DEPARTMENT OF HEALTH

Minnesota Homeless Mortality Report, 2017-2021

A report for the Minnesota Department of Health Center of Excellence on Public Health and Homelessness
Prepared by the Health, Homelessness, & Criminal Justice Lab at Hennepin Healthcare Research Institute

January 2023

HEALTH HOMELESSNESS & CRIMINAL JUSTICE LAB

Minnesota Homeless Mortality Report, 2017-2021

Published: January 26, 2023, revised November 27, 2023

Minnesota Department of Health
Infectious Disease Epidemiology, Prevention and Control
Center of Excellence on Public Health and Homelessness
PO Box 64975, St. Paul, MN 55164
651-201-5414 or 1-877-676-5414
www.health.state.mn.us/communities/homeless/coe/

DEPARTMENT OF HEALTH

HEALTH HOMELESSNESS & CRIMINAL JUSTICE LAB

Contents

Executive summary ---- 1

Key findings ---- 1

Next steps ---- 1

Acknowledgements ---- 2

Background ---- 2

Methods ---- 3

Data sources ---- 3

Statistical analysis ---- 4

Results ---- 5

Table 1. Cohort demographics ... 5

Table 2. Unadjusted mortality rate (per 100,000 person years) ... 6

Table 3. Adjusted mortality rate (per 100,000 person years) ... 6

Table 4. Cause of death ... 7

Figure 1. Frequency and disparities among causes of death ... 8

Table 5. Substances in death data among deaths primarily attributed to substance use ... 9

Limitations ---- 10

Next steps ---- 11

Conclusion ---- 12

References ---- i

Executive summary

This report summarizes data from the first systematic examination of mortality among people experiencing homelessness (PEH) who die in Minnesota.

The Health, Homelessness, and Criminal Justice Lab at the Hennepin Healthcare Research Institute merged Minnesota state death data, Minnesota Homeless Management Information System data, and Minnesota population data from the Census to compare sociodemographic differences and causes of death among PEH and the general Minnesota population.

Key findings

- The rate of death is 3 times higher among people who experience homelessness (PEH) in Minnesota than the general population.
  - 20-year-olds experiencing homelessness in Minnesota have the same rate of death as 50-year-olds in the general population.
- Mortality across each racial and ethnic group is higher among PEH than in the general Minnesota population.
  - American Indian PEH have 1.5 times higher rates of death than other PEH and 5 times higher rates of death than the general Minnesota population.
- Deaths from substance use are 10 times higher among PEH than the general Minnesota population.
  - 1 in 10 substance use deaths in Minnesota are among PEH.
  - 1 in 3 of all deaths among PEH are caused by substance use, especially opioids including fentanyl.

Next steps

This report reveals the tragic and ongoing premature loss of life among people experiencing homelessness in our state.

The Minnesota Interagency Council on Homelessness should lead a coordinated, multi-sector, and action-oriented response that includes:

- Recognizing the ongoing and inequitable impact of homelessness on health and public health in Minnesota.
- Investing in cross-sector health and housing programs to address the high rates of mortality among PEH. People with lived experience of homelessness should be paid to design and lead development and delivery of these services. This will ensure services center on culture and community and the experiences of American Indian, Black, and other people of color.
- Advancing data infrastructure and analyses to drive accountability in addressing the health impacts of homelessness and housing instability.
- Elevating housing as a key life-saving strategy to prevent fatal opioid overdoses among PEH. This should include prioritizing integrated housing and treatment models for PEH in the Opioid Epidemic Response Advisory Council and Governor Walz's Opioids, Substance Use, and Addiction Subcabinet.

These actions can reduce the hundreds of preventable deaths among people experiencing homelessness in Minnesota each year.

Acknowledgements

This report was produced with support from the CDC Foundation as a product of the Center of Excellence on Public Health and Homelessness.

We acknowledge and appreciate the support of the Center's Advisory Committee made of people with lived experience, housing, health care, and public health service providers and leaders. We acknowledge the tremendous work and contributions of staff at the Health, Homelessness, & Criminal Justice Lab at Hennepin Healthcare Research Institute and the Minnesota Department of Health who completed this work. We thank the staff at the Institute for Community Alliances, the Homeless Management Information System (HMIS) lead and state system administrator for Minnesota, for their support with accessing and analyzing the HMIS data. We also want to thank staff from the Centers for Disease Control and Prevention (CDC) and the CDC Foundation whose input helped guide this work. We appreciate the advocacy and national conversation about homeless death data led by the National Health Care for the Homeless Council's Policy Committee.

Background

People experiencing homelessness (PEH) in Minnesota and beyond face increased risk and earlier onset of many health problems.[1,2] Homelessness creates tremendous barriers to the health care resources and the healthy environments needed to prevent or manage physical and behavioral health problems.[3,4] Homelessness and its health outcomes are the result of an overlap of system failures, stigma, and racism.

Structural racism and the failure of multiple systems in our society (health care, public health, housing, criminal justice, social/human services, and education) leaves Minnesotans of color at much higher risk for homelessness.[5] This makes homelessness a key social risk driving a variety of inequitable health outcomes (disparities) seen among Minnesotans of color.

In order to begin to address these inequities, we need to more clearly understand how and why PEH in Minnesota are experiencing the most severe health outcome—death—and how this compares to the general population. That is the goal of this report.

Data that can identify homelessness comes from different systems than health data. These systems were not built to work together (public health, health care delivery, shelter/housing, and social/human services). In this report, we merged housing and mortality data to better understand death among PEH in Minnesota.
We also discuss next steps to address the tragic disparities we identified.

Our specific objectives were to:

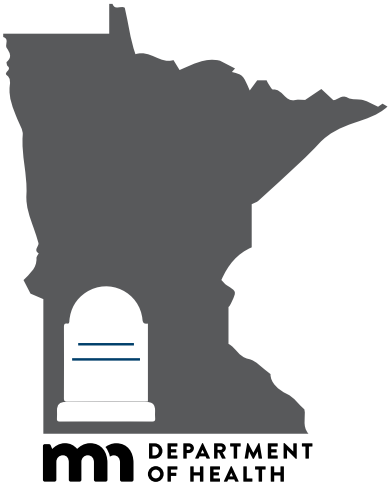
- Compare demographic characteristics of PEH to the Minnesota population.
- Describe unadjusted mortality rates by age and gender among PEH.
- Describe age- and gender-adjusted mortality rates among PEH overall, by race/ethnicity, and by geography.
- Compare causes of death among PEH to the Minnesota population in age- and gender-adjusted mortality rates.

Methods

Data sources

We examined data from all sources from Jan. 1, 2017, through Dec. 31, 2021. We used three data sources:

1. Minnesota death data



We examined data about all people who died while in Minnesota using death certificate data obtained from the Minnesota Department of Health's Office of Vital Records.[6]

2. Minnesota HMIS data

We defined people experiencing homelessness (PEH) in Minnesota as those who used homelessness services documented in Homelessness Management Information System (HMIS). This included use of street outreach services, shelter beds, rapid rehousing, coordinated entry, or transitional or permanent supportive housing.

3. Minnesota population data

We compared PEH to all Minnesota residents using estimates from the U.S. Census American Community Survey population average estimates from 2017-2020 (2021 data were not yet released, so we duplicated 2020 data).

We ensured each person was represented in our data only once across the three data sources (using one-way encrypted hash identifiers). We assigned individuals "at-risk years" calculated as the time between the beginning of their first observed homeless service use and either their date of death or the last date available in the data (Dec. 31, 2021). We considered participation in any portion of a year as participating in that full year. For example, if someone entered a homelessness service on Dec. 30, 2020, and died on Feb. 1, 2021, they were counted for two at-risk years.[7]

Diagnosis codes (ICD-10 codes) summarize health problems, including injuries and violence. These diagnosis codes are used by medical examiners and health care providers to identify causes of death in a death record. We grouped ICD-10 codes from death certificate data to create summary "cause of death" categories. We grouped ICD-10 categories based on similar prior work with PEH.[8,9] Death records list primary (underlying) and contributing causes of death. We focused on data defining the primary cause of death using the ICD-10 codes. Where substance use was listed as the primary cause of death, we looked at the specific substances involved via free text search of cause of death fields.

Race/ethnicity, age, and gender data for PEH came from Minnesota Homelessness Management Information System (HMIS) data. For the general population this data came from Minnesota Census population data. Demographic data for the general population who died in Minnesota came from Minnesota state death records.

To mirror the homeless data, data on the Minnesota population were combined over the five years, stratified by age and gender.

Statistical analysis

We calculated mortality rates per 100,000 person years for PEH and the general population. A person year is any year we could have known about a death for an individual if it occurred. Rates represented total deaths divided by total at-risk years. The homeless population's mortality rate included deaths for any PEH divided by total at-risk years for the homeless population. The general population's mortality rate included deaths in Minnesota divided by total at-risk years for the general Minnesota population.

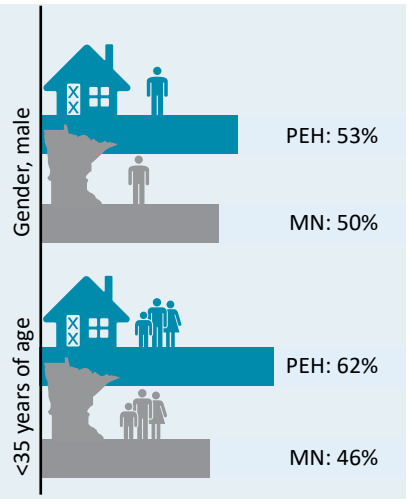
Because age and gender both impact mortality, we used indirect standardization[10] to age- and gender-adjust Minnesota values to match the HMIS age and gender distribution.

We compared the mortality rate for PEH and the general Minnesota population by dividing the mortality rate for PEH by the rate for the general Minnesota population across a variety of categories (Tables 3-5).

Results

People experiencing homelessness were overall younger and more male than the general population (Table 1).

Our data illustrates known racial inequities in homelessness: higher proportions of Black, American Indian, and Hispanic Minnesotans experience homelessness than other races. Close to 15% (14.8%) of PEH met the Housing and Urban Development (HUD) definition of chronically homeless (homeless for 12 months or more in the past three years).[11] Close to 40% (39.2%) of PEH self-reported disability during HMIS data intake. Over four percent (4.2%) of PEH were Veterans.[12] The majority of PEH used shelter beds (56%) and lived in Hennepin (29.9%) or Ramsey (17.3%) Counties.



PEH were younger and more male than the general population (Table 1).

Table 1. Cohort demographics

Category		PEH (n, %)	Minnesota (n, %)
Total		93,923	5,556,359
Gender	Male	49,745 (53.0)	2,766,145 (49.8)
	Female	43,224 (46.0)	2,790,214 (50.2)
	Other or unknown gender	954 (1.0)	n/a*
Age, at HMIS entry	Age (median)	28	38
	0-17	26,715 (28.4)	1,294,054 (23.3)
	18-24	13,557 (14.4)	499,918 (9.0)
	25-34	17,871 (19.0)	755,129 (13.6)
	35-44	14,507 (15.4)	700,183 (12.6)
	45-54	11,439 (12.2)	712,696 (12.8)
	55-64	7,960 (8.5)	742,312 (13.4)
	65-74	1,621 (1.7)	486,574 (8.8)
	75+	246 (0.3)	365,494 (6.6)
Race/ethnicity**	White	34,357 (36.6)	4,432,765 (79.8)
	Black or African American	31,416 (33.4)	344,546 (6.2)
	American Indian or Alaskan native	10,257 (10.9)	51,300 (0.9)
	Asian or Pacific Islander	1,478 (1.6)	265,638 (4.8)
	Hispanic	7,660 (8.2)	298,260 (5.4)
	Multirace	7,235 (7.7)	152,795 (2.7)
	Other or unknown race	1,520 (1.6)	11,054 (0.2)
Status, at entry	Disability	36,818 (39.2)	
	Veteran (ages 18+)	3,954 (4.2)	
	Chronically Homeless	13,861 (14.8)	
Service type, any use in given category	Coordinated Entry	40,249 (42.9)	
	Street/unsheltered	11,607 (12.4)	
	Shelter	52,921 (56.3)	
	Permanent supportive housing	37,731 (40.2)	
Continuum of Care (CoC) region, at entry	MN-500 Hennepin	28,105 (29.9)	
	MN-501 Ramsey	16,241 (17.3)	
	MN-509 St Louis	9,954 (10.6)	
	MN-503 SMAC (Twin Cities metro)	8,159 (8.7)	
	MN-505 Central	7,561 (8.1)	
	MN-502 Southeast	7,536 (8.0)	
	MN-506 Northwest	5,587 (5.9)	
	MN-508 West Central	5,023 (5.3)	
	MN-504 Northeast	2,926 (3.1)	
	MN-511 Southwest	2,831 (3.0)	

* HMIS captured self-reported gender identity of PEH while Census respondents selected their sex (male or female)
** All races are non-Hispanic unless indicated
ACS estimates do not include Status or Service Type variables and are unavailable by CoC region.

Table 2. Unadjusted mortality rate (per 100,000 person years)

Category		PEH	Minnesota
Overall		663.1	856.2
Gender	Male	852.3	877.2
	Female	453.9	835.3
Age, at entry	0-17	50.4	42.7
	18-24	257.2	73.6
	25-34	477.4	112.0
	35-44	812.9	163.7
	45-54	1,284.2	311.9
	55-64	2,087.6	727.4
	65-74	3,190.0	1,725.4
	75+	4,037.3	7,836.4

PEH person years calculated from date of first HMIS entry to date of death or 12/31/2021.

Table 3. Adjusted mortality rate (per 100,000 person years)

Category		PEH	Minnesota	Mortality rate ratio
Overall		663.1	217.9	3.0
Race/ethnicity	American Indian or Alaskan native, non-Hispanic	1,042.2	741.7	1.4
	Black or African American, non-Hispanic	550.6	378.2	1.5
	White, non-Hispanic	717.9	270.3	2.6
	Hispanic	411.9	154.6	2.7
	Asian or Pacific Islander, non-Hispanic	585.5	151.0	3.9
	Multirace	606.9	103.4	5.9
Continuum of Care (CoC) region, at entry	MN-504 Northeast	801.4		
	MN-505 Central	760.9		
	MN-500 Hennepin	737.0		
	MN-501 Ramsey	712.6		
	MN-506 Northwest	684.8		
	MN-509 St Louis	662.4		
	MN-503 SMAC	643.1		
	MN-502 Southeast	467.2		
	MN-508 West Central	339.9		
	MN-511 Southwest	226.0		

PEH person years calculated from date of first HMIS entry to date of death or 12/31/2021. HMIS and Minnesota values standardized to HMIS age and gender distribution. Other/unknown race redacted due to small numbers.

Unadjusted mortality rates highlight the differences in age and gender between PEH and the general Minnesota population (Table 2). This shows us that 20-year-olds experiencing homelessness in Minnesota have the same rate of death as 50-year-olds in the general population.

Age- and gender-adjusted comparisons show that the rate of death is three times higher among PEH in Minnesota than the general population (Table 3).

Mortality across each racial and ethnic group is higher among PEH than in the general Minnesota population. This is most stark among American Indian PEH who have substantially higher rates of death than other PEH and the general Minnesota population. Specifically, American Indian PEH have a mortality rate that is 1.5 times higher than PEH overall and 5 times higher than the general Minnesota population. Hispanic PEH had the lowest mortality rate, but this rate is still 2.7 times higher than the general Hispanic population in Minnesota.

Mortality rates varied among PEH by region (following the HMIS Continuum of Care regions[13]) with the highest rates in the Northeast, Central, and Hennepin and Ramsey County regions (Table 3).

Table 4. Cause of death

Category	All deaths, unadjusted		Adjusted mortality rates per 100,000 person years		
	PEH (n, %)	**Minnesota** (n, %)	**PEH**	**Minnesota**	**Mortality rate ratio***
All deaths	1,996	237,859	663.1	221.6	3.0
Chronic diseases, overall	721 (36.1)	130,439 (54.8)	239.5	107.7	2.2
Heart disease	245 (12.3)	41,876 (17.6)	81.4	28.5	2.9
Cancer	185 (9.3)	49,356 (20.8)	61.5	46.8	1.3
Liver disease	116 (5.8)	4,710 (2.0)	38.5	10.2	3.8
Cerebrovascular disease	29 (1.5)	11,445 (4.8)	9.6	5.7	1.7
Diabetes Mellitus	68 (3.4)	7,042 (3.0)	22.6	7.1	3.2
Kidney disease (nephritis)	11 (0.6)	2,666 (1.1)	3.7	1.5	2.5
Chronic lower respiratory disease	55 (2.8)	11,333 (4.8)	18.3	6.1	3.0
Metabolic disorders	12 (0.6)	2,011 (0.8)	4.0	1.9	2.1
Substance use-related, overall	733 (36.7)	8,734 (3.7)	243.5	28.8	8.4
Alcohol**	186 (9.3)	4,153 (1.7)	61.8	11.2	5.5
Other substances	547 (27.4)	4,581 (1.9)	181.7	17.6	10.3
External causes, overall	298 (15.0)	15,857 (6.7)	91.0	33.5	2.7
Anoxic Brain Injury	9 (0.5)	406 (0.2)	3.0	0.8	3.8
Suicide	84 (4.2)	3,733 (1.6)	27.9	13.6	2.1
Homicide	54 (2.7)	798 (0.3)	17.9	3.5	5.2
Transport accident	65 (3.3)	2,602 (1.1)	21.6	8.6	2.5
Pedestrian injured	24 (1.2)	326 (0.1)	8.0	1.0	7.7
Other accidents and trauma	62 (3.1)	8,318 (3.5)	20.6	7.2	2.9
Infectious disease, overall	102 (5.1)	14,709 (6.2)	33.9	11.5	2.9
Pneumonia or Influenza	12 (0.6)	2736 (1.2)	4.0	1.9	2.1
COVID-19†	61 (3.1)	9,415 (4.0)	50.2	17.7	2.8
Viral Hepatitis	6 (0.3)	228 (0.1)	2.0	0.4	4.6
HIV/AIDS	10 (0.5)	143 (0.1)	3.3	0.5	7.4
Sepsis	13 (0.7)	2,187 (0.9)	4.3	1.7	2.6

* Ratio of homeless mortality rate/general population mortality rate. Ratios above 1.0 indicate homeless population has a higher mortality rate than the general population

** Includes causes 100% attributable to alcohol. CDC: Alcohol-Related ICD Codes (www.cdc.gov/alcohol/ardi/alcohol-related-icd-codes.html)

† Restricted to 2020, 2021

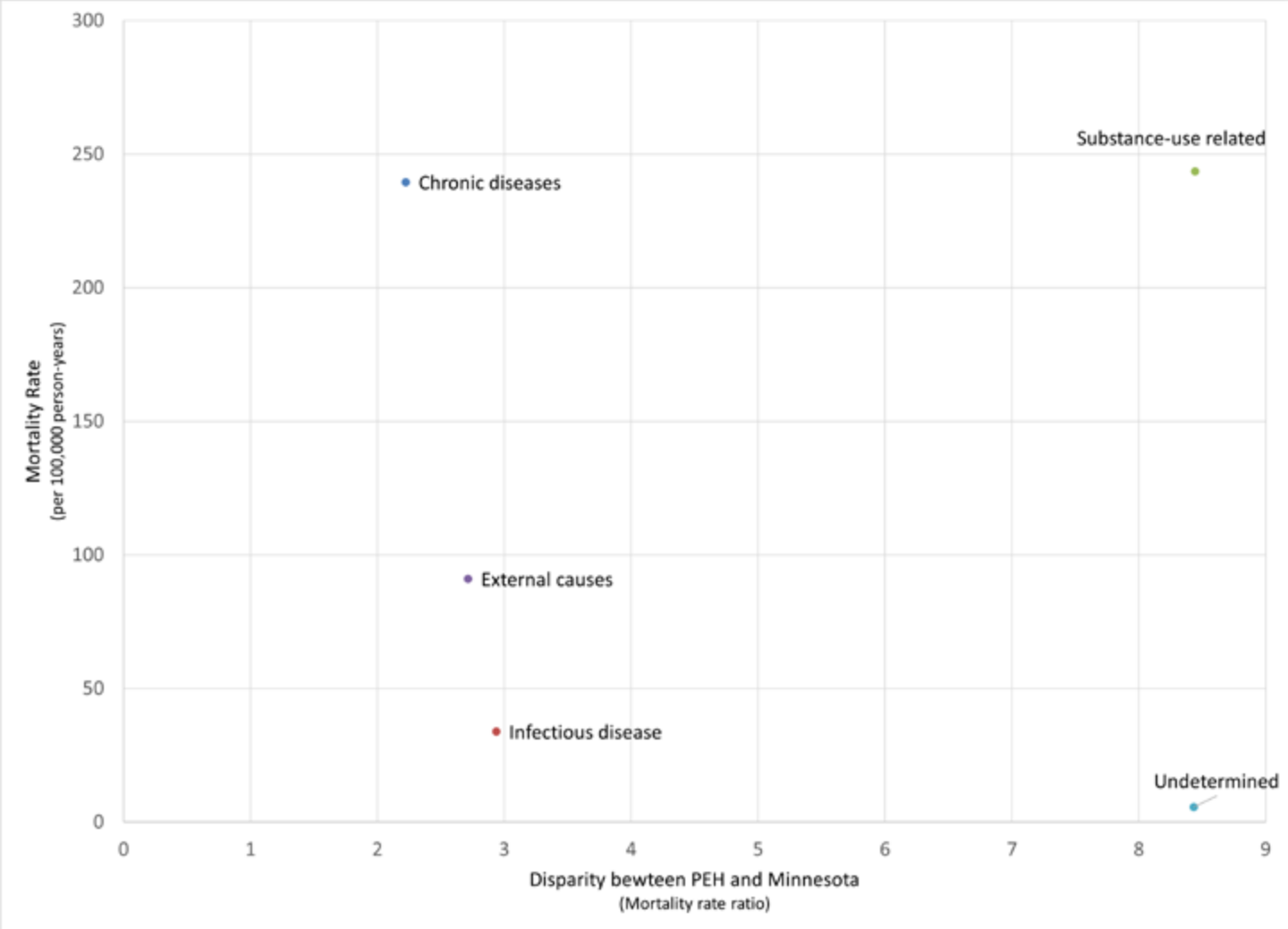
PEH person years calculated from date of first HMIS entry to date of death or 12/31/2021. Minnesota values standardized to HMIS age and gender distribution.

All causes of death were more common among PEH than the general Minnesota population, demonstrated by mortality rate ratios greater than 1.0 (Table 4). However, the frequency and disparities of different causes of death between PEH and the general Minnesota population varied substantially (Figure 1).

Chronic disease-related deaths made up over one-in-three deaths among PEH but over one-in-two deaths in the general Minnesota population. Top chronic diseases causing death included heart disease, cancer, liver disease (including from alcohol use and hepatitis), and diabetes. The largest disparities in chronic disease death rates were due to liver disease and diabetes which were three times higher among PEH than the general population (mortality rate ratios of 3.8 and 3.2, respectively).

Chronic disease-related deaths made up over one-in-three deaths among PEH but over one-in-two deaths in the general population (Table 4).

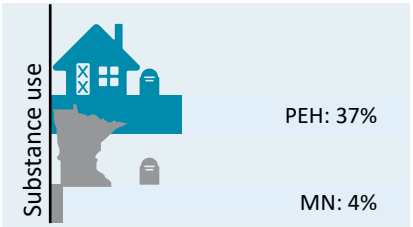
Figure 1. Frequency and disparities among causes of death



Substance use deaths were the most common cause of death among PEH accounting for one-in-three deaths among PEH, but less than one-in-ten deaths among the general population. Substance use deaths had the highest disparity with the non-alcohol-related substance use death rates more than 10 times higher among PEH than the general Minnesota population (mortality rate ratio of 10.3) (Table 4). Opioids were the most frequently noted substances causing death, especially fentanyl, both alone and in combination with other substances (Table 5).

Deaths due to external causes were less frequent and had varied disparity. However, all disparities in deaths due to external causes were substantially lower than non-alcohol substance use deaths. The most frequent causes of death in this area were suicide, transportation accidents, and other accidents. The highest disparities were in death rates due to pedestrian injuries which were nearly eight times higher for PEH (mortality rate ratio of 7.7) and homicides which were over five times higher for PEH (mortality rate ratio of 5.2).

Infectious disease-related deaths were the least frequent, making up just over 5% of all deaths among PEH. While COVID-19 was the most frequent cause of infectious death among PEH, HIV/AIDS death rates had the highest disparity.



Substance use deaths were the most common cause of death among PEH accounting for one-in-three deaths among PEH, but less than one-in-ten deaths among the general population (Table 4).

Substance use deaths had the highest disparity with the non-alcohol-related substance use death rates more than 10 times higher among PEH than the general population (Table 4).

Table 5. Substances in death data among deaths primarily attributed to substance use

Category	All deaths, unadjusted		Adjusted mortality rates per 100,000 person years		
	PEH (n, %)	**Minnesota** (n, %)	**PEH**	**Minnesota**	**Mortality rate ratio***
Substance use**	648	6,223	215.3	22.2	9.7
Alcohol	149 (7.5)	16,45 (0.7)	49.5	5.5	9.0
Alcohol + opioids	68 (3.4)	376 (0.2)	22.6	1.6	13.9
Opioids	354 (17.7)	2,473 (1.0)	117.6	10.6	11.1
Fentanyl	310 (15.5)	1,905 (0.8)	103.0	8.4	12.3
Other opioids	115 (5.8)	971 (0.4)	38.2	3.9	9.7
Methamphetamine	235 (11.8)	1,297 (0.5)	78.1	5.4	14.4
Meth + opioids	147 (7.4)	688 (0.3)	48.8	3.0	16.1
Cocaine	60 (3.0)	399 (0.2)	19.9	1.6	12.5
Cocaine + opioids	14 (0.7)	70 (0.0)	4.7	0.3	15.5

* Ratio of homeless mortality rate/general population mortality rate. Ratios above 1.0 indicate homeless population has a higher mortality rate than the general population

** Includes deaths due to illicit substances and alcohol-related deaths where alcohol codes were listed as the underlying cause of death (e.g., excludes some deaths due to chronic disease, such as liver disease)

Substances identified from text cause of death fields included in death records using key words. More than one substance may be listed for a cause of death so subcategories may not sum to the master category total.

Key findings

- The rate of death is 3 times higher among PEH than the general Minnesota population.
  - 20-year-olds experiencing homelessness in Minnesota have the same rate of death as 50-year-olds in the general population.

- Mortality across each racial and ethnic group is higher among PEH than in the general Minnesota population.
  - American Indian PEH have 1.5 times higher rates of death than other PEH and 5 times higher rates of death than the general Minnesota population.

- Deaths from substance use are 10 times higher among PEH than the general Minnesota population.
  - 1 in 10 substance use deaths in Minnesota are among PEH.
  - 1 in 3 of all deaths among PEH are caused by substance use, especially opioids including fentanyl.

Limitations

This analysis has notable limitations. First, not all PEH use HMIS. HMIS-users are likely systematically different (age, race, geography) and lower risk (less likely to stay outside) than non-HMIS-users in ways that have not been reliably measured to our knowledge.[14] This likely makes the estimates about the size and characteristics of PEH underestimates and leaves out important high-risk groups of PEH. While HMIS data contains data on non-binary gender, this is not a captured field in death data. Country of origin data is not captured reliably in any of these data sources. Changes to the structure of HMIS data in 2017 limit our ability to look back further in time. Death data we present focused on common causes of death for PEH from similar, prior work; we do not present comprehensive data on all causes of death. These common causes contain 93% of all deaths among PEH and 71% of deaths among the general Minnesota population. While data matching was successful at matching most people who were in both the HMIS and MDH death certificate data, due to variations in data records, it was impossible to match all PEH who died to a death record. For this reason, our results likely underestimate mortality among PEH.

Next steps

We conclude with next steps based on data.

The Minnesota Interagency Council on Homelessness should lead a coordinated, multi-sector, and action-oriented response that includes:

- Recognizing the ongoing and inequitable impact of homelessness on health and public health in Minnesota.
- Investing in cross-sector health and housing programs to address the high rates of mortality among PEH. People with lived experience of homelessness should be paid to design and lead development and delivery of these services. This will ensure services center on culture and community and the experiences of American Indian, Black, and other people of color.
- Advancing data infrastructure and analyses to drive accountability in addressing the health impacts of homelessness and housing instability.[25]
- Elevating housing as a key life-saving strategy to prevent fatal opioid overdoses among PEH. This should include prioritizing integrated housing and treatment models for PEH in the Opioid Epidemic Response Advisory Council and Governor Walz's Opioids, Substance Use, and Addiction Subcabinet.

These actions can reduce the hundreds of preventable deaths among people experiencing homelessness in Minnesota each year.

Conclusion

We found that PEH in Minnesota experienced substantially higher death rates compared to the general Minnesota population. Within every age group, the rate of death was higher among PEH. Mortality rates are higher in every racial/ethnic subgroup and for every cause of death among PEH compared to the general population. Stark disparities are seen most among American Indian PEH which far surpass the disparities in other racial/ethnic subgroups. Non-alcohol-related substance use is the most disparate cause of death, and this is seen most in opioid use alone or with other substances. **Taken together these data demonstrate a tragic pattern of ongoing premature loss of life among people who experience homelessness in Minnesota.**

Comparing our data is difficult because regular examination of death data among PEH is not common at the state or federal level. A recent national toolkit estimated homeless mortality reviews occur in 68 counties and cities.[15] Oregon and Maryland are the only states we know of that attempt a statewide assessment of mortality, but their approach differs substantially from ours centering on adding housing status to death records.[16,17] Maryland reports that substance use was the cause of death in 67% of cases in 2018-2019.11 Our data are similar to several studies done of PEH. For example, users of Boston's Health Care for the Homeless Program also had high rates of drug overdose.[3] Our mortality rate ratios comparing deaths between PEH and the general population related to alcohol (5.5, Table 4) and non-alcohol-related substances (10.3, Table 4) are comparable to those found among homeless and marginally housed people in Canada (alcohol: men 4.8, women 3.8; drug use: men 6.4, women 8.2).[18] We found deaths by suicide were twice as common among PEH compared to the general population (rate ratio of 2.1, Table 4) which is comparable to what was seen among Canadian men (rate ratio of 2.3)[12] and U.S. Veterans (hazard ratio of 2.7).[19]

Racial inequities among those who become homeless are known byproducts of structural racism in housing, education, economic opportunity, and more.[20] We see this in our data and in the persistently high rates of death among all racial and ethnic subgroups of PEH. We see particularly stark impacts on the American Indian community that parallel national mortality trends in this population around the same time.[21] Our findings demonstrate a continuation of the extreme disparities among the Minnesota American Indian population previously documented in the Advancing Health Equity in Minnesota: Report to the Legislature (2014).[22] Jackie Dionne, Director of American Indian Health at the Minnesota Department of Health, summarized the report in 2022: "We now know…that there are many factors that impact the health of populations, including systemic problems, structural racism, historical trauma, health behaviors, biological differences, and social determinants of health (poverty, employment, housing)—we would like to recognize that all of these factors are a part of the story of health in American Indian communities."[23]

We emphasize a few important pieces of context in interpreting these data.

- Adjusted data on the general population have been age- and gender-matched for comparison with PEH and should not be mistaken for general mortality trends.
- Substance use is a chronic disease that is often a response to historic trauma, poverty, and challenges across the lifespan and can be the result of homelessness, not the driver of homelessness.[24]

References

1 Geddes JR, Fazel S. Extreme health inequalities: mortality in homeless people. The Lancet. 2011;377(9784):2156-2157. doi: 10.1016/S0140-6736(11)60885-4

2 Brown RT, Evans JL, Valle K, Guzman D, Chen YH, Kushel MB. Factors Associated With Mortality Among Homeless Older Adults in California: The HOPE HOME Study. JAMA Internal Medicine. Published online August 29, 2022. doi:10.1001/jamainternmed.2022.3697

3 Gelberg L, Gallagher TC, Andersen RM, Koegel P. Competing priorities as a barrier to medical care among homeless adults in Los Angeles. Am J Public Health. 1997;87(2):217-220. doi:10.2105/AJPH.87.2.217

4 Gelberg L, Andersen RM, Leake BD. The Behavioral Model for Vulnerable Populations: application to medical care use and outcomes for homeless people. Health Serv Res. 2000;34(6):1273-1302.

5 Advancing Health Equity in Minnesota: Report to the Legislature. Feb. 1, 2014. https://www.health.state.mn.us/communities/equity/reports/ahe_leg_report_020114.pdf Accessed Oct. 10, 2022.

6 Vital records data for 2021 was preliminary as official records are delayed in their release.

7 This decision was because the population estimate data from the Census assumes each person is given one at risk year since we do not know when in a year someone was surveyed. This means the general population data does not truncate at risk years when people die. Therefore, to make an accurate comparison, we must do the same among PEH.

8 Baggett TP, Hwang SW, O'Connell JJ, et al. Mortality among homeless adults in Boston: shifts in causes of death over a 15-year period. JAMA Intern Med. 2013;173(3):189-195. doi:10.1001/jamainternmed.2013.1604

9 Stenius-Ayoade A, Haaramo P, Kautiainen H, Gissler M, Wahlbeck K, Eriksson JG. Mortality and causes of death among homeless in Finland: a 10-year follow-up study. J Epidemiol Community Health. 2017;71(9):841-848. doi:10.1136/jech-2017-209166

10 Naing NN. Easy Way to Learn Standardization : Direct and Indirect Methods. Malays J Med Sci. 2000;7(1):10-15.

11 Housing and Urban Development Exchange, Definition of Chronic Homelessness. Accessed September 13, 2022. https://www.hudexchange.info/homelessness-assistance/coc-esg-virtual-binders/coc-esg-homeless-eligibility/definition-of-chronic-homelessness

12 Comparisons between disability and Veteran status with the general population are not made here since HMIS data collection does not parallel data collection in the general population.

13 Minnesota Homeless Management Information System, CoC Regions. Accessed September 15, 2022. https://www.hmismn.org/coc-regions

14 Mosites E, Morris SB, Self J, Butler JC. Data Sources That Enumerate People Experiencing Homelessness in the United States: Opportunities and Challenges for Epidemiologic Research. American Journal of Epidemiology. 2021;190(11):2432-2436. doi:10.1093/aje/kwab051

15 Homeless Mortality Toolkit. National Health Care for the Homeless Council. Published December 14, 2020. Accessed September 15, 2022. https://nhchc.org/wp-content/uploads/2020/12/Homeless-Mortality-Toolkit-FULL-FINAL.pdf

16 Oregonian/OregonLive NH| T. Oregon death reports soon must note if the deceased was homeless. Oregonlive. Published June 9, 2021. Accessed September 15, 2022. https://www.oregonlive.com/portland/2021/06/oregon-death-reports-soon-must-note-if-the-deceased-was-homeless.html

17 2019 Annual Report on Homelessness. Accessed September 17, 2022. https://dhcd.maryland.gov/HomelessServices/Documents/2019AnnualReport.pdf

18 Hwang SW, Wilkins R, Tjepkema M, O'Campo PJ, Dunn JR. Mortality among residents of shelters, rooming houses, and hotels in Canada: 11 year follow-up study. BMJ. 2009;339:b4036. doi:10.1136/bmj.b4036

19 Schinka JA, Leventhal KC, Lapcevic WA, Casey R. Mortality and Cause of Death in Younger Homeless Veterans. Public Health Rep. 2018;133(2):177-181. doi:10.1177/0033354918755709

20 Minnesota Department of Health, Housing, Accessed September 15, 2022. https://www.health.state.mn.us/docs/communities/titlev/housing2021.pdf

21 Arias E, Ahmad FB. Provisional Life Expectancy Estimates for 202. :16. Vital Statistics Rapid Release. Accessed September 17, 2022. https://www.cdc.gov/nchs/data/vsrr/vsrr023.pdf

22 Minnesota Department of Health. Advancing Health Equity in Minnesota: Report to the Legislature. February 2014. https://www.health.state.mn.us/communities/equity/reports/ahe_leg_report_020114.pdf

23 Minnesota Department of Health. Social and economic factors: American Indian health status in Minnesota [30-year retrospective]. :11. Accessed September 15, 2022. https://www.health.state.mn.us/communities/equity/reports/maihsr02socioeconomic.pdf

24 Neale J. Homelessness amongst drug users: a double jeopardy explored. International Journal of Drug Policy. 2001;12(4):353-369. doi:10.1016/S0955-3959(01)00097-4

25 Adopted Definition of Housing, Racial, and Health Justice for People Experiencing Homelessness. Minnesota Interagency Council on Homelessness. Published June 10, 2022. Accessed September 17, 2022. https://mich.mn.gov/definition-housing-racial-and-health-justice-people-experiencing-homelessness-final-june-10-2022