

Mortality Rates and Causes of Death Among People Experiencing Homelessness in Los Angeles County: 2014-2021

May 2023



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Executive Summary

In October 2019, the Los Angeles (LA) County Department of Public Health (DPH) released its first comprehensive annual report on mortality rates and causes of death among people experiencing homelessness (PEH) in LA County. The report was accompanied by a set of recommendations for preventing and reducing mortality in this highly vulnerable population. The LA County Board of Supervisors (Board) tasked the Homeless Mortality Prevention Workgroup¹ with implementing the recommendations and reporting back to the Board quarterly on their progress. The second annual report (January 2021) was released at the height of the COVID-19 pandemic, and although it was still too soon to be able to report COVID-19 mortality rates, that report previewed partial data on 2020 COVID-19 deaths among PEH and included a new set of recommendations regarding COVID-19 mitigation strategies for sheltered and unsheltered PEH.

Because the pandemic prevented the carrying out of the January 2021 LA County point-in-time (PIT) homeless count, we were not able to update our mortality rate trends, so we focused our third report (April 2022) on a comparison of numbers and proportions of deaths and causes of death in the 12-month periods before and after the start of the pandemic. For the current fourth report (April 2023) we were able to use the January 2022 PIT count to continue our estimation of trends in all-cause and cause-specific mortality rates, along with comparisons by gender and race/ethnicity and comparison between the homeless population and the general LA County population.

After increasing by 29% from 2014 to 2019, the crude mortality rate among LA County PEH increased even more sharply--by 55%--from 2019 to 2021 (**Figure 1**). The primary driver of this recent increase was drug overdoses, which comprised 37% of all PEH deaths in 2020-21 combined and was the leading cause of death among men and women, all racial/ethnic groups, and all age groups under 60. The specific drug most responsible for this increase was fentanyl. Fentanyl's involvement in PEH overdose deaths almost tripled from 2019 to 2021 (**Figure 10**).

Demographic breakdowns revealed some interesting patterns. Both men and women and members of all racial/ethnic groups who died of overdoses saw similar increases in the involvement of fentanyl in those deaths (**Figure 11**). However, while age-adjusted overdose rates increased substantially across all racial/ethnic groups from 2019 to 2020, from 2020 to 2021 they began to level off among Latinx and Blacks, while continuing to increase precipitously among Whites (**Figure 4**). A similar pattern was seen by gender, with rates among both men and women increasing steadily through 2020 and then decreasing slightly among women from 2020 to 2021, while continuing to increase among men (**Figure 7**). The age groups with the

¹ Led by DPH in collaboration with the Departments of Health Services and Mental Health, the LA County CEO Homeless Initiative, and the Los Angeles Homeless Services Authority

highest overdose rates in 2020 and 2021 were 50-59 and 60-69 and the highest rate increase between those years was among those aged 70+ (**Figure 9**), perhaps due to the increased frailty of older PEH with existing health conditions.

The second leading cause of death among PEH in LA County continues to be coronary heart disease (CHD). CHD is usually the leading cause in the general population of LA County,¹ although PEH die from CHD at younger ages. The decrease in CHD mortality from 2020 to 2021 (**Figures 2, 5 and 8**) may be due to very high rates of overdose mortality in 2021 among PEH over 50, some of whom may have died from CHD had they not overdosed.

Transportation-related injury continues to be the third leading cause of death among PEH. The mortality rate from this cause increased by almost 50% from 2019 to 2021 and this was the cause of death for which the unhoused/housed mortality gap² widened the most from the pre- to post-pandemic period, followed by CHD (**Table 2**).

In contrast, while PEH mortality rates for drug overdose and homicide have increased markedly over the past several years (**Figure 2**), mortality rates for those causes in the general population appear to have kept close pace with rates among PEH (**Table 2**). So, the overall increase in the unhoused/housed mortality gap, from 2.9 to 3.8, was driven at least in part by a widening of the gap in transportation-related injury and CHD mortality. The COVID-19 pandemic may have contributed to the latter through reduced access to health care services, increased risk of worsening CHD among those who have had COVID-19, and increased tobacco, alcohol and other substance use due to the stress and isolation triggered by the pandemic.

Finally, COVID-19 itself had a considerable impact on PEH in LA County, with 789 recorded outbreaks in emergency shelters across the County in 2020 and 2021. While our estimate of the unhoused/housed mortality gap in 2020-21 due to COVID-19 was considerably lower than that for other causes of death (due at least in part to the targeted disease control and prevention resources that DPH devoted to this particularly vulnerable population), PEH were still approximately 80% more likely to die from COVID-19 than those in the general population.

In summary, the COVID-19 pandemic and the parallel rise in fentanyl trafficking brought widespread disruption and death to PEH in LA County and widened the gap in mortality between PEH and the general population. Both factors likely also had broader indirect effects on other causes of death, including CHD, transportation-related injury, and homicide.³ As we extend our analyses to 2022 and 2023, it will be important to track how these trends progress.

¹ The exception being 2021, when COVID-19 was the leading cause of death.

² The mortality rate among PEH divided by the mortality rate in the general population.

³ Car crash deaths have surged during the COVID-19 pandemic. *Los Angeles Times*, December 8th, 2021; During Covid-19, Road Fatalities Increased and Transit Ridership Dipped, U.S. Government Accountability Office. January 25th, 2022; Gun violence hits 15-year high in L.A., taking lives and erasing hard fought gains. *Los Angeles Times*. December 31st, 2021.

Introduction

With this report, we resume our annual surveillance of trends in mortality rates and causes of deaths among people experiencing homelessness (PEH) in LA County. Last year's report (2022) was modified in scope due to the COVID-related cancellation of the January 2021 point-in-time homeless count. Without an updated population count we could not update our mortality rate calculations so, instead, we focused that report on a comparison of the numbers and causes of deaths during the 12-month periods before and after the start of the COVID-19 pandemic.¹

In the current report we return to the format of our January 2021 report.² Whereas that report included data on PEH mortality rates through 2019, the current report includes mortality data through 2021, although we use data from the January 2022 point-in-time (PIT) count for our mortality rate calculations (see methods below). We intend to release all future reports in January. Thus, the January 2024 report will include additional PEH mortality data through 2022 and will use the results of the January 2023 PIT count for rate calculations.

The data presented in this report are as follows:

- 1) Trends in all-cause PEH death counts and mortality rates: 2014-2021
- 2) Demographic data on leading causes of PEH deaths: 2020-2021 combined
- 3) Trends in cause-specific mortality rates for leading causes of PEH deaths: 2014-2021
- 4) Age-adjusted trends in all-cause and cause-specific PEH mortality rates by race/ethnicity and gender: 2020-2021 and 2017-2021
- 5) Trends in overdose mortality rates among PEH, by age group: 2020-2021
- 6) Trends in the types of drugs involved in PEH overdose deaths: 2018-2021
- 7) Trends in fentanyl involvement in overdose deaths, by gender and race/ethnicity: 2018-2022
- 8) Comparisons of all-cause and cause-specific mortality rates between PEH and the general LA County population: 2020-2021 combined.

After the presentation of findings, we offer some conclusions followed by an updated set of recommended actions from the LA County Homeless Mortality Prevention Workgroup.

¹ Los Angeles County Department of Public Health, Center for Health Impact Evaluation. Mortality Among People Experiencing Homelessness in LA County One Year Before and After the COVID-19 Pandemic. April 2022.

² Results of the 2021 report were published in the American Journal of Public Health: Nicholas W, Greenwell L, Henwood BF, Simon P. Using Point-in-Time Homeless Counts to Monitor Mortality Trends Among People Experiencing Homelessness in Los Angeles County, California, 2015-2019. *Am J Public Health*. 2021 Dec;111(12):2212-2222.

Methods

PEH Deaths and Population Denominators

Calculating annual homeless mortality rates requires estimates of the number of PEH who die each year and the total population of PEH each year. Most deaths among PEH are investigated by the Medical Examiner-Coroner (MEC).¹ To identify the latter, MEC-investigated deaths coded as homeless/indigent were augmented through systematic text-based analyses of remaining MEC case records. Those remaining cases with emergency shelter or transitional housing facility addresses² in one or more address fields were added to the homeless death count. In addition, cases with homelessness-related key words³ in any of the text-based descriptive fields were independently reviewed by two analysts using Department of Housing and Urban Development (HUD) homelessness criteria.⁴ Those cases meeting these criteria were also added to the homeless death count. To identify homeless deaths not investigated by the MEC, MEC records were matched to state death certificate data and the address fields in the latter were systematically searched for entries suggesting homelessness.⁵ Cases identified as PEH solely based on data from death certificates were added to the count of PEH deaths from the review of MEC data alone.

The average of two consecutive January point-in-time (PIT) homeless counts was used to estimate mid-year homeless population denominators for annual rate calculations.⁶ Because no PIT count was conducted in January 2021, results of the 2022 PIT count were used as a proxy for 2021.⁷

Causes of Death

Causes of death were determined using the International Classification of Disease (ICD-10) cause of death code in the underlying cause of death field from state death certificates. This code was captured for all MEC cases identified as homeless that matched with state death records, as well as all additional state death certificates with evidence of homelessness in the decedent's residential address field.

¹ The MEC investigates all violent, sudden, or unusual deaths; unattended deaths; and deaths where the deceased does not have a physician (Govt. Code, § 27491)

² Shelter and transitional housing addresses were obtained from the latest HUD mandated Housing Inventory Counts from the Los Angeles, Long Beach, Pasadena, and Glendale homeless services authorities, and augmented with more recent data on facilities not included in those counts.

³ Key words included: homeless, transient, shelter, lives in van, lives in car, lives in vehicle, no fixed abode, no known residence, tent, encampment, indigent, skid row, vagrant, shed, Room Key, HomeKey, PEH, and institution.

⁴https://files.hudexchange.info/resources/documents/HomelessDefinition_RecordkeepingRequirementsandCriteria.pdf

⁵ In addition to homeless key words and emergency shelter/transitional housing addresses, state death certificate address fields were also searched for location descriptions consistent with instructions provided by the state to local registrars on how to code the address field for homeless decedents.

⁶ The annual point in time homeless count is conducted by the Los Angeles Homeless Services Authority (LAHSA). Assuming the count would not fluctuate greatly from week to week over the course of a year, the PIT count-based mid-year population estimates used for these analyses are reasonable and useful for comparing mortality rates over time.

⁷ Rather than assuming a more gradual increase in homelessness from for 2020 to 2022, we assumed the COVID-19 pandemic was impacting homelessness significantly by January 2021, which was the deadliest month of the pandemic in LA County: http://dashboard.publichealth.lacounty.gov/covid19_surveillance_dashboard/

Comparing Mortality Rates Among PEH Sub-Groups and Between PEH and the General Population (2017-21)

Using PEH demographic survey data collected in conjunction with the annual PIT count, we compared age-adjusted trends in all-cause and cause-specific PEH mortality rates by race/ethnicity and gender.¹ The 2010 LA County population was used as the standard population for the calculation of these age-adjusted mortality rates.²

Age and gender-adjusted mortality rate ratios (MRRs) were calculated to compare all-cause and cause-specific mortality rates among PEH to those in the general LA County population for the combined years of 2020-21. Data on 2020-21 LA County population demographics were obtained from Hedderson Demographic Services, and data on 2020-21 LA County deaths were obtained from Los Angeles County Linked and Provisional Linked Death Data.³ Mortality rate ratios (MRRs) were calculated by dividing directly adjusted rates for PEH by those for the general LA County population. The 2010 LA County population was used as the standard population for age and gender adjustment.

Drug Type Analysis for Overdose Deaths (2018-21)

To determine the types of drugs that contributed to overdose deaths, a text-based analysis was performed using cause of death, contributing cause of death, and description of injury fields from the MEC and state death records of PEH whose ICD-10 code for underlying cause of death was drug/alcohol overdose. This analysis was based on a methodology developed and published by epidemiologists at the Food and Drug Administration and the National Center for Health Statistics.⁴ Any type of drug mentioned as a primary or contributing cause of death is deemed to be a contributing factor for that death, and multiple drugs can contribute to the same death. Using this methodology, each drug type was ranked according to the percentage of deaths to which it contributed in a mention-level analysis (i.e., in which the units were person-mentions). Drug combinations were also examined at the individual level. These analyses were performed for PEH overdose deaths from 2018-2021.

¹ Demographic estimates are available only for the Los Angeles Continuum of Care which excludes Long Beach, Glendale, and Pasadena. To produce countywide estimates, we assumed that the age, gender, and racial/ethnic makeup of the PEH populations in those three cities was the same as that of the rest of LA County.

² Age adjustment of 2017-19 rates had to be performed using the non-standard age groupings available from LAHSA's annual PEH demographic survey: <18; 18-24; 25-54; 55-61; and 62+. In 2020 and 2022 a more flexible set of age groupings were produced which allowed us to use standard 10-year age groupings: <18; 18-29; 30-39; 40-49; 50-59; 60-69; and 70+. Thus, age-adjusted rates for 2017-19 are not directly comparable to those for 2020-21. When we adjusted the 2020-21 mortality rates using the non-standard age groups, all-cause (-6%) CHD (-9%), COVID-19 (-18%), and transportation-related injury (-9%) MRRs decreased slightly, but overdose, homicide and suicide MRRs remained virtually unchanged (<5% difference).

³ These mortality data sets are created by the LA County Department of Public Health. Data for 2020 and 2021 are provisional because they do not yet include out of state deaths for LA County residents.

⁴ Trinidad J, et al. Using Literal Text from the Death Certificate to Enhance Mortality Statistics: Characterizing Drug Involvement in Deaths. *National Vital Statistics Reports*. 2016; 65 (9): 1-14.

Results

Mortality Trends and Leading Causes of Death

The number of deaths among PEH increased each year from 658 in 2014 to 2,201 in 2021 (Figure 1).¹ The all-cause crude mortality rate, which accounts for increases in the total homeless population over that eight-year period, also increased each year, from 1,596 per 100,000 in 2014 to 3,183 per 100,000 in 2021. After steady but more gradual increases in the numbers of deaths and mortality rates from 2014 to 2019, both indicators began increasing dramatically beginning in 2020, with the mortality rate increasing by 55% between 2019 and 2021.

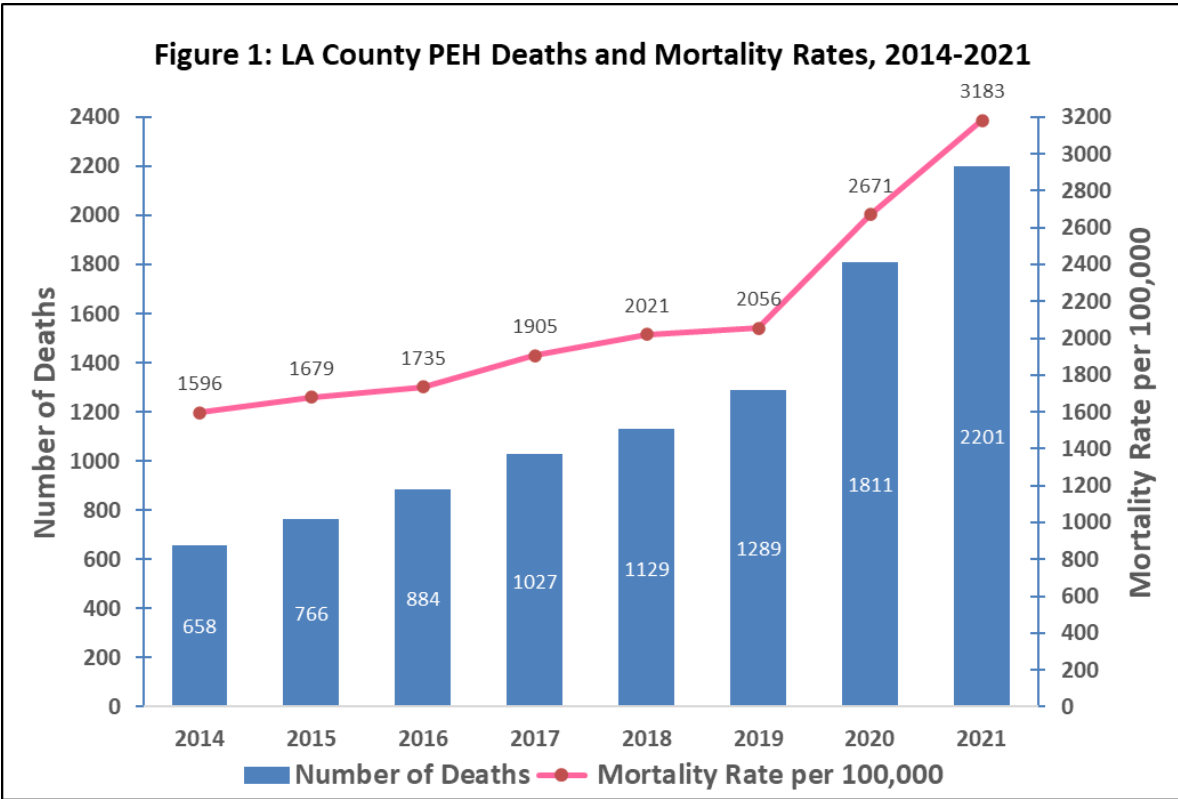


Table 1 shows the top eight causes of death among PEH in 2020-2021 combined. Together, these eight causes accounted for 78% of all PEH deaths in those years. By comparison, the top eight causes of death in the general population in 2020 accounted for only 53% of deaths,² suggesting that deaths among PEH are more concentrated among a smaller group of causes. Alcohol and other drug (AOD) overdose was the leading cause of PEH deaths in 2020-21,

¹ Please note that the numbers have increase slightly compared to previous years' reports due to the continuous updating of state death records and the identification of additional PEH deaths through a more exhaustive list of shelter and transitional housing addresses and search terms applied across all years and data sources.

² Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology. Mortality in Los Angeles County, 2020: Provisional Report.

accounting for 37% of all deaths. Overdose was the leading cause of death among males (36%), and females (40%) as well as among Whites (42%), Latinx (35%), and Blacks (36%). Overdose was the leading cause of death for all age groups under 60 and was the second leading cause of death for those aged 60-69. Coronary heart disease (CHD) was the second leading cause overall, accounting for 14% of deaths. CHD was the leading cause of death among those 60 and older (30%). CHD was the second leading cause of death among males (15%) but was the third leading cause among females (9%), among whom transportation-related injury was the second leading cause of death (10%). By age group, deaths from transportation-related injury were highest among those under age 40 (10%) and those aged 60+ (8%).

Homicide was the fourth leading cause of death overall (6%)—just slightly higher than COVID-19 (6%). Homicide was the sixth leading cause of death among Whites (2%), fourth among Blacks (6%) and third among Latinx (9%). Homicide was the second leading cause of death (after overdose) among all age groups under age 50. COVID-19 was the second leading cause of death among those aged 70+ (13%) and the third leading cause of death among those aged 60-69. COVID-19 was the fifth leading cause of death overall and was the fourth leading cause of death among females (5%), followed by suicide (4%). Suicide was also the fourth leading cause of death among those under age 40 (7%).

Table 1: Leading causes of PEH death (2020/21 combined; N=4,012 Deaths)

Cause	Total	Race/Ethnicity ¹				Gender ²		Age Group ³					
		Latinx	Black	White	Other/ Missing	Male	Female	18-29	30-39	40-49	50-59	60-69	70+
Drug/Alcohol Overdose (unintentional)	1488	555	376	526	31	1197	290	169	340	315	410	224	26
Coronary Heart Disease	564	183	151	207	23	496	68	*	*	18	174	259	109
Transportation-Related Injury ⁴	308	131	77	93	*	237	71	33	65	38	77	72	22
Homicide	229	136	63	28	*	208	21	37	66	57	48	17	*
COVID-19	223	100	57	44	22	184	39	*	11	37	50	79	44
Suicide	121	57	20	40	*	95	26	21	46	21	23	10	0
Other Unintentional Injuries	100	51	20	26	*	87	13	10	16	24	23	17	*
Liver Disease	99	66	12	18	*	82	17	*	*	29	37	19	*
Total ⁵	4012	1594	1033	1261	124	3281	728	321	649	718	1064	905	331

1 Other/missing includes Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, multiracial, refused and missing

2 Male includes transgender male and female includes transgender female

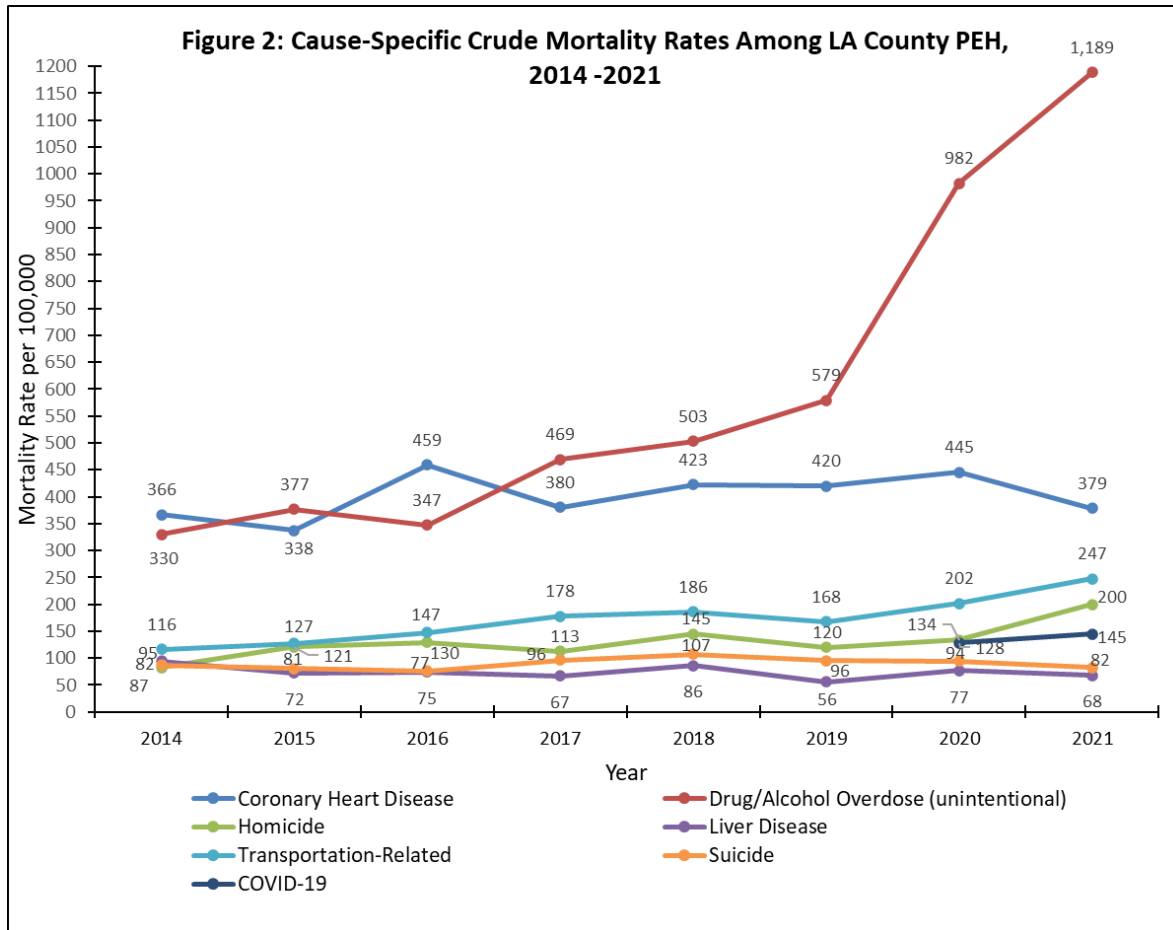
3 There was only one 0-17 PEH death from these top 8 causes in 2020 and 2021. Age data were missing for a small number of deaths.

4 Includes motor vehicle and train-related injuries involving motorists, train passengers, cyclists and pedestrians. Most of these PEH deaths involved cyclists or pedestrians.

5 These totals include ALL 2020-21 PEH deaths for each of the column headings (not just the totals from these top eight causes).

* Non-zero cells with less than 10 deaths are suppressed per state death data reporting rules.

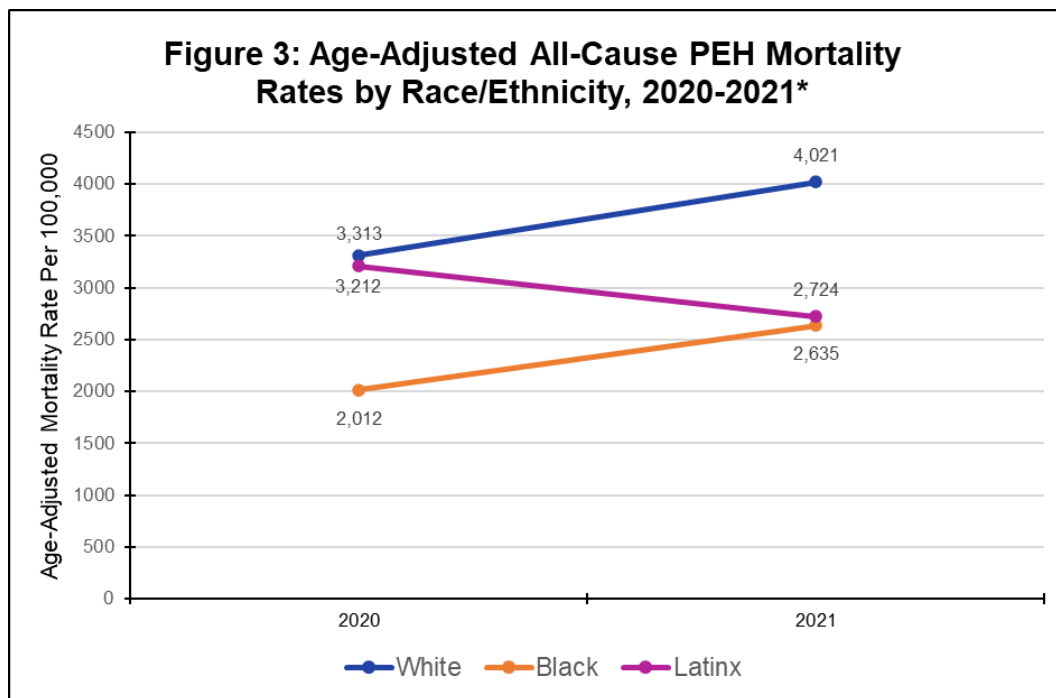
Figure 2 shows annual trends in cause-specific mortality rates among PEH from 2014-21 for the top seven causes of death. These trends indicate that the steep increase in overall mortality from 2019-2021 (**Figure 1**) was driven largely by an increase in the overdose mortality rate, which doubled between 2019 and 2021. CHD, liver disease, and suicide mortality have remained relatively stable over time. The mortality rate for transportation-related injuries (mostly involving pedestrians and cyclists) has increased steadily over time, with a particularly sharp increase of almost 50% from 2019 to 2021. Homicide mortality remained relatively stable through 2020 but exhibited a notable recent increase of almost 50% from 2020 to 2021.



Trends in Age-Adjusted PEH Mortality Rates, by Race/Ethnicity and Gender

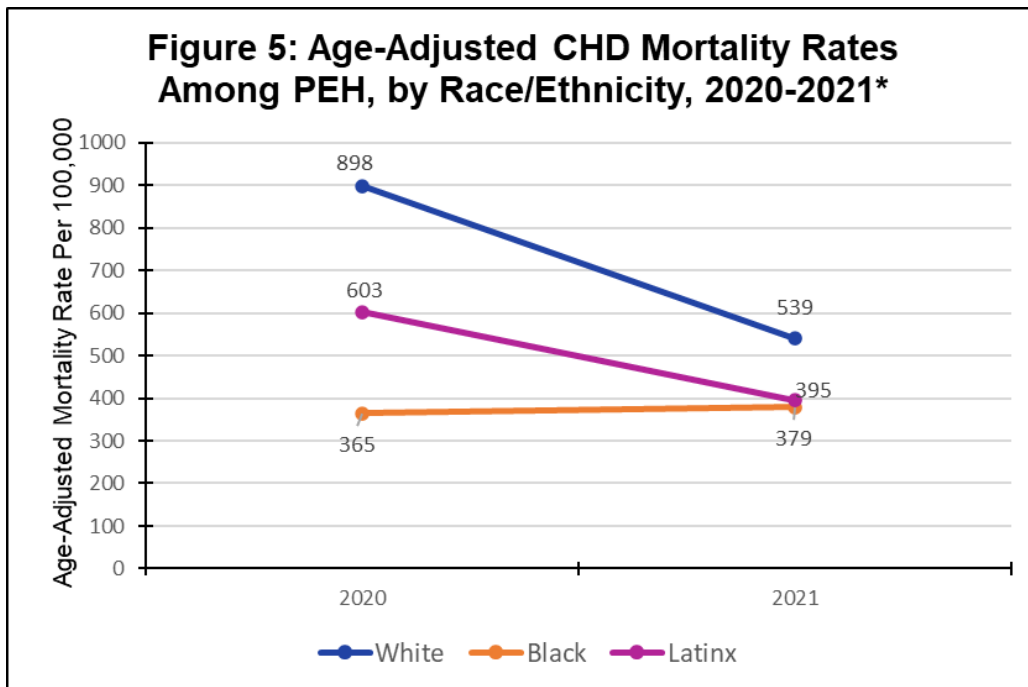
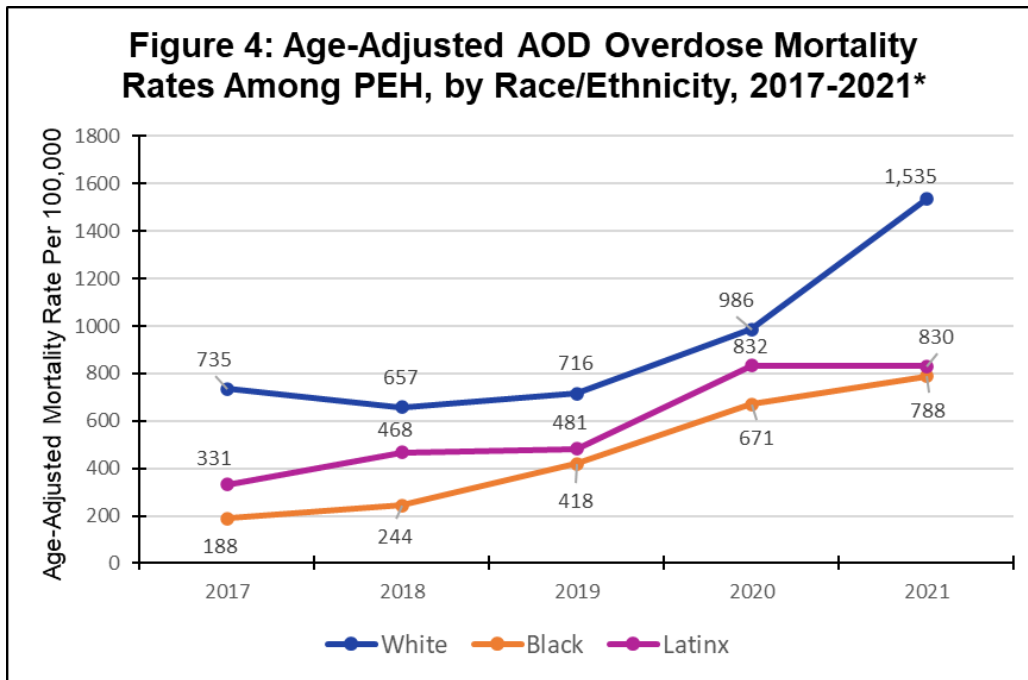
Race/Ethnicity

Figures 3-5¹ show trends in age-adjusted all-cause and cause-specific mortality rates among PEH by race/ethnicity. From 2020-2021, the all-cause mortality rates increased by 31% among Blacks and 21% among Whites and decreased among Latinx (-15%) (**Figure 3**). While the White rate was about 50% higher than the Black in rate both years, the Latinx rate went from near parity with the White rate in 2020 to near parity with the Black rate in 2021.



Overdose mortality rates increased substantially from 2017 to 2021 across all three racial/ethnic groups (**Figure 4**). However, the percentage increase was greatest among Blacks (320%), followed by Latinos (150%) and Whites (109%). The overdose mortality rate was highest among Whites across all years. While the relative difference between the White rate and the Black and Latino rates decreased from 2017-2020, 2021 saw a spike in the rate among Whites and a plateauing of the rate among Latinos such that the overdose mortality rate among Whites was almost twice that of the other two groups in 2021.

¹ 2017-19 rates were age-adjusted using non-standard age categories based on available demographic data at the time (see methods). Thus, they are not directly comparable to the 2020-21 rates, which were adjusted using standard 10-year age categories. However, after conducting a sensitivity analysis by applying the non-standard categories to the 2020-21 rates we determined that the differences for the overdose rates were so small (<1% for each rate) that displaying 5-year trends for overdose rates was reasonable. The differences for the all-cause and CHD rates were non-trivial so we chose to display only 2020 and 2021 rates for those causes.



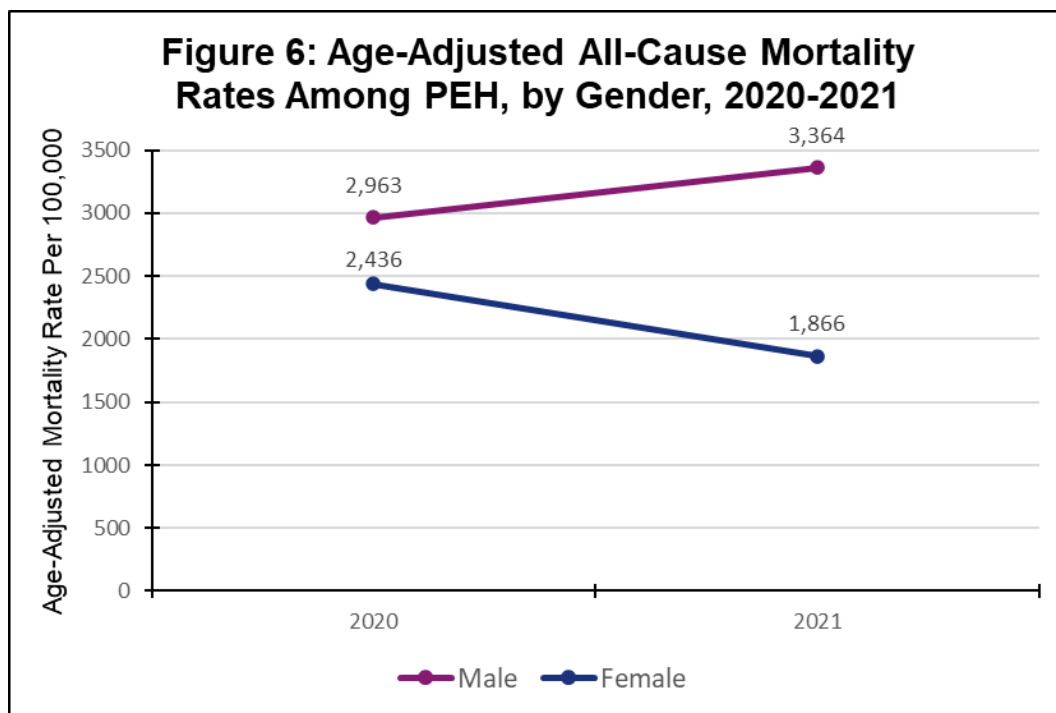
*Asians, Native Hawaiians, and Pacific Islanders, and American Indian and Alaskan Natives are not included in this graph due to very small numbers of deaths in these groups.

The CHD mortality rate among Whites decreased by 40% from 2020 to 2021 (**Figure 5**), which may be related to the sharp increase in White overdose mortality that same year. Overdose mortality increased most among those over 50 (**Figure 9**), some of whom may have died from CHD if they had not overdosed. CHD mortality among Blacks remained relatively stable, suggesting that their increase in all-cause mortality was driven largely by increases in drug

overdoses. The decrease in the CHD mortality rate among Latinx likely contributed to their all-cause mortality rate decrease, particularly since the overdose rate for Latinx plateaued in 2021.

Gender

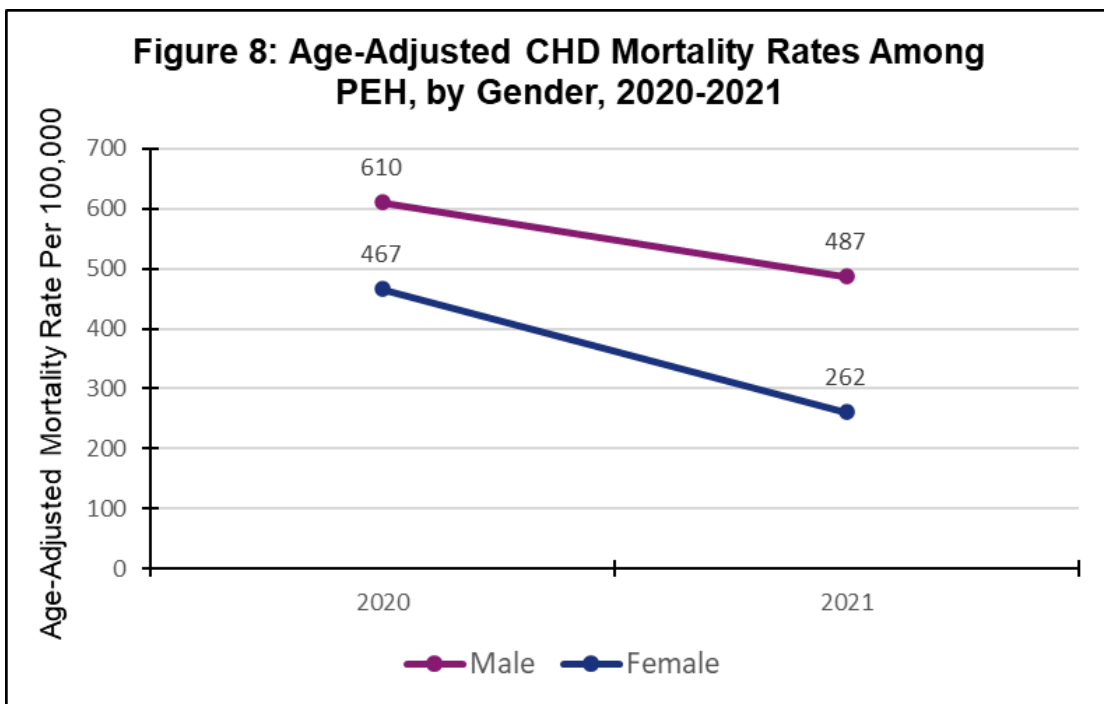
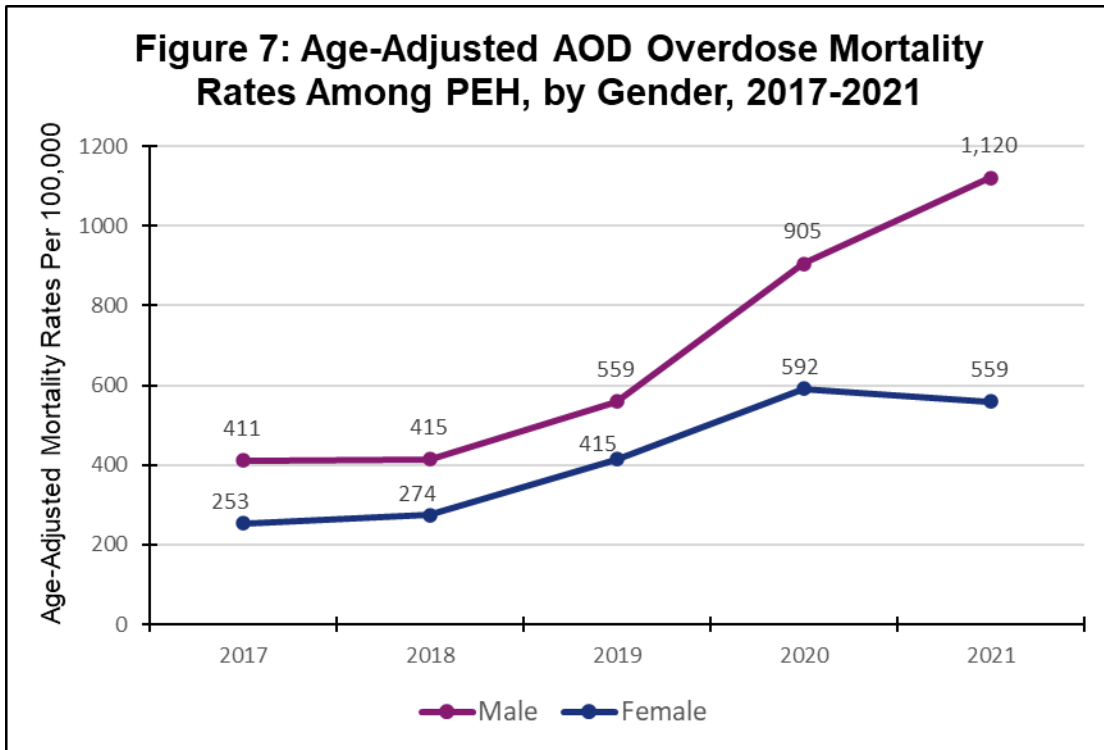
Figures 6-8¹ show trends in age-adjusted all-cause and cause-specific mortality rates among PEH by gender. The all-cause mortality rate was higher among men than women in 2020 and 2021 and that gap widened to a difference of 80% in 2021, as the rate increased among men (14%) and decreased among women (-23%) (**Figure 6**).



The overdose mortality rate almost tripled among men between 2017-2021, with the most precipitous increase occurring from 2019-2021 when the rate nearly doubled from 599 per 100,000 to 1,120 per 100,000 (**Figure 7**). The rate more than doubled among women from 2017-2020 but then dropped slightly in 2021. The gender pattern for 2020-21 is similar to that for all-cause mortality which is to be expected given the large role of drug overdose on overall mortality.

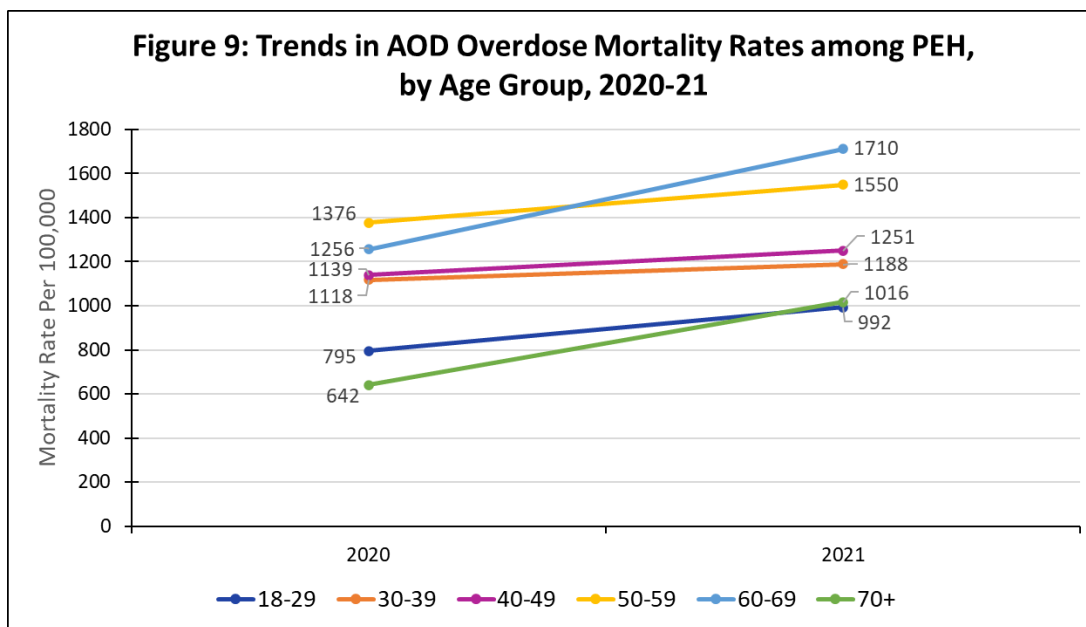
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The CHD mortality rate decreased among men (-20%) from 2020-2021 despite the increase in all-cause mortality, likely due to the considerable increase in overdose mortality over that same period. Among women, the CHD mortality rate decreased by 44% from 2020 to 2021 (**Figure 8**).



Overdose Mortality Trends by Age Group

The mortality rates above are adjusted for the age distribution of different racial/ethnic and gender groups of PEH, but it is also useful to compare mortality trends among different age groups. **Figure 9** shows overdose mortality rates by age group for 2020 and 2021.¹ The overdose rate increased for all age groups, but the increase was greatest among those over age 60. The rate for those 70+ increased by 58%, while the rate for those aged 60–69 increased by 36%. In both years, the highest overdose mortality rates overall were among those aged 50-69.



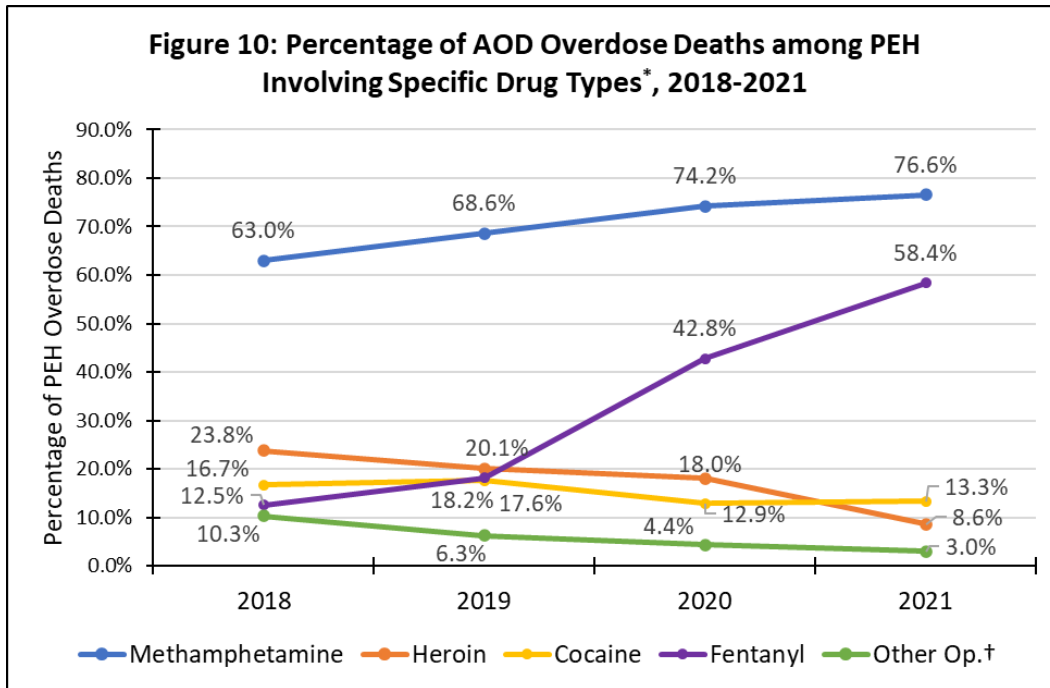
Drug Types Involved in Overdose Deaths

Figure 10 displays trends in the specific types of drugs involved in PEH overdose deaths from 2018-2021, regardless of whether other drug types were also involved. Methamphetamine was the drug involved in the greatest percentage of overdose deaths across all years, and this percentage increased from 63% in 2018 to 77% in 2021. The percentage of overdose deaths involving fentanyl, a powerful synthetic opioid, increased almost five-fold, from near the bottom of the list to a level approaching that of methamphetamine in just three years. Meanwhile, the percentage of deaths involving heroin and other opioids decreased three-fold over the same period.

Figure 11 displays trends in overdose involvement of methamphetamine or fentanyl by race/ethnicity. The percentage of overdose deaths involving methamphetamine increased

¹ 10-year age groupings were not available for 2017-2019 but were available starting in 2020 and will continue to be available in future years.

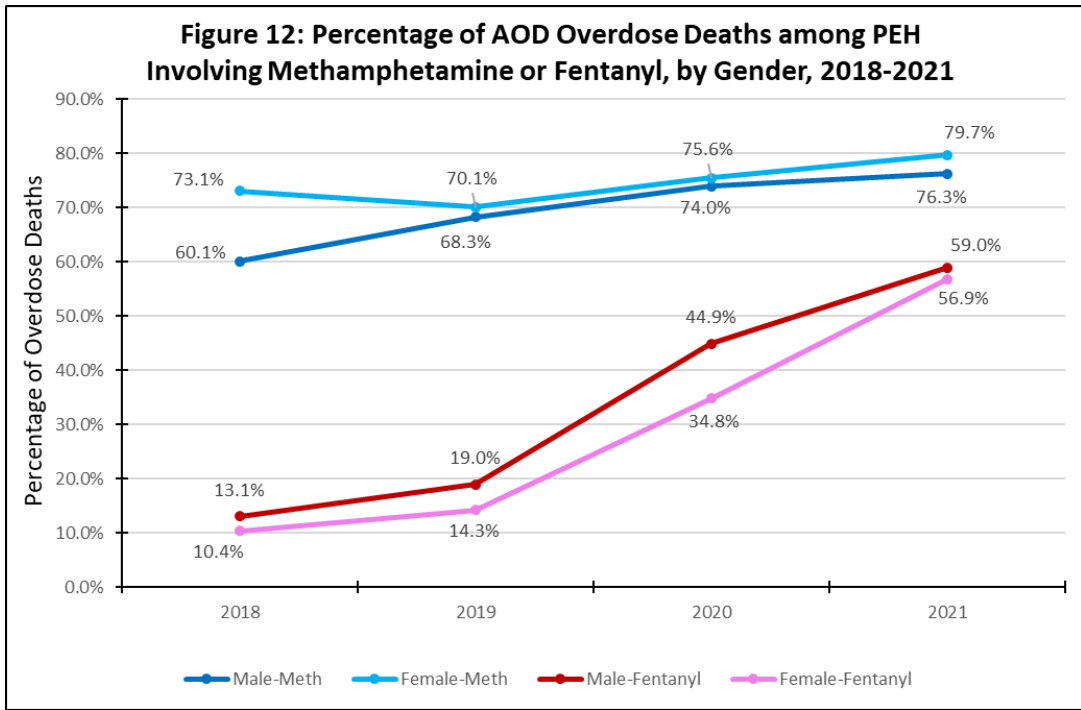
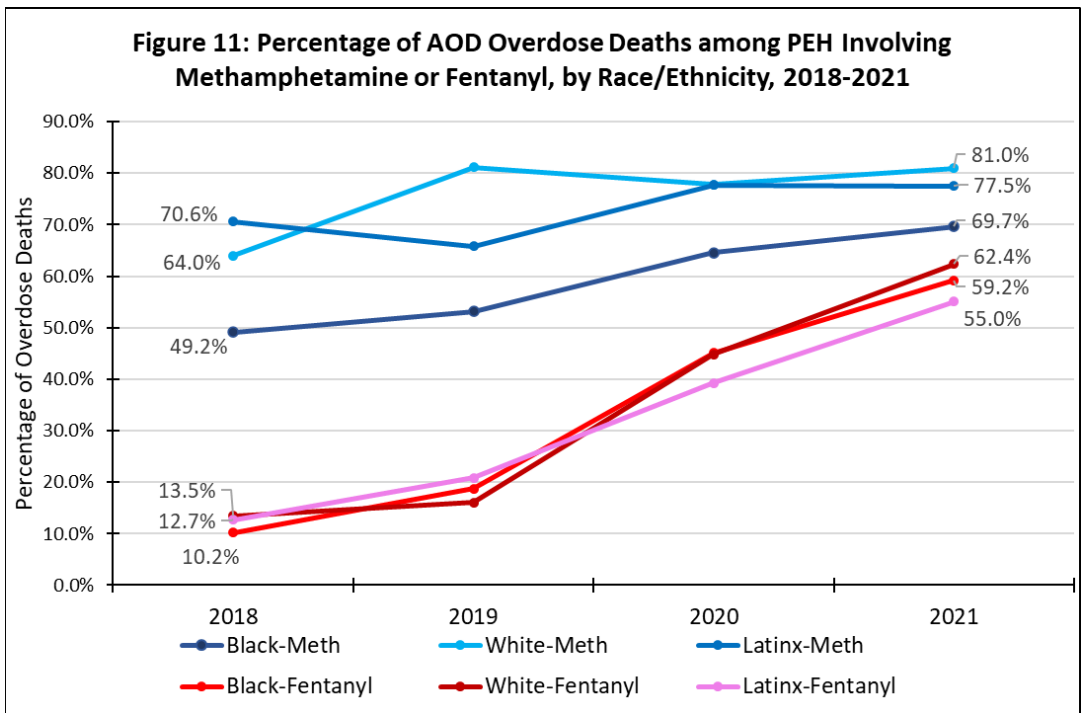
among all three racial/ethnic groups from 2018-2021, although the percentage increase was greatest among Blacks (42%). While Black overdose deaths were the least likely to involve methamphetamine across all years, the level of involvement of this drug in Black overdoses approached that of Whites and Latinx by 2021. The percentage of overdose deaths involving fentanyl increased precipitously among all three racial/ethnic groups, with similar levels of involvement across groups each year.



*Percentages per year sum to more than 100% because each overdose can involve multiple drug types.

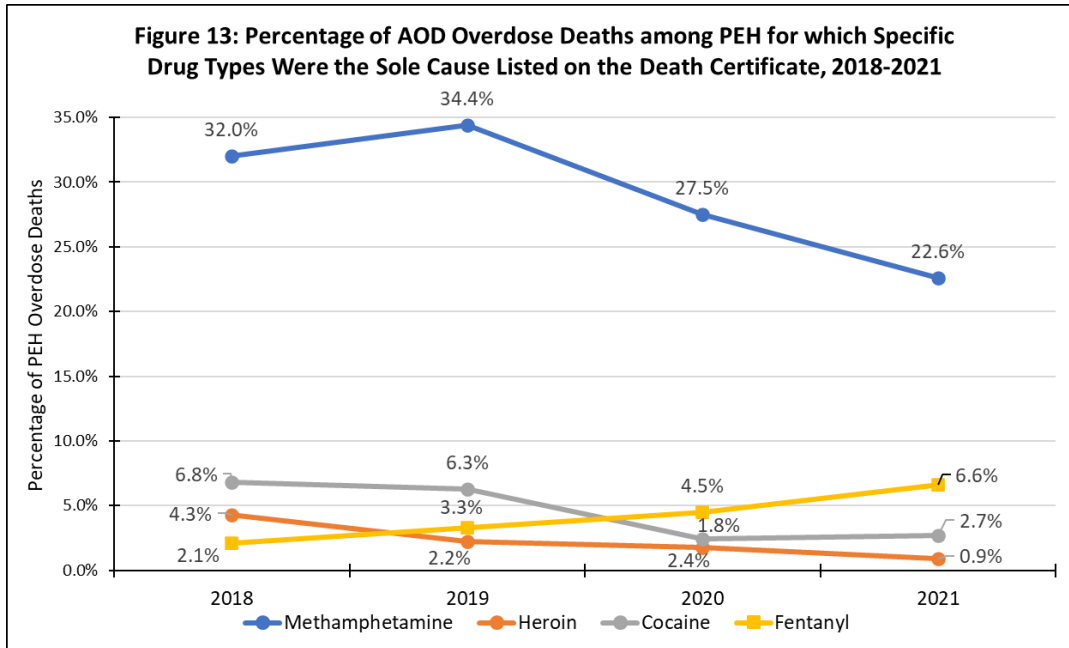
†Methadone, morphine, oxycodone, hydrocodone, oxymorphone, tramadol, codeine, opiate

Figure 12 displays trends in overdose involvement of the methamphetamine or fentanyl by gender. The percentage of overdose deaths involving methamphetamine increased among males and females from 2018-2021, although the percentage increase was greater among males (27%, vs. 9% among females). Across all years, the percentage of overdose deaths involving methamphetamine was slightly higher among females than among males. The percentage of overdose deaths involving fentanyl increased precipitously among males and females, with only slightly lower levels of involvement among females each year.



While overdose deaths often involve multiple drugs, it is also useful to examine trends in the percentages of overdose deaths involving only one drug. As shown in **Figure 13**, the only major drug with an increase in the percentage of overdose deaths for which it was the only drug

involved was Fentanyl. Yet even as Fentanyl tripled on this indicator, it increased only from 2.1% to 6.6%. Multi-drug use—particularly combinations including methamphetamine and fentanyl—is clearly the norm among those who use drugs in this population. In 2021, 71% of all fentanyl involved deaths among PEH also involved methamphetamine, and 41% of all overdose deaths we from drug combinations that included fentanyl and methamphetamine.



Comparison of Mortality Rates Between PEH and the General LA County Population

Adjusting for differences in the age and gender distributions of the homeless population compared with the general LA County population, the all-cause mortality rate for the combined years of 2020-2021 was 3.8 times greater among PEH than among the general population (**Table 2**). The all-cause Mortality Rate Ratio (MRR) for 2017-19 was 2.9, suggesting that the excess risk of mortality among PEH has increased between the two time periods.¹

¹ The 2017-19 MRRs were age-adjusted using non-standard age categories (see methods footnote 2) based on available demographic data at the time. Thus, they are not directly comparable to the 2020-21 MRRs, which were adjusted using standard 10-year age categories. However, when we calculated the 2020-21 MRRs using the non-standard age categories, the only ones that changed by more than 5% showed slight decreases: all cause (-9%), CHD (-10%), transportation-related injury (-9%) and COVID-19 (-20%). Thus, the MRR differences in Table 2 may be slightly inflated for these causes, but not enough to change the conclusion that the all-cause, transportation-related injury and CHD MRRs increased somewhat between the two time periods, while the others remained relatively unchanged.

In 2020-21, PEH were 38.9 times more likely to die from an overdose, 20.4 times more likely to die from a transportation-related injury, 15.1 times more likely to die from homicide, 8.4 times more likely to die from suicide, 4.4 times more likely to die from CHD, and 1.8 times more likely to die from COVID-19 compared to the general population of LA County.

While all the cause-specific MRRs in **Table 2** increased from 2017-19 to 2020-21, the relative increase was greatest for transportation-related injuries (16.4 vs. 20.4). Since COVID-19 became a leading cause of death among PEH in 2020-21 and PEH died from COVID-19 at almost twice the rate as the general population, it is likely that COVID-19 also contributed to the widening of the unhoused/housed mortality gap. While the overdose and homicide death rates increased markedly among PEH during the pandemic, the relative increases in the overdose (36.4 vs. 38.9) and homicide (14.9 vs. 15.1) mortality rate ratios were small, suggesting that overdose and homicide rates in the general population have kept close pace with rates among PEH.

Cause of Death	Years	
	2017-2019	2020-2021 (new age groups)
All Causes	2.9	3.8
Drug Overdose	36.4	38.9
Coronary Heart Disease	3.8	4.4
Transportation-Related Injury	16.4	20.4
Homicide	14.9	15.1
Suicide	7.5	8.4
COVID-19	NA	1.8

* The MRR is the mortality rate among PEH divided by the mortality rate in the General LA County population. In this report, the MRR is sometimes referred to more colloquially as the "unhoused/housed mortality gap".

Conclusions

The first two calendar years of the COVID-19 pandemic—2020 and 2021—were the deadliest for PEH in LA County since at least 2014, when we began tracking mortality in this highly vulnerable population. Together, the new SARS-CoV-2 virus, the proliferation of a dangerously potent synthetic opioid, and surges in homicides and road traffic fatalities all took a tremendous toll on unhoused Angelenos, contributing to a 55% increase in the crude mortality rate in just two years (**Figure 1**).

Drug overdose was the largest driver of this recent increase, in both relative and absolute terms. More PEH died of overdoses in 2020 and 2021 than in at least the six previous years

combined¹, and the overdose mortality rate rose from near parity with the CHD rate to nearly three times the latter over that same period. Our analysis of drug types involved in overdose deaths suggests that fentanyl has rapidly replaced other opioids among users in this population and is the drug most responsible for the recent increase in overdose deaths. While we found that overdose deaths involving fentanyl almost always involved other drugs as well, our data did not allow us to determine if decedents took fentanyl unknowingly (i.e., because it was added to another drug without their knowledge) or if they purposefully took fentanyl in combination with another drug.

We do have evidence that fentanyl has been equally devastating among Black, Latinx and White PEH who use drugs, and among male and female users, but by 2021 the rate of overdose deaths was almost twice as high among White PEH compared to Black and Latinx PEH and among men compared to women. While our data do not shed light on the reasons for these disparities, we have anecdotal evidence that methamphetamine is the drug of choice among unhoused female users because its sleep depriving effects help protect them from the sexual assaults prevalent in life on the street.² This may explain why methamphetamine has contributed to a higher percentage of female versus male overdose deaths (**Figure 12**). If fear of assault also discourages women from using fentanyl (a more deadly drug than methamphetamine), that could also explain the gender disparity in overdose mortality overall. The reasons for the racial-ethnic difference in overdose mortality, particularly in 2021, are less clear and warrant further investigation.

We compared PEH mortality with mortality in the LA County general population by calculating all-cause and cause specific mortality rate ratios (MRRs) for the combined years of 2020-2021 (**Table 2**). A comparison of these ratios with those from the pre-pandemic period (2017-2019) suggests that the unhoused/housed mortality gap has widened. Nevertheless, the relative increase in the overdose MRR was small, suggesting that while drug overdose mortality is still strikingly higher among PEH than the general population, the county wide overdose rate has kept close pace with the rate among PEH during the pandemic. A recent report from DPH's Substance Abuse Prevention and Control Program supports this conclusion, indicating that fentanyl overdose deaths in LA County have recently increased at about the same rate as we report here for PEH.³ Homicide also increased substantially countywide in 2020 and 2021-- hitting a 15-year high in 2021⁴--but the stability of the homicide MRR from pre- to post-

¹ There were approximately 1,244 PEH overdose deaths from 2014-2019, and while we do not have data for earlier years, it is very likely that if we included 2013 overdose deaths, the number would still not reach the total of 1,488 for 2020-21.

² Testimony from members of LAHSA's lived experience workgroup when asked to provide feedback on our 2021 homeless mortality report.

³ Data Report: Fentanyl Overdoses in Los Angeles County. Los Angeles County Department of Public Health Substance Abuse and Prevention Program. November 2022.

⁴ Gun violence hits 15-year high in L.A., taking lives and erasing hard fought gains. *Los Angeles Times*. December 31st, 2021.

pandemic suggests that countywide homicide mortality has also kept close pace with rate in the homeless population.

The cause of death with the largest percentage increase in the unhoused/housed mortality gap from pre- to post-pandemic was transportation-related injury. The recent increase in traffic injury deaths among PEH is part of a broader phenomenon observed in LA County and nationally during the first two years of the COVID-19 pandemic, when traffic fatalities increased overall.¹ However the notable increase in the transportation-related injury MRR suggests that PEH may have been disproportionately affected by the rise in traffic fatalities. The high rate of traffic injury deaths among PEH is likely related to the preponderance of pedestrians and cyclists vs. cars among the collisions causing these deaths, along with the proximity of PEH dwellings to major roadways (about 70% of LA County PEH are unsheltered). A recent national study found that racial/ethnic disparities in traffic fatalities—across travel modes but particularly for cycling and walking—were larger than previously thought after accounting for differential exposure (i.e., miles travelled).² Structural racism in the transportation infrastructure, which the authors cite as a potential contributor to these disparities, has potential implications for efforts to reduce traffic fatalities among PEH in LA County. Accelerating the placement of unsheltered PEH into permanent housing will also go a long way toward reducing the traffic-injury mortality gap.

CHD has been the first or second leading cause of death among PEH since at least 2014. CHD deaths increased in the LA County general population by 10% from 2019 to 2020, making it the second largest contributor (after COVID-19) to the overall mortality increase that year.³ Among PEH CHD mortality increased from 2019 to 2020 and then decreased in 2021, largely among White and Latinx PEH (**Figure 5**). Nevertheless, the unhoused/housed mortality gap for CHD increased during the pandemic (**Table 2**). This increase may be due to reduced access to health care services, increased risk of worsening CHD among those who have had COVID-19, and increased tobacco, alcohol and other substance use due to the stress and isolation triggered by pandemic. Given the already stressed and isolated conditions of life on the street, it is plausible that during the height of the COVID-19 pandemic CHD death rates increased disproportionately among PEH.

Finally, while we have no prior period with which to compare COVID-19 death rates, COVID-19 took a serious toll on the homeless population as evidenced by the 789 outbreaks detected in emergency shelters in 2020 and 2021 and a death toll that made COVID-19 a leading cause of

¹ Car crash deaths have surged during the COVID-19 pandemic. *Los Angeles Times*, December 8th, 2021; During Covid-19, Road Fatalities Increased and Transit Ridership Dipped, U.S. Government Accountability Office. January 25th, 2022.

² Matthew A. Raifman, Ernani F. Choma, Disparities in Activity and Traffic Fatalities by Race/Ethnicity, *Am. J. Prev. Med.* 2022; 63 (2).

³ Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology. Mortality in Los Angeles County, 2020: Provisional Report.

PEH death soon after the pandemic began. Nevertheless, whereas countywide, COVID-19 became the second leading cause of death in 2020 and the leading cause in 2021, it was only the fifth leading cause of death among PEH in 2020-21 (**Table 1**). The unhoused/housed mortality gap was also relatively low for COVID-19 compared to other leading causes of death. We estimated a mortality rate ratio of 1.8, which is similar to recently published data showing a COVID-19 rate ratio of 2.35 during almost the same period.¹

In summary, drug overdoses, traffic injuries and homicides, were major contributors to what became the deadliest period for PEH in LA County since we began our surveillance. And while the general public experienced parallel increases in these causes of death during the COVID-19 pandemic, reductions in mortality among PEH can only be achieved through large reductions in deaths from overdoses, traffic injuries and homicides. Meanwhile, since coronary heart disease continues to be the second leading causes of death among PEH--who now die from this common chronic disease at over four times the rate of the general public--efforts to improve chronic disease control and prevention in this population are also critical. The fact that, during the height of the pandemic, the COVID-19 mortality rate was only moderately higher among PEH than the general public may be a testament to the positive impacts of concerted disease control and prevention efforts in this highly vulnerable population.

¹ Porter NAC, Brosnan HK, Chang AH, Henwood BF, Kuhn R. Race and Ethnicity and Sex Variation in COVID-19 Mortality Risks Among Adults Experiencing Homelessness in Los Angeles County, California. *JAMA Netw Open*. 2022;5(12): e2245263. Our MRR (1.8) may be even lower than the one reported in this study because we used more restrictive criteria for determining COVID-19 as the cause of death (i.e., the underlying cause field in the death certificate). Also, this study included mortality data through November 2022 only.

Recommendations

Increase Harm Reduction Services including the Availability of Naloxone and other Overdose Prevention Services to PEH in Street Settings and Shelter/Interim Housing Settings, and PEH Exiting Correctional Facilities

1. Continue to advance legislation, regulation, and local advocacy with law enforcement and prosecutors that is needed to establish sites for safer supervised consumption of drug use in areas with high concentrations of overdose deaths among PEH to reduce overdose deaths, and the spread of HIV, hepatitis C, and other infectious diseases.
2. Increase emergency departments offering naloxone for patients who present with overdoses, including but not limited to PEH.
3. Continue to expand the distribution of overdose prevention kits, including but not limited to naloxone, among people being treated within the specialty SUD treatment system and among PEH.
4. Continue to support LA County Department of Health Services' expansion of the Overdose Education and Naloxone Distribution (OEND) program to support opioid overdose prevention among PEH by distributing naloxone doses and training service providers and PEH in the administration of naloxone.
5. Continue to make naloxone available to those at high risk of opioid overdose through jail-based vending machines, identify opportunities for implementing additional community-based vending machines, and increase distribution of naloxone through street-based outreach.
6. Identify funding for fentanyl test strips and naloxone doses not currently covered by Medi-Cal so that these resources can be more readily integrated into harm reduction services for PEH.

Enhance and Expand Field-Based Substance Use Disorder (SUD) and other Health Care Treatment and Related Housing Services for PEH, with an Explicit Focus on Reaching Black and Latinx PEH

7. Expand staffing and capacity of field-based multidisciplinary teams to provide harm reduction services to PEH with particular attention to Black and Latinx PEH. Use these teams to reduce participant barriers to Medications for Addiction Treatment (MAT), implement Contingency Management programming, and increase peer support and engagement. Target services to overdose hotspots in SPAs 4, 6, and 8.
8. Leverage CFCI funds to continue the expansion of harm reduction syringe services and other overdose prevention services through LA County contracted Engagement and Overdose Prevention (EOP) Hubs including syringe exchange, naloxone and fentanyl test

strip distribution and education, and screening and referral for SUD and other physical and mental health service needs.

9. Expand use of mobile clinic units to improve the health and wellbeing of people experiencing unsheltered homelessness, create a pipeline for training practitioners dedicated to field-based services and reducing health disparities, and capture payments for delivery of non-traditional health care to patients otherwise not accessing care within county outpatient settings.
10. Expand use of multidisciplinary Homeless Outreach and Mobile Engagement (HOME) teams to provide specialty mental health care and co-occurring SUD treatment, including naloxone distribution, overdose prevention, and Medications for Addiction Treatment for PEH who use drugs.
11. Ensure that providers from field-based multidisciplinary teams are engaged in the planning and implementation of encampment resolution activities and that connections with service providers are maintained so that PEH with SUDs have continuity of essential supports and do not lose belongings that facilitate harm reduction strategies (e.g., safe use equipment and medications).

Expand and Improve SUD Services for PEH, with an Explicit Focus on Reaching Black and Latinx PEH

12. Expand and improve access to low barrier Medications for Addiction Treatment (MAT) for PEH, whether through mobile vans, delivery of MAT to housing settings, etc.
13. Expand and improve SUD services for permanent supportive housing residents and for PEH served through mainstream service integration and homeless encampment outreach projects, by serving additional locations and incorporating recommendations from the Ad Hoc Committee on Black People Experiencing Homeless.
14. Use the Reaching the 95% Initiative, the overdose prevention and harm reduction training and technical assistance programming, and the LA County's updated harm reduction syringe services certification process to increase the capacity of SUD treatment providers to distribute naloxone and provide other harm reduction services and to increase providers' initiation of treatment for people who may not be initially committed to abstinence from substances.
15. Expand and enhance training of service providers on "At-Risk Services for Prevention and Early Intervention", an intervention model for adults at risk of SUD and provide intervention workshops at permanent supportive housing and interim housing sites serving current and former PEH.
16. Expand and enhance Client Engagement and Navigation Services (CENS), including outreach and engagement, agency education, harm reduction services, Medi-Cal enrollment, and SUD treatment navigation services, to current and former PEH at interim and permanent supportive housing locations across the county.

Expand Peer-Based Outreach to PEH through Street-Based Harm Reduction Syringe Services and other Overdose Prevention Services

17. Use the modernized and revised syringe exchange policies and procedures which permit mobile exchanges to expand the network of sites certified to offer harm reduction syringe services in LA County and update LA County's contracting mechanisms to solicit new contracts for harm reduction services with additional EOP Hubs that offer syringe exchange as part of their peer-based overdose prevention services.
18. Expand the existing LA County-supported overdose response teams and multidisciplinary teams which provide street-based outreach involving peers to provide rapid overdose responses and provide street-based overdose prevention services in communities experiencing high rates of overdose.

Expand and Enhance County-Contracted SUD Provider Utilization of Homeless Management Information System (HMIS) to Improve Coordination of Care and Housing-Focused Case Management for PEH with SUDs

19. Maintain HMIS licenses and train all SUD providers on the HMIS VI-SPDAT tool to assess and prioritize vulnerability of PEH clients for housing services. Leverage new uncapped care coordination benefit to provide care coordination services for PEH with SUDs to improve housing and other social service outcomes.

Increase Investments in Recovery Bridge Housing (RBH) and Recovery Housing to Ensure PEH, including those Exiting Jails, Receive Outpatient SUD Treatment Services and Permanent Housing Placements

20. Identify and leverage available funds to support expansion of RBH beds for PEH in need of SUD services and abstinence-focused, peer-supported housing.
21. Ensure that additional RBH beds are available to PEH who exit jails after receiving in-custody SUD treatment services, and train RBH providers on LAHSA's rehousing system to facilitate permanent housing placements.
22. Establish Recovery Housing as a component of the housing continuum for individuals with SUD who prefer recovery-oriented and sober housing settings and who require longer lengths of stay than is offered through RBH.
23. Advocate for changes at the federal (CMS) level to:
 - a. Raise the allowable statewide average from 30- to 45-days for California's Section 1115 waiver for Medicaid reimbursable residential SUD treatment bed days to ensure medically necessary residential SUD care beyond the current allowable 30-day statewide average.

- b.** Allow for Medicaid reimbursement for recovery residences, which are recovery-oriented sober living environments for people in substance use disorder (SUD) treatment and/or recovery. Medicaid coverage of Recovery Residences would be a demonstration that housing is health and that investing in this resource will yield the best outcomes for those who need housing.
- c.** Provision of federal funding for abstinence-based Recovery Housing to complement Housing First approaches to housing and ensure a housing continuum that can meet the varied needs of its participants.

Implement Infectious and Chronic Disease Prevention and Treatment in Shelters, Encampments, and Other Congregate Settings Where PEH Live

- 24. Identify and leverage available funds to assist shelters with implementation of infectious disease protocols, including facility-level protocols around cleaning, disinfection and ventilation, and person-level protocols such as symptom and temperature screening, testing, cohorting within shelters, and return to work guidance.
- 25. Increase the provision of preventive healthcare and chronic disease management, specifically including heart disease prevention and management, for PEH who at risk for health conditions that, when left unmanaged, increase the mortality rates among PEH.
- 26. Identify and leverage available funds to provide shelters with rapid antigen test kits to facilitate appropriate isolation and quarantine, KN95 masks to assist with infection control for omicron variants and potential future surges, and technical assistance on the use rapid testing kits, general infection prevention and control, and wellness checks.

Engage with LA County and City of LA Vision Zero¹ Teams on Strategies for Reducing Traffic Deaths Among PEH

- 27. Collaborate with local jurisdictions to identify concentrations of fatal injury collisions involving PEH to help inform local infrastructure, program, and policy interventions to prevent future PEH traffic deaths.

¹ Vision Zero is a traffic safety initiative to eliminate traffic-related fatalities. It grew out of an international movement toward a new multidisciplinary and systems approach to traffic safety focusing on equitable practices, polices, and designs to lessen the severity of collisions.

Continue Annual Surveillance of Mortality Among PEH in LA County Including Geographic Analyses of Deaths from Different Causes and an Investigation of other Contextual data that may Better Inform Prevention Strategies

28. Produce an annual PEH Surveillance Report in January 2024 that estimates recent trends in mortality rates using 2023 point-in-time homeless count data, compares mortality rates by causes of death and by race/ethnicity, and provides data on drug types involved in overdose deaths.
29. Include an appendix in the 2024 report that shows the geographic distribution of PEH deaths from different causes over time.
30. Explore the feasibility of accessing additional data from the Medical Examiner-Coroner on selected subsets of overdose, traffic-related, and homicide deaths for the purpose of conducting a qualitative mortality review to inform prevention efforts.

Conduct Analyses of Administrative Data Records of Deceased PEH in Coordination with County Departments and Academic Partners, to Reduce Homeless Mortality

31. Pilot test the County Chief Information Office's (CIO) cloud-based countywide information management platform with a longitudinal analysis of County services used by PEH prior to their deaths. For this pilot analysis, leverage Public Health's identification of recent PEH deaths in LA County to augment identifications made by the Department of Medical Examiner-Coroner (DMEC).