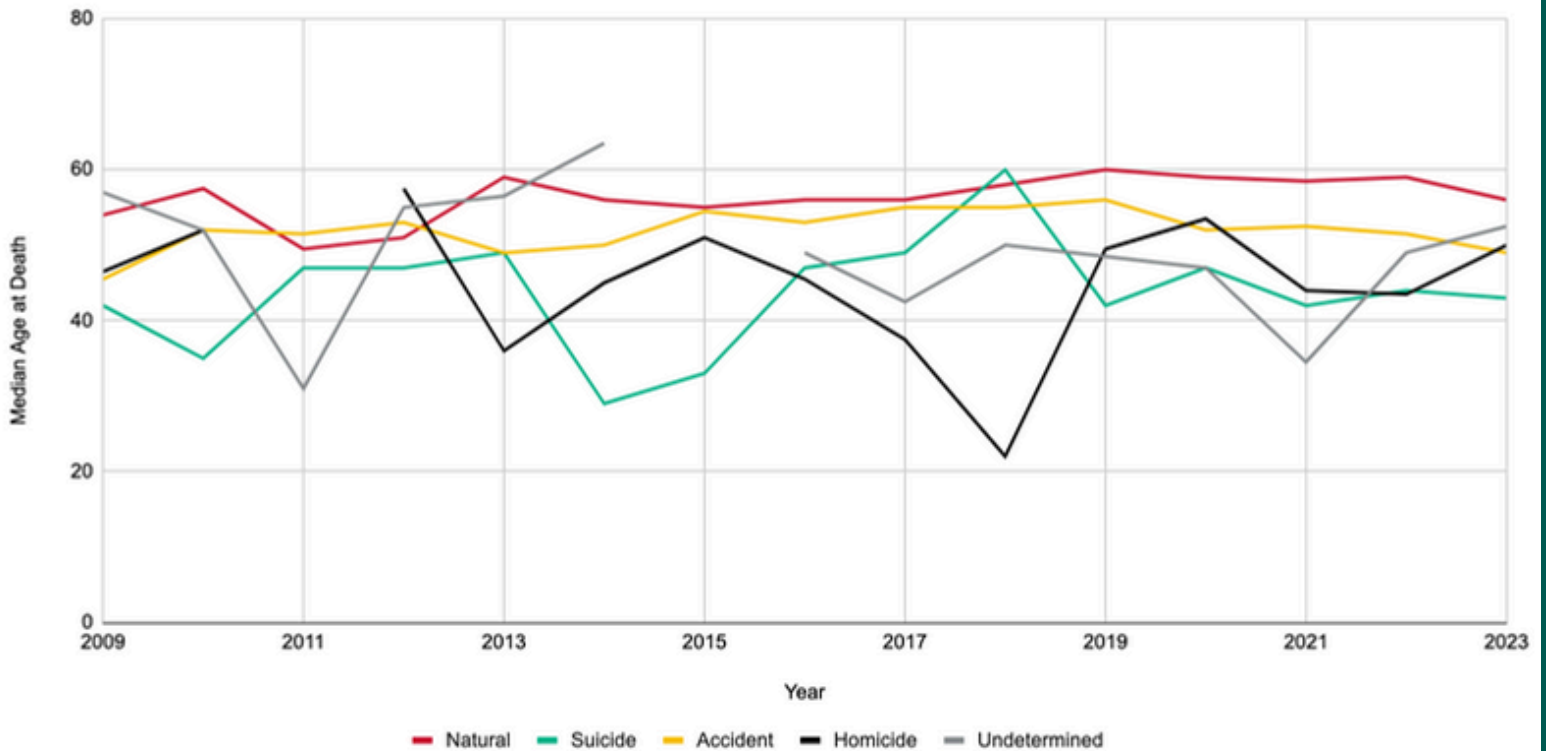


Figure 55 and Table 7 below display the median age at death among individuals experiencing homelessness, by each manner of death.

Overall, natural deaths consistently occurred at a higher median age compared to other manners of death. In contrast, suicides and homicides tended to occur at younger median ages. However, these findings show significant fluctuations due to the relatively low frequency of suicides and homicides, which can introduce variability in the data. The lower frequency of these causes of death may also make it difficult to draw definitive conclusions about age patterns for these specific causes. Nonetheless, the trends suggest that natural deaths tend to occur later in life, while suicides and homicides are more common among younger individuals experiencing homelessness.

Table 7. Median age by manner of death over time counts

Year	Manner of Death				
	Undetermined	Homicide	Accident	Suicide	Natural
2009	57	46.5	45.5	42	54
2010	52	52	52	35	57.5
2011	31		51.5	47	49.5
2012	55	57.5	53	47	51
2013	56.5	36	49	49	59
2014	63.5	45	50	29	56
2015		51	54.5	33	55
2016	49	45.5	53	47	56
2017	42.5	37.5	55	49	56
2018	50	22	55	60	58
2019	48.5	49.5	56	42	60
2020	47	53.5	52	47	59
2021	34.5	44	52.5	42	58.5
2022	49	43.5	51.5	44	59
2023	52.5	50	49	43	56

Figure 56. Median age by race/ethnicity over time

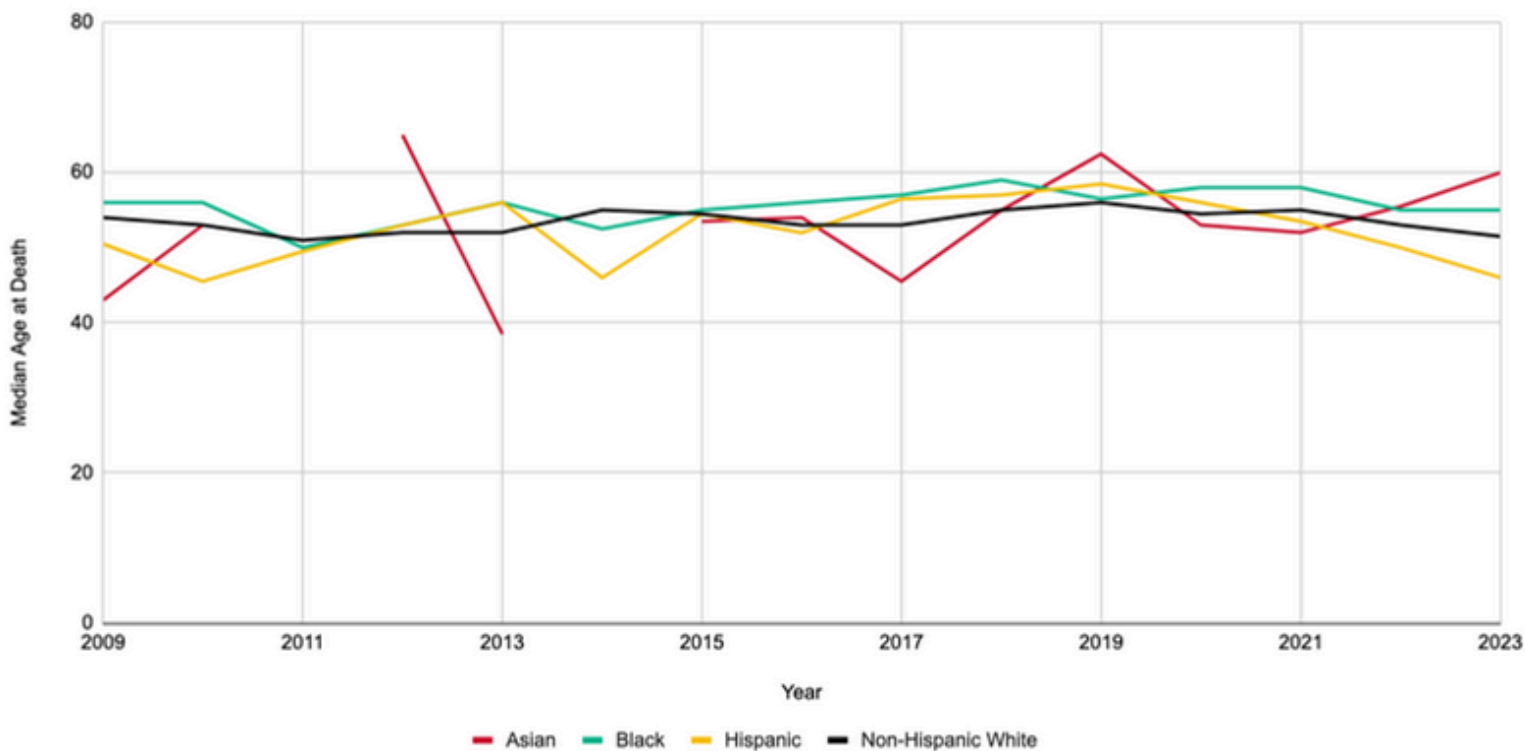


Figure 56 and Table 8 below display the median age at death among individuals experiencing homelessness, by race/ethnicity over time.

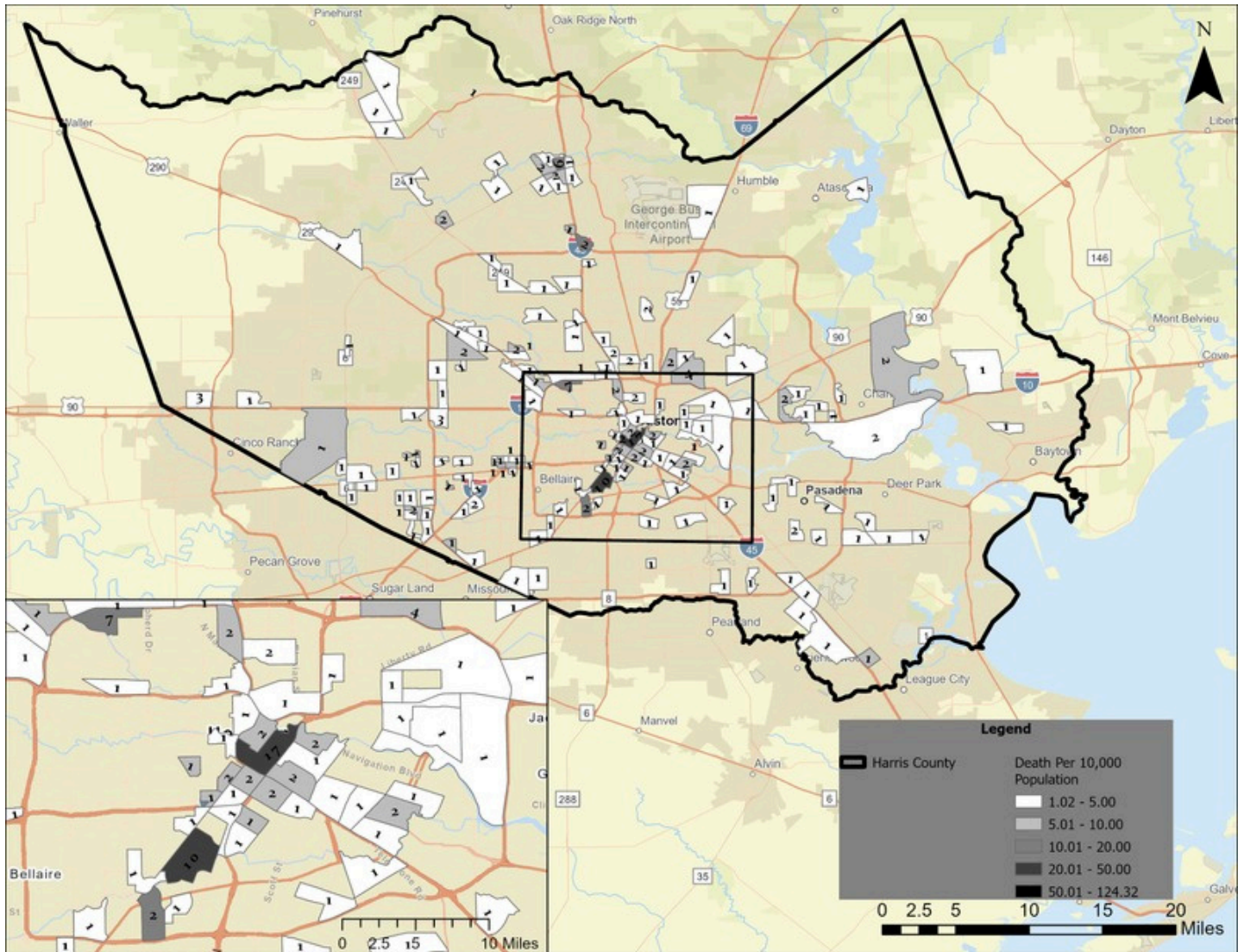
It can be observed that Black individuals generally have a higher median age at death compared to non-Hispanic White and Hispanic individuals experiencing homelessness. In contrast, the median age of Hispanic decedents has steadily declined since 2019, dropping from 58.5 years in 2019 to 46 years in 2023. The significant fluctuations in the median age at death for Asian decedents are primarily due to the consistently low number of deaths each year, which can lead to considerable variability in the data.

Table 8. Median age by race/ethnicity over time counts

Year	Race/Ethnicity			
	Asian	Black	Hispanic	Non-Hispanic White
2009	43	56	50.5	54
2010	53	56	45.5	53
2011		50	49.5	51
2012	65	53	53	52
2013	38.5	56	56	52
2014		52.5	46	55
2015	53.5	55	54.5	54.5
2016	54	56	52	53
2017	45.5	57	56.5	53
2018	55	59	57	55
2019	62.5	56.5	58.5	56
2020	53	58	56	54.5
2021	52	58	53.5	55
2022	55.5	55	50	53
2023	60	55	46	51.5

Maps

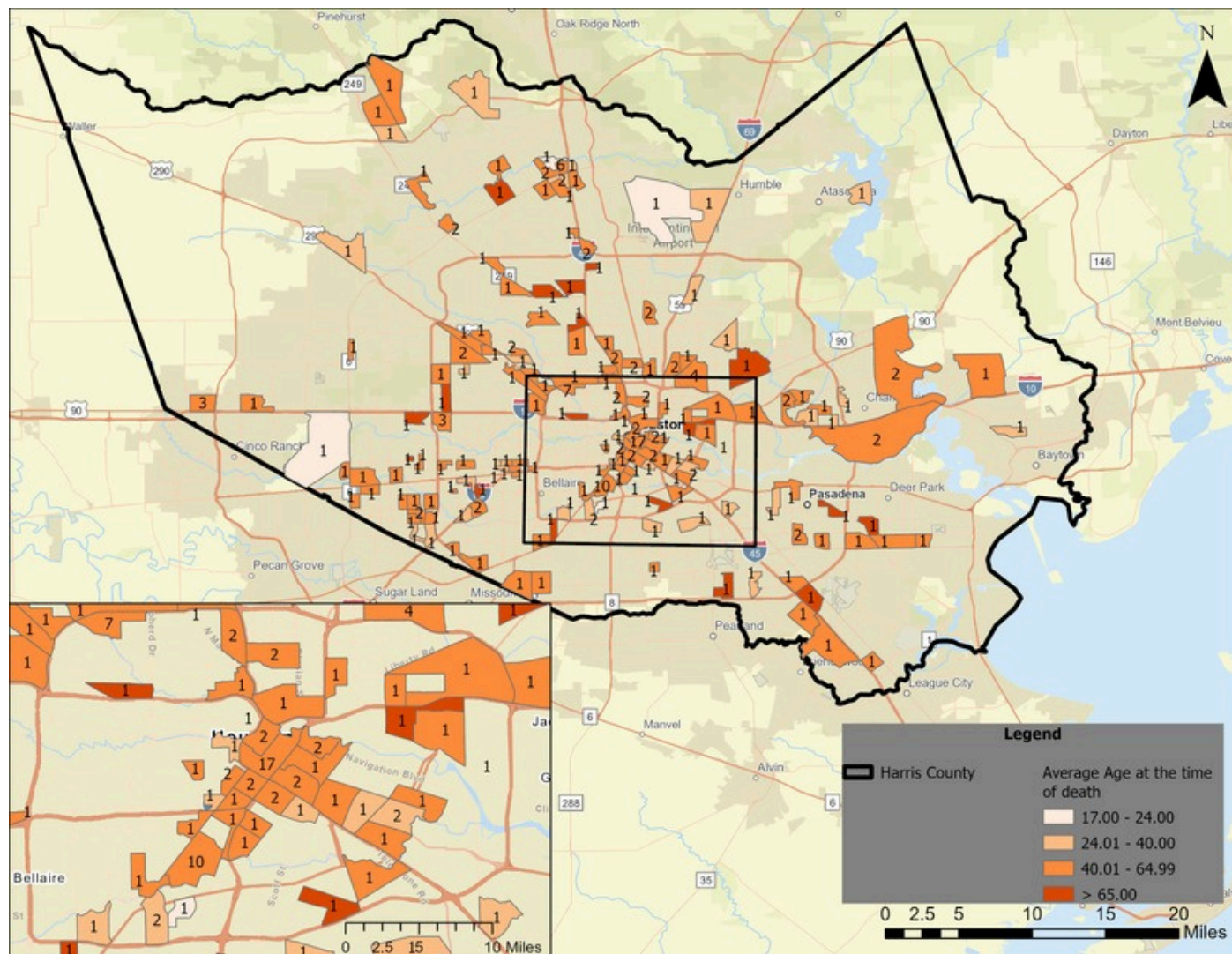
Figure 57. Geographic distribution of deaths among people experiencing homelessness in Harris County during 2023



The map above shows the geographic distribution of deaths among individuals experiencing homelessness by census tract in Harris County, highlighting the number of deaths in homelessness per 10,000 population.

The geographic distribution of deaths highlights that homeless mortality is observed throughout Harris County, albeit with the highest death rates per 10,000 population concentrated near the central areas, including downtown Houston and the Medical Center. The higher numbers of deaths in these regions may be attributed to the presence of major hospitals, which could contribute to higher visibility and reporting of cases, as well as the proximity to healthcare services that may serve individuals experiencing homelessness. Additional areas with higher than expected densities of deaths include the northwest corner of 610 and multiple tracts along north I-45 including the intersection with FM1960.

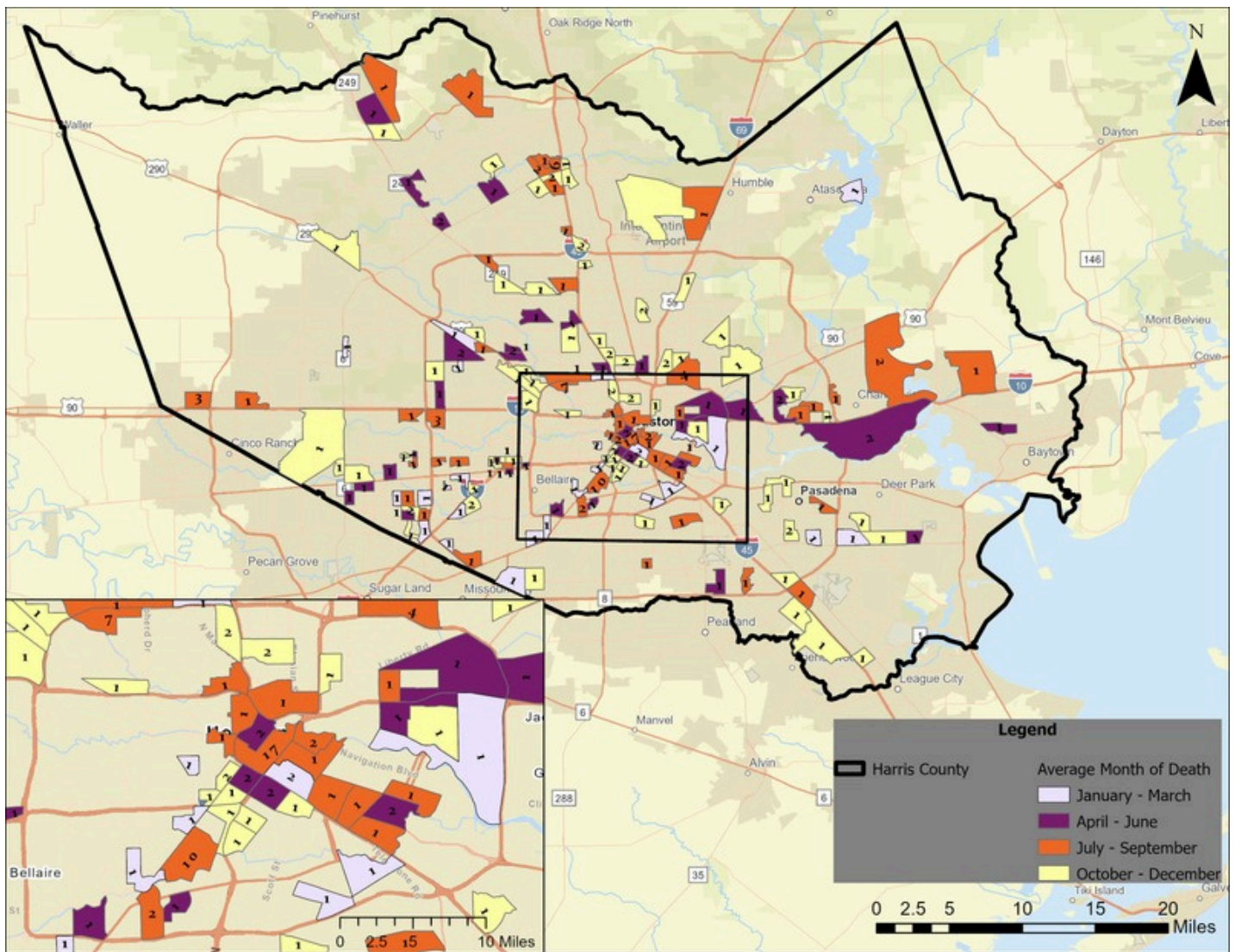
Figure 58. Geographic distribution of average age at death among people experiencing homelessness in Harris County during 2023



The figure above illustrates the geographic distribution of the average age at death among individuals who died while experiencing homelessness in Harris County.

In 2023, most deaths among persons experiencing homelessness occurred in the age range of 40.01 to 64.99 years, which is notably lower than the county-wide life expectancy of 78.9 years. Notably, the life expectancy between different ZIP codes across Harris county ranges widely from 69.8 years (77026) to 89.7 years (77073). Several factors may contribute to the premature aging of individuals who are unhoused, including chronic stress, substance use, mental illness, violence, trauma, lack of access to healthcare, and exposure to harmful environments. Homelessness can accelerate aging, placing individuals at a significantly higher risk of early mortality.

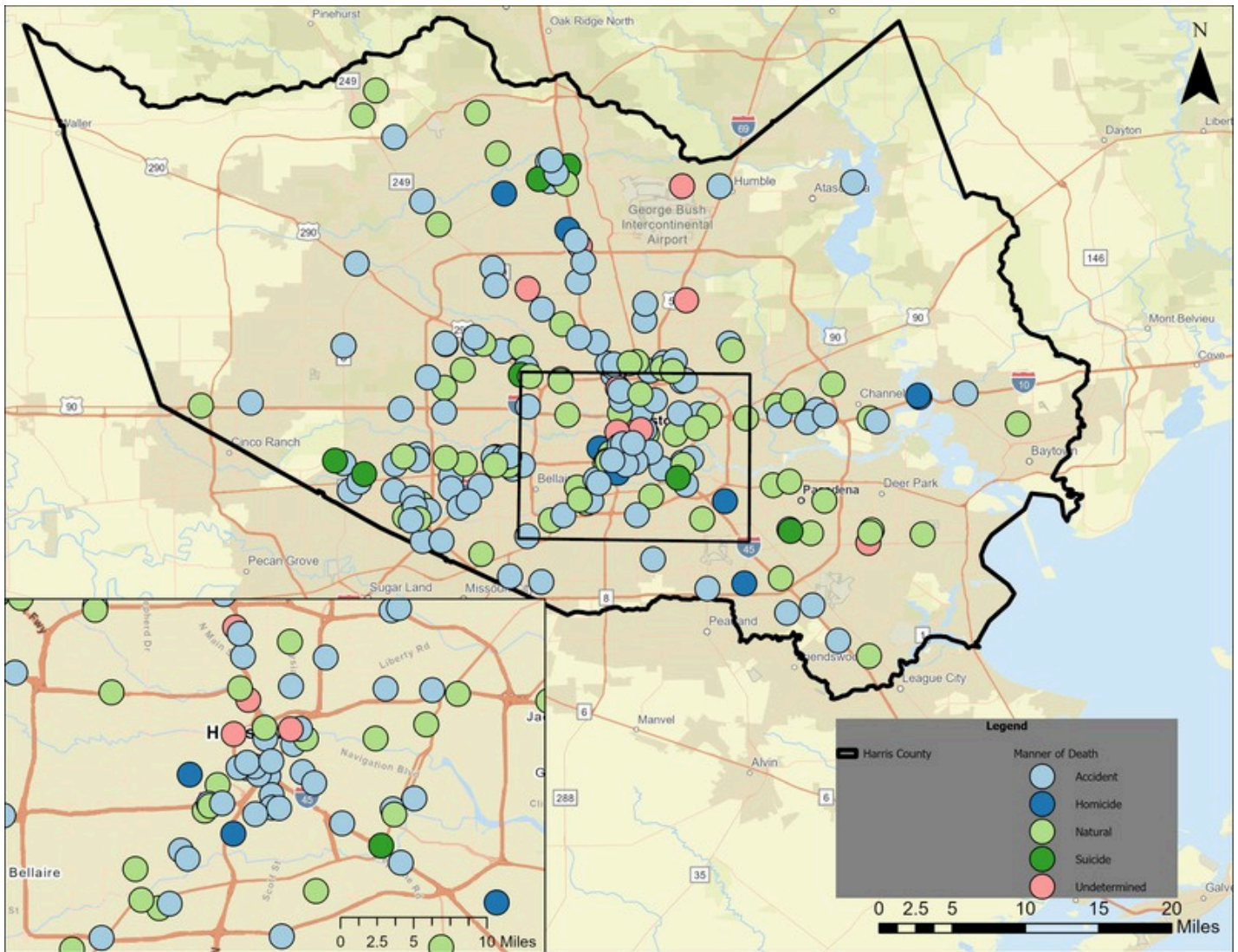
Figure 59. Geographic distribution of deaths by the average month within 2023, among people experiencing homelessness in Harris County during 2023



The map above illustrates the geographic distribution of the average month of death among individuals who died while experiencing homelessness in Harris County.

Mathematically speaking, the average months of deaths in homelessness would occur during the summer months. This is consistent with the observed average for most census tracts being from July through September (shown in orange). This also correlates with the overall death counts by month, which peaked in August, as shown in Figure 36. The higher mortality during these months could be attributed to the extreme heat experienced in the summer, which disproportionately affects individuals without shelter. However, there are also a few areas notable for winter (January-March) or fall (October-December) deaths instead.

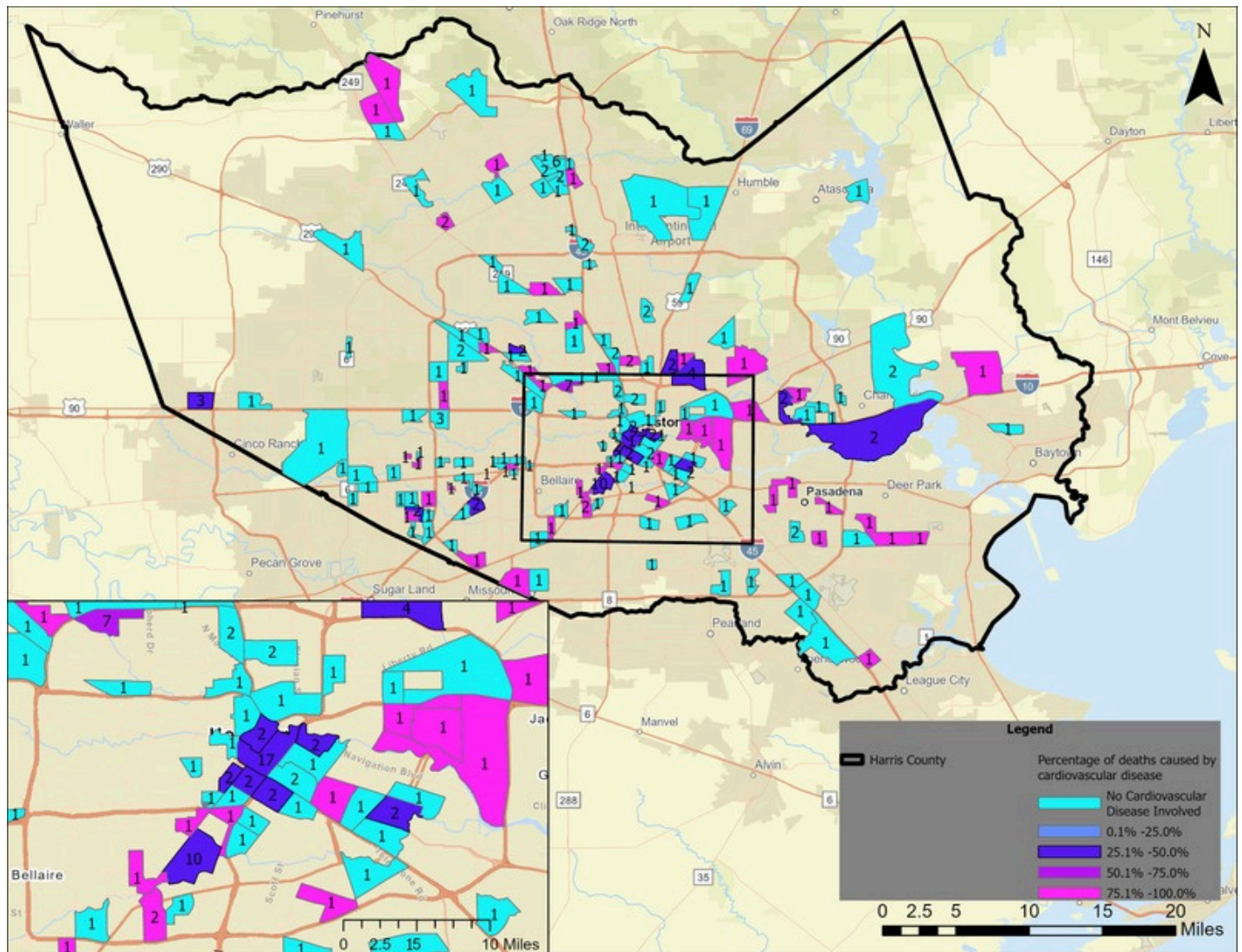
Figure 60. Geographic distribution of deaths among people experiencing homelessness by manner of death



The figure above illustrates the geographic distribution of deaths among individuals who died while experiencing homelessness in Harris County, categorized by manner of death.

In 2023, the majority of deaths among persons experiencing homelessness were classified as either accidental or natural. Regardless of the prevalence of each manner of death, the distribution appeared relatively even across Harris County. Notably, the limited number of suicide deaths were less common within the inner loop; however, this may be due to the overall low number of such cases rather than a specific geographic trend.

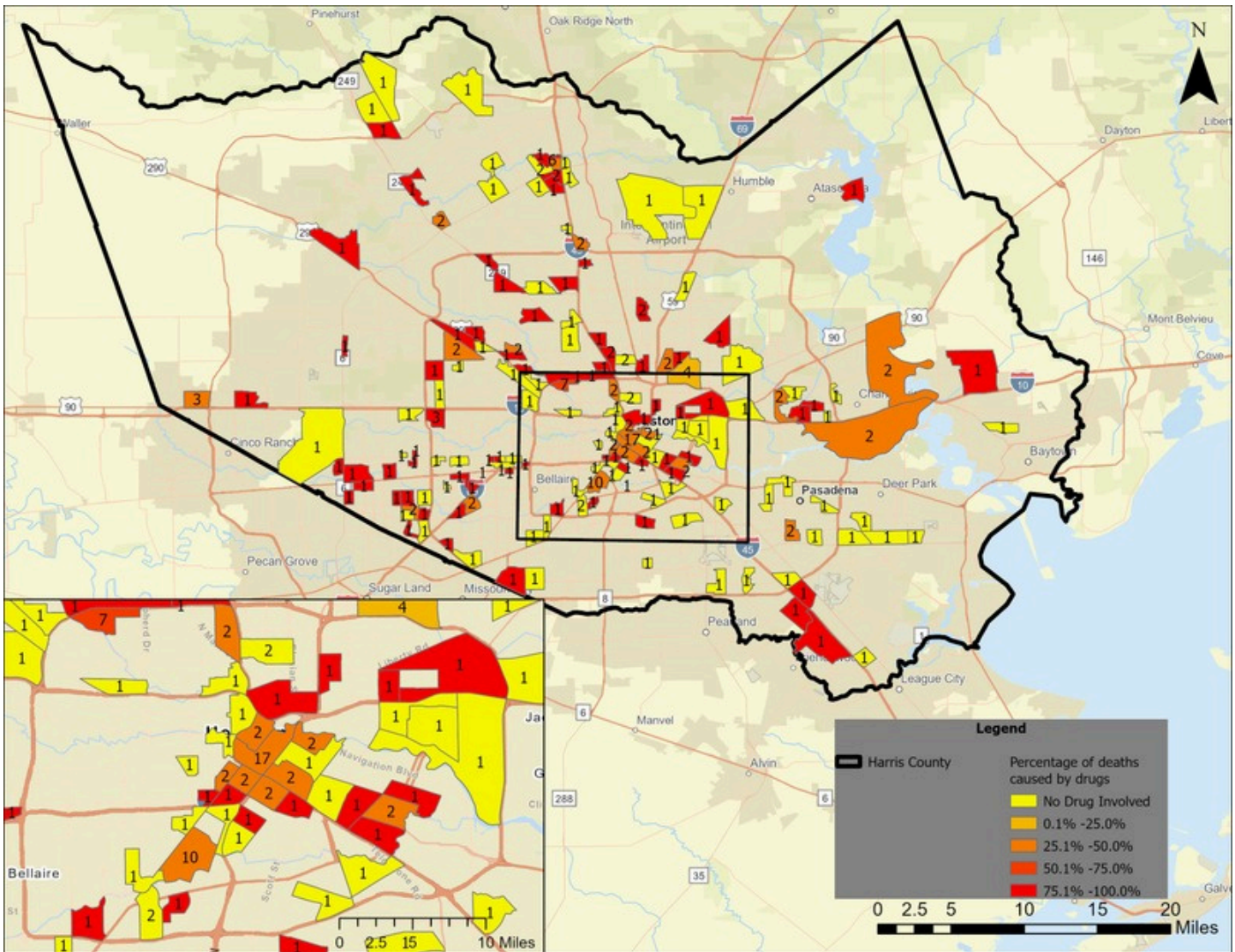
Figure 61. Geographic distribution of CVD deaths among people experiencing homelessness



The figure above depicts the geographic distribution of CVD deaths in homelessness in Harris County, highlighting the proportion of these deaths within the overall homeless mortality rate.

CVD-related deaths were prevalent throughout Harris County, with many census tracts reporting 100% of their recorded homeless deaths attributed to CVD. However, it is important to note that these tracts often had only one or two deaths. In areas with higher total mortality counts, the proportion of deaths attributed to CVD generally ranged from 25.1% to 50%, highlighting CVD as one of the most significant causes of mortality among people experiencing homelessness.

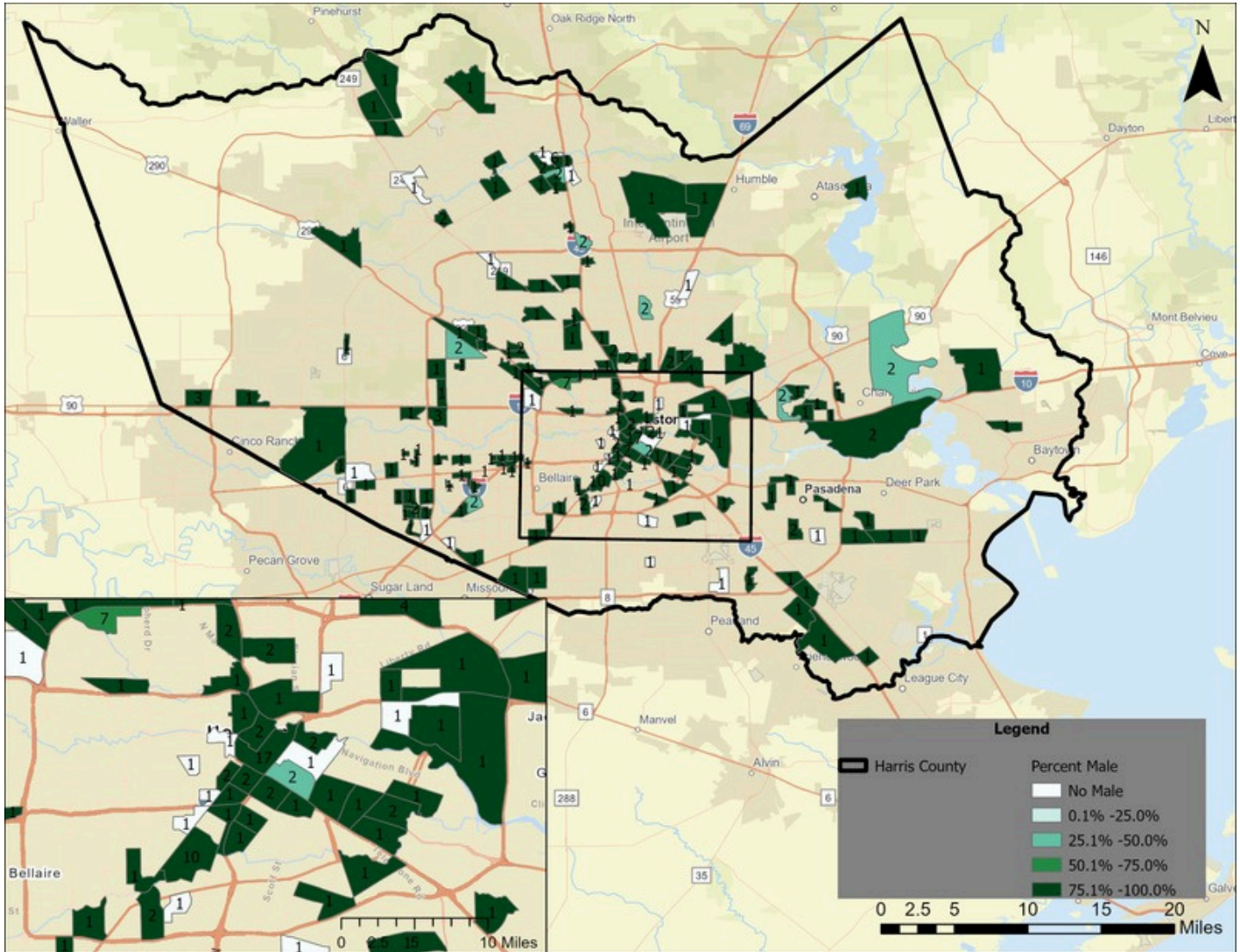
Figure 62. Geographic distribution of drug toxicity deaths among people experiencing homelessness in Harris County during 2023



The figure above shows the geographic distribution of drug toxicity deaths in homelessness in Harris County, highlighting the percentage of these deaths within the overall homeless mortality rate.

It can be observed that there is a geographically widespread distribution of drug toxicity deaths, with regions having higher death counts falling in the 25.1-50.0% range for deaths caused by drug toxicity. As was the case in 2021 and 2022, regions all across the county show partial death counts due to drug toxicity demonstrating the pervasiveness of substance use disorder and widespread accessibility to life-threatening substances. However, there appears to be some change in which regions have deaths due to drug toxicity from 2022 with some regions no longer having counts of drug-related deaths in 2023 which did in 2022, and other regions having counts of drug-related deaths in 2023 which did not have any in 2022. This highlights the difficulty of pinpointing areas for intervention and the need for more and more-decentralized prevention efforts since toxicity deaths are becoming more widespread.

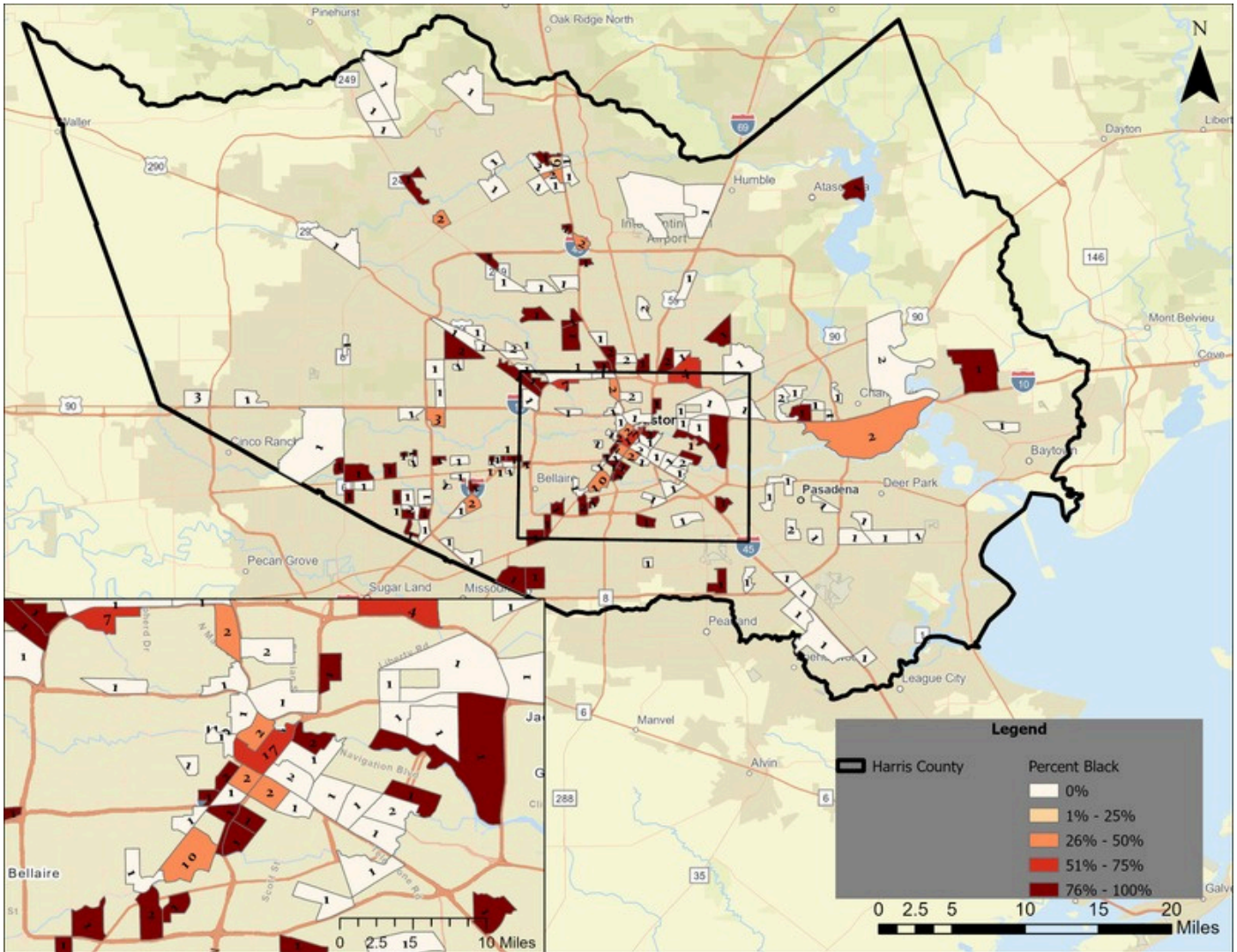
Figure 63. Geographic distribution of deaths among male individuals experiencing homelessness in Harris County during 2023



The map above shows the relative proportions of males and females across the geographic distribution of deaths in homelessness in Harris County.

The geographic distribution reinforces that deaths among individuals experiencing homelessness in Harris County were predominantly male, as represented in dark green. While there are a few census tracts with solely female deaths, this may be attributed to the significantly lower proportion of females both experiencing and dying in homelessness, as discussed earlier in this report.

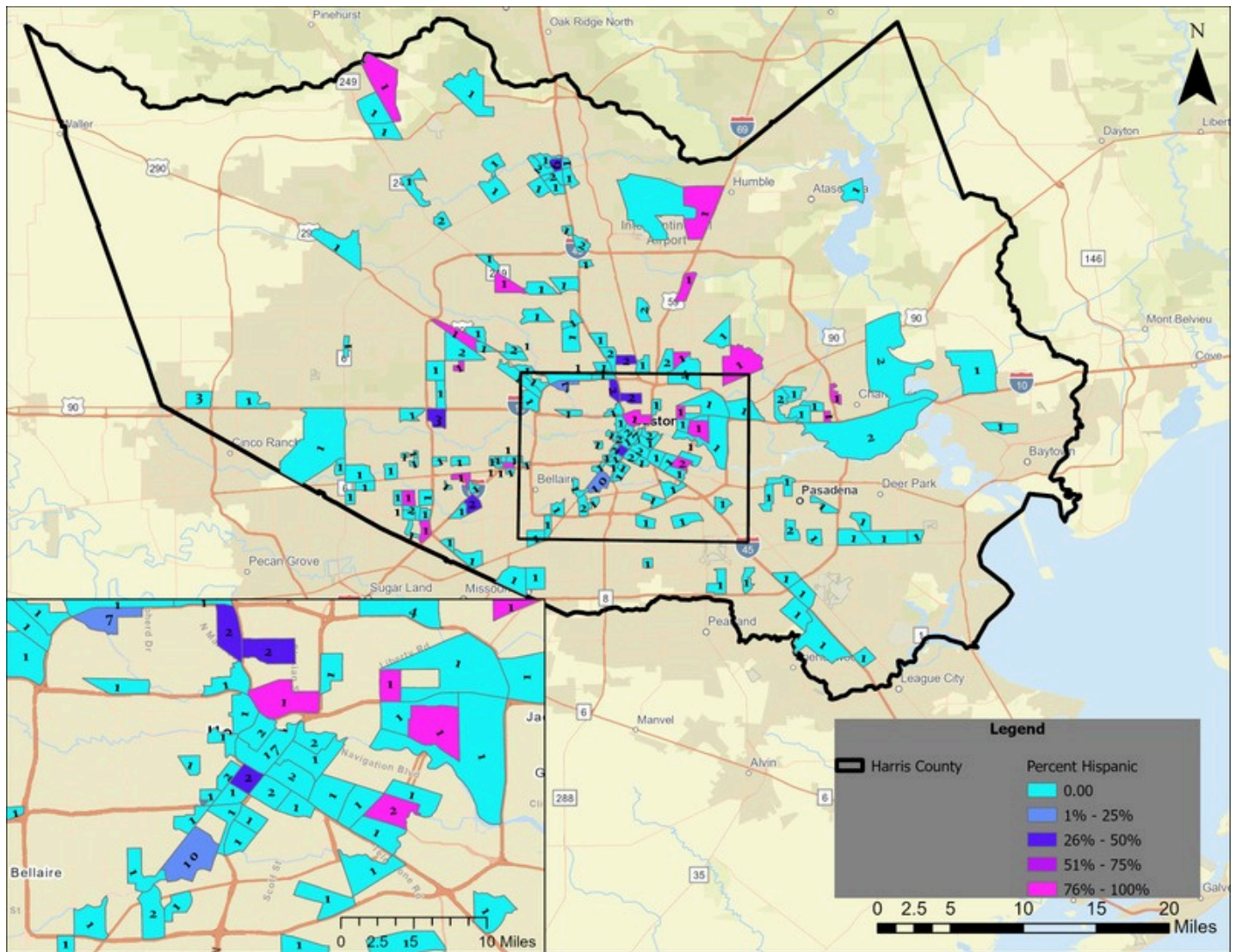
Figure 64. Geographic distribution of deaths among Black individuals experiencing homelessness in Harris County during 2023



The figure above illustrates the relative proportion of Black individuals within the geographic distribution of deaths in homelessness in Harris County, highlighting the percentage of these within the overall distribution of deaths in homelessness.

The map shows that a significant proportion of deaths among Black individuals experiencing homelessness are spread throughout the county, with possibly elevated concentrations in the southwest Houston region(s).

Figure 62. Geographic distribution of deaths among Hispanic individuals experiencing homelessness in Harris County during 2023



The figure above shows the relative proportion of Hispanic individuals within the geographic distribution of deaths associated with homelessness in Harris County, highlighting the percentage of these deaths within the overall homeless mortality distribution.

The map illustrates that Hispanic deaths in homelessness are fairly dispersed throughout the county. It is important to note that all but one of the census tracts where 100% of deaths in homelessness were Hispanic recorded only one death. Additionally, many tracts show 0% Hispanic deaths, which aligns with earlier findings in this report, noting that Hispanics make up only 12% of the total deaths in homelessness in the county.

REFERENCES

1. Troisi, C. (2024). *The Way Home Continuum of Care: 2024 Analysis of The Point-In-Time Count and Survey of People Experiencing Homelessness*. https://irp.cdn-website.com/8ccc955e/files/uploaded/Homeless_Count_2024_final.pdf
2. King, B., Attri, S., Nichols, R., Swamy, S., & Khorsandi, S. (2023). *Mortality Report (2022): Homelessness in Harris County*. <https://uh.edu/medicine/education/departments/health-systems-population-health-sciences/hspchs-documents/2022-harris-county-homelessness-mortality-report---pub-nov2023.pdf>
3. National Center for Health Statistics. (2024). *Drug Overdose Deaths in the United States, 2002–2022*. U.S. Department of Health & Human Services, Centers for Disease Control and Prevention. <https://www.cdc.gov/nchs/data/databriefs/db522.pdf>
4. Vaughan, A. S., Coronado, F., Casper, M., Loustalot, F., & Wright, J. S. (2022). County-Level Trends in Hypertension-Related Cardiovascular Disease Mortality-United States, 2000 to 2019. *Journal of the American Heart Association*, 11(7), e024785. <https://doi.org/10.1161/JAHA.121.024785>
5. Troisi, C. (2023). *The Way Home Continuum of Care: 2023 Homeless Count & Survey Analysis*. https://irp.cdn-website.com/2d521d2c/files/uploaded/Homeless%20Count%202023_full.pdf
6. U.S. Department of Housing and Urban Development. (2023). *The 2023 Annual Homeless Assessment Report (AHAR) to Congress*. Office of Policy Development and Research. <https://www.huduser.gov/portal/sites/default/files/pdf/2023-AHAR-Part-1.pdf>
7. U.S. Census Bureau. (2023). *QuickFacts: Harris County, Texas*. <https://www.census.gov/quickfacts/fact/table/harriscountytexas/PST045223>
8. Centers for Disease Control and Prevention. (n.d.). CDC wonder. Centers for Disease Control and Prevention. <https://wonder.cdc.gov/>
9. Villalpando, R. (2024, January 1). Heat dome, Harold and 100-degree days: A recap of 2023, Houston's hottest year, in five charts. Houston Chronicle. <http://www.houstonchronicle.com/news/houston-weather/article/2023-hottest-year-houston-weather-five-charts-18576554.php>



Tilman J. Fertitta Family
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