

Recent Trends in Mortality Rates and Causes of Death Among People Experiencing Homelessness in Los Angeles County

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Executive Summary

In 2019, the Los Angeles (LA) County Department of Public Health (DPH) released its first comprehensive report on trends in mortality and causes of death among people experiencing homelessness (PEH) in LA County. Subsequently, at the direction of the LA County Board of Supervisors, DPH partnered with the Department of the Medical Examiner-Coroner, the Departments of Health Services and Mental Health, the LA County CEO Homeless Initiative, and the Los Angeles Homeless Services Authority to launch a homeless mortality prevention initiative (HMPI) to address the alarming findings in that first report. As that initiative was ramping up, the COVID-19 pandemic arrived in LA County, presenting a new set of challenges for efforts to reduce mortality in this highly vulnerable population. This 2020 report updates the previous one with data from 2019 and some additional analyses not included in the first report. Given the need for early data on the impact of COVID-19 on mortality among PEH, it also includes some limited analyses of death counts and causes during the first seven months of 2020.

After steadily increasing by over 30% between 2014 and 2018, the overall mortality rate among PEH rose only slightly in 2019 compared to the previous year. This flattening of the overall curve was due to an increase in the homeless population that kept pace with the increase in the number of deaths, which rose to a record total of 1,267 in 2019. Despite the relatively small increase in the overall mortality rate, the rate of drug overdose deaths continued to increase substantially among PEH in 2019. Drug overdose has been the leading cause of death among PEH since 2017. For the combined years of 2017-2019, PEH were 36 times more likely to die of a drug overdose than people in the general LA County population. An age-adjusted comparison of overdose rates by race/ethnicity revealed that white PEH had considerably higher overdose mortality rates than Black and Latinx PEH from 2017-2019. However, the rate for white PEH remained relatively stable, while the rate for Black PEH almost doubled and the rate for Latinx PEH increased by over a third. In 2019 overdose rates were highest among PEH aged 55-61, followed by those aged 62+, and the rates for these two age groups had the sharpest increases from 2018 to 2019. From 2017-2019, overdose rates among women experiencing homelessness were only slightly lower than those among men, which is notable given that overdose rates among men in the general population are typically more than double those of women. The drug type involved in the highest percentage of overdose deaths in 2018, 2019 and the first seven months of 2020 was methamphetamine, but the only drug involved in increasing percentages of overdose deaths across all three years was fentanyl, which was involved in more than twice as many overdose deaths in the first seven months of 2020 as in all of 2019. While there was no change from 2018 to 2019 in the percentage of overdose deaths involving fentanyl among white PEH, among Black and Latinx PEH fentanyl involvement in overdose deaths doubled. Then during the first seven months of 2020, fentanyl-involved overdoses increased precipitously across all the three racial/ethnic groups.

Coronary heart disease (CHD) has been the second leading cause of death among PEH in LA County since 2017. CHD is the leading cause of death in the general county population and its high prevalence among PEH is an indication of the aging of the homeless population, although PEH die from CHD at younger ages on average than those who are housed. For the combined years of 2017-2019, PEH were almost 4 times more likely to die of CHD than people in the general LA County population. Adjusting for age, white PEH had higher CHD mortality rates than Black and Latinx PEH from 2017-2019, although rates among whites have decreased over time while those among Blacks and Latinx have increased.

The transportation-related injury mortality rate among PEH decreased in 2019 after increasing by over 60% from 2014 to 2018. For the combined years of 2017-2019, PEH were over 17 times more likely to die of a transportation-related injury compared to people in the general LA County population. The unsheltered status of most of LA County's homeless population vastly increases their exposure to traffic hazards and is thus likely a primary driver of traffic-related deaths among PEH, which most frequently involved pedestrians and cyclists.

Homicide and suicide have been the fourth and fifth leading causes of death among PEH since 2015, and from 2017-2019 PEH were 15 times more likely to die from homicide and almost eight times more likely to die from suicide than people in the general population. Mortality rates from these violent causes have remained relatively stable over the last several years, an indication of the constant and disproportionate amounts of various kinds of violence that PEH experience on a regular basis.

During the first seven months of 2020, 36 PEH were identified among all COVID-19 deaths in LA County, making COVID-19 the fifth leading cause of death among PEH at the end of July. At that same point in time, COVID-19 had already become the second leading cause of death in the LA County population as a whole. Despite the relatively smaller direct impact of COVID-19 on PEH, the first seven months of 2020 saw an alarming increase in overdose deaths in this population. 273 PEH died of overdoses from January through July of 2020, compared to 205 during those same months in 2019—a 33% increase. This increase was driven largely by the more frequent involvement of fentanyl in overdose deaths among PEH in 2020 compared to the prior year.

The data presented in this report demonstrate the urgent need for our systems of care and support for PEH in LA County to include a focus on preventing premature death. The recommendations at the end of the report grew out of a collaborative effort across multiple County entities to address the high and rising mortality rates in the homeless population. The HMPI workgroup has also developed a plan of action to address these recommendations. Given the particular devastation caused by drug overdoses, many of the recommendations are focused on addressing substance use disorders (SUD) among PEH. Also, since recent increases in overall, CHD and overdose mortality rates have been driven predominantly by increases among Black and Latinx PEH, this year's recommendations include an explicit focus on reducing racial/ethnic inequities.

Introduction

This report is a follow-up to the first annual report of its kind, released in October of 2019, on trends in mortality rates and causes of death among people experiencing homelessness (PEH) in Los Angeles (LA) County. The first report covered annual trends through 2018 and recommended that an updated report be released each year with additional data from the previous year. Due to our ongoing response to the COVID-19 pandemic, the release of the 2020 report was delayed to January of 2021, and it includes a special preview of 2020 data so that the early impacts of COVID-19 on PEH could be examined and addressed.

In response to feedback from a multidisciplinary advisory group¹, this report presents results from additional analyses not included in last year's report, namely: 1) age-adjusted comparisons of cause-specific mortality rates among racial/ethnic and gender subgroups of PEH, 2) trends in overdose mortality rates by PEH age groups, and 3) an analysis of drug types most frequently involved in overdose deaths.

In response to last year's report, the LA County Board of Supervisors instructed the Department of Public Health, in collaboration with other County departments and the Chief Executive Office Homeless Initiative, to develop a set of recommended strategies for reducing homeless mortality. These strategies became the blueprint for a countywide Homeless Mortality Prevention Initiative (HMPI). The recommendations in this year's report reflect the recommended strategies of the HMPI with modifications based on this year's findings and a reassessment of the original recommendations by the advisory group.

¹ The advisory group consisted of representatives from the LA County Departments of Public Health, Health Services, and Mental Health, the LA County Medical Examiner-Coroner and Chief Information Offices, the County Chief Executive Office, and the Los Angeles Homeless Services Authority.

Methods

Identifying Homeless Deaths and Population Denominators

Calculating 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).² To identify the latter, the subset of MEC-investigated deaths coded as homeless/indigent was augmented through systematic text-based searches of remaining MEC case records. Cases with emergency shelter or interim/transitional housing facility addresses³ in one or more of the address fields were added to the homeless death count. In addition, cases with homelessness-related key words⁴ in any of the text-based descriptive fields were independently reviewed by two analysts using Department of Housing and Urban Development (HUD) homelessness criteria.⁵ Those cases meeting these criteria were also added to the homeless death count.⁶ To identify homeless deaths not investigated by the MEC, MEC records were matched to state death records, and all address fields of non-matching state records were systematically searched for entries suggesting homelessness.⁷

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.⁸ Individual PEH may experience bouts of homelessness lasting from less than a month to more than a year, but available data did not allow for the calculation of total person-years of homelessness experienced each year (i.e., the ideal denominator for PEH mortality rates). However, assuming that the total PIT 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 rates over time.

Identifying Causes of Death

Causes of death were determined using International Classification of Disease (ICD-10) cause of death codes found on state death records. These codes were captured for all homeless MEC cases that matched with state death records, and for all non-matching state death records with evidence of homelessness in one or more address fields.⁹

² The MEC investigates all violent, sudden, or unusual deaths; unattended deaths; and deaths where the deceased does not have a physician (Govt. Code, § 27491)

³ Shelter and interim/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.

⁴ 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, and vagrant

⁵ National Alliance to End Homelessness, Changes in HUD Definition of "homeless". <http://endhomelessness.org/wp-content/uploads/2012/01/changes-in-hud-definition-homeless.pdf>

⁶ A definitive determination of homelessness was not always possible based on available information. If the investigator described the decedent as homeless/possibly homeless, and no other information suggested otherwise, the person was counted as homeless for these analyses. In the coming year, DPH will develop a guide to help MEC investigators determine homelessness based on HUD criteria.

⁷ In addition to homeless key words and emergency shelter/interim/transitional housing addresses, state death records were also searched for location descriptions consistent with instructions provided by the state to local registrars on how to code residence addresses for homeless decedents.

⁸ The annual point in time homeless count is conducted by Los Angeles Homeless Services Authority (LAHSA) in collaboration with contracted researchers at the USC Dworak-Peck School of Social Work.

⁹ Including those homeless deaths not investigated by the MEC, ICD-10 underlying causes of death were determined for 98% of all deaths identified among PEH from 2014-2019.

Comparing Mortality Rates Among PEH Sub-Groups and Between PEH and the General Population

The availability of four consecutive years of demographic survey data, collected in conjunction with the annual homeless count, made it possible to compare trends in age-adjusted mortality rates among racial/ethnic and gender sub-groups of PEH.¹⁰ Using the mid-year population denominator estimates described above, all-cause and cause-specific mortality rates were compared for 2017-2019 across these PEH sub-groups. The 2010 LA County census population was used as the standard population for the calculation of these directly age-adjusted mortality rates.¹¹

Age and gender-adjusted mortality rate ratios (MRRs) were calculated to compare all-cause and cause-specific mortality rates among PEH to those among the general LA County population for the combined years of 2017-19.¹² To calculate MRRs, the same PEH demographic data and standard population demographic data described above were used. Data on 2017-19 LA County population demographics were obtained from Hedderson Demographic Services and data on 2017-19 LA County mortality were obtained from Los Angeles County Linked and Provisional Linked Death Data.¹³ Mortality rate ratios (MRRs) were calculated by dividing directly adjusted rates among PEH by those among the general LA County population.

Drug Type Analysis for Overdose Deaths

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 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.¹⁴ 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 in 2018, 2019 and January through July of 2020.

PEH Death Counts and Causes of Death for January-July of 2020

Mid-year PEH population denominator estimates are not yet available for 2020 so all analyses of 2020 data are of raw death counts and causes of death only. This report includes 2020 mortality data through July 31st. It takes several months for causes of death to be recorded on state death records, and by limiting the analyses to deaths through July, the percentage of deaths without a documented cause was kept under 10%.

¹⁰ Demographic estimates are available only for the Los Angeles Continuum of Care which excludes Long Beach, Glendale and Pasadena. For these countywide analyses it was assumed that the age, gender and racial ethnic makeup of the PEH populations in those cities was the same as the rest of LA County.

¹¹ Age adjustment was performed using LAHSA's homeless count demographic survey age groupings: <18; 18-24; 25-54; 55-61; and 62+)

¹² MRRs were not calculated for single years because relatively small numbers of PEH deaths from specific causes would have made the estimates unstable.

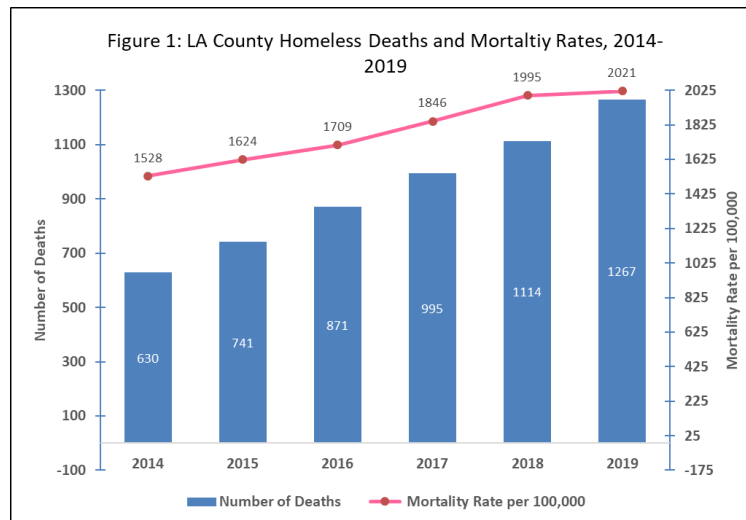
¹³ These mortality data sets are created by the LA County Department of Public Health. Data for 2018 and 2019 are provisional because they do not yet include out of state deaths for LA County residents.

¹⁴ 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 Among People Experiencing Homelessness

The number of deaths among PEH increased each year from 630 in 2014 to 1,267 in 2019 (Figure 1). The all-cause mortality rate, which accounts for increases in the total homeless population over that six-year period, also increased each year, from 1,528 per 100,000 in 2014 to 2,021 per 100,000 in 2019. Compared to earlier years, the mortality rate increase from 2018 to 2019 was relatively small, indicating that the absolute increase in homeless deaths in 2019 was accompanied by a roughly equivalent increase in the homeless population.



The top causes of death among PEH from 2017 through July of 2020 are shown in Table 1. Combined, these eight causes accounted for 77% of all PEH deaths during that time period. Drug/alcohol overdose was the leading cause of death, accounting for about 28% of all deaths. Overdose was the leading cause for males and females and for all racial/ethnic groups except Asians/Pacific Islanders. Coronary heart disease (CHD) was second, accounting for about 20% of deaths. CHD was the second leading cause for males but was slightly lower than transportation-related injuries for females. Transportation related injury was the third leading cause of death, accounting for about 9% of deaths overall. Transportation-related injury was the third leading cause for all racial/ethnic groups except Blacks, for whom homicide was the third leading cause. Homicide and suicide were the fourth and fifth leading causes of PEH deaths overall.

Table 1: Leading Causes of Death Among PEH, 2017-July 2020 (N=4,305)

Cause	Total*	Race/Ethnicity†				Gender	
		Latinx	Black	White	Asian/PI	Male	Female
Drug/Alcohol Overdose (unintentional)	1137 (27.5%)	355 (24.6%)	271 (26.4%)	478 (31.8%)	17 (17.0%)	904 (26.9%)	232 (29.9%)
Coronary Heart Disease	808 (19.5%)	222 (15.4%)	234 (22.8%)	318 (21.2%)	27 (27.0%)	718 (21.3%)	90 (11.6%)
Transport-Related Injury‡ (unintentional)	361 (8.7%)	153 (10.6%)	61 (5.9%)	129 (8.6%)	9 (9.0%)	269 (8.0%)	92 (11.9%)
Homicide	255 (6.2%)	135 (9.3%)	69 (6.7%)	46 (3.1%)	**	227 (6.8%)	28 (3.6%)
Suicide	195 (4.7%)	77 (5.3%)	22 (2.1%)	83 (5.5%)	11 (11.0%)	168 (5.0%)	27 (3.5%)
Other Unintentional Injury	154 (3.7%)	65 (4.5%)	34 (3.3%)	49 (3.3%)	5 (5.0%)	128 (3.8%)	26 (3.4%)
Liver Disease/Cirrhosis	141 (3.4%)	86 (6.0%)	12 (1.33)	36 (2.4%)	**	122 (3.6%)	19 (2.5%)
Other Heart Disease§	132 (3.2%)	34 (2.4%)	49 (4.8%)	46 (3.1%)	**	90 (2.7%)	42 (5.4%)

* Percentages represent percentages of deaths with non-missing causes of death (n=4,141).

† Asians and Pacific Islanders were combined due to very small numbers of deaths in these two groups. Asians, Pacific Islanders and American Indians/Alaskan Natives each represented 1% or less of the LA County homeless population in the years analyzed.

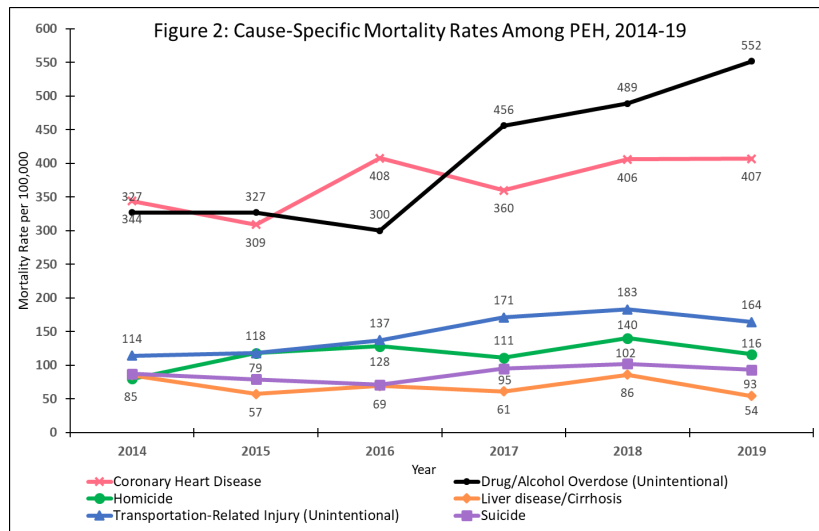
‡ Includes motor-vehicle and train-related injuries involving motorists, rail passengers, cyclist and pedestrians. Most of these PEH deaths involved pedestrians or cyclists.

§ Includes acute and subacute endocarditis; diseases of the pericardium and acute myocarditis; heart failure; and all other forms of heart disease except hypertensive heart disease.

** Causes with fewer than 5 deaths are suppressed. This includes all causes among American Indians/Alaskan Natives.

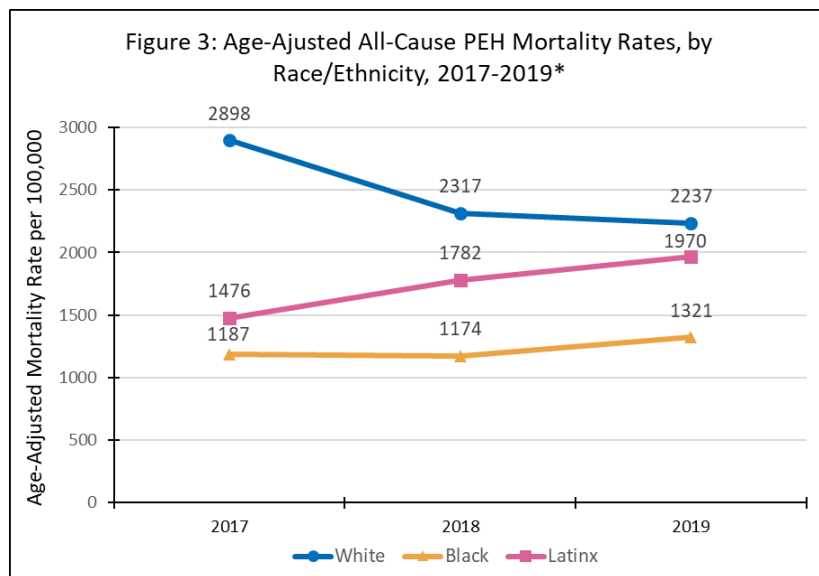
† Cells with fewer than 5 deaths are suppressed

Figure 2 shows annual trends in cause-specific mortality rates among PEH from 2014-19 for the top six causes of death during that time period. These trends indicate that the flattening of the all-cause mortality rate from 2018 to 2019 (Figure 1) occurred despite a continued increase in the overdose death rate in 2019. While transportation-related injury, homicide, suicide and liver disease mortality rates decreased slightly in 2019, the rate of overdose deaths increased by about 13% compared to 2018, and by 84% compared to 2016.

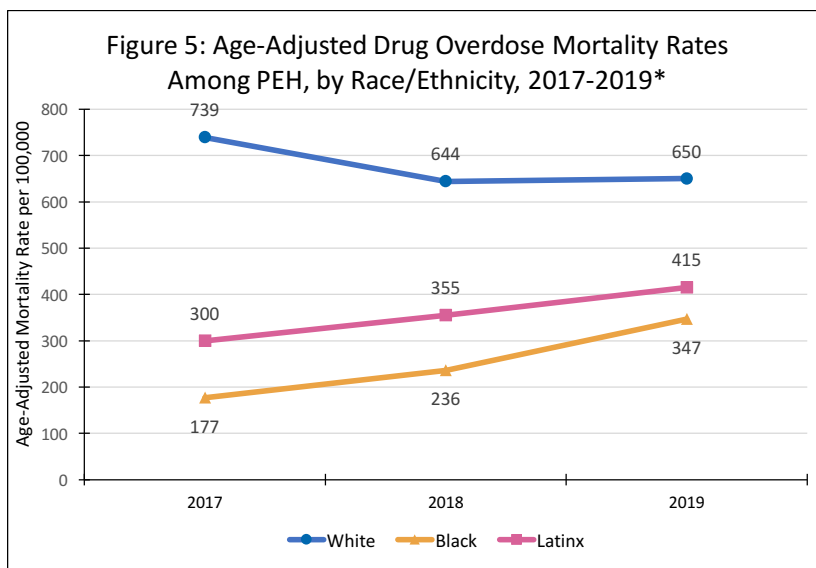
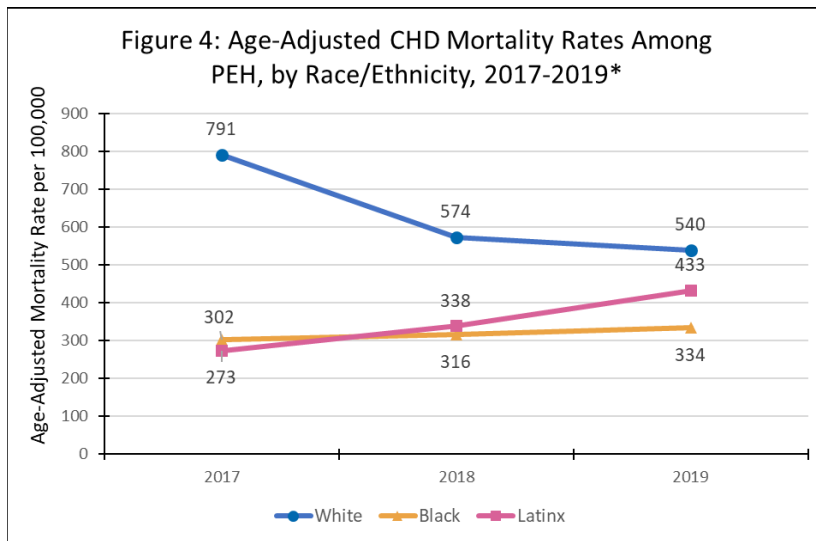


Trends in Age-Adjusted Mortality Rates Among PEH, by Race/Ethnicity and Gender

Figures 3-5 show trends in all-cause and cause-specific age-adjusted mortality rates among PEH by race/ethnicity. All-cause mortality rates were highest for white PEH across all three years, followed by Latinx PEH and Black PEH (Figure 3). However, the rate for white PEH decreased over that time period, while the rates for Latinx and Black PEH increased.



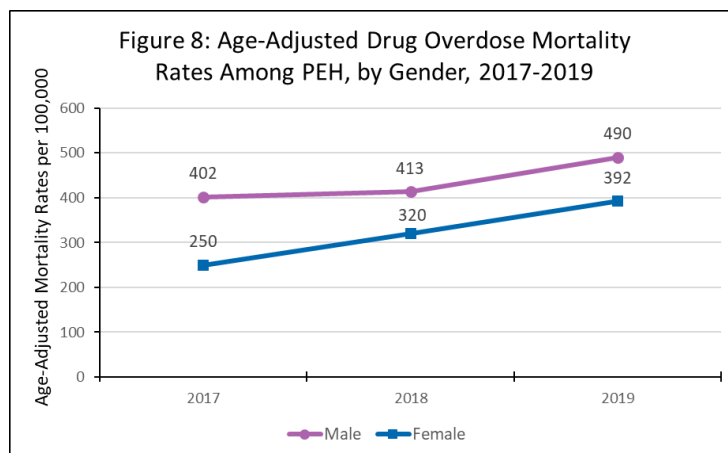
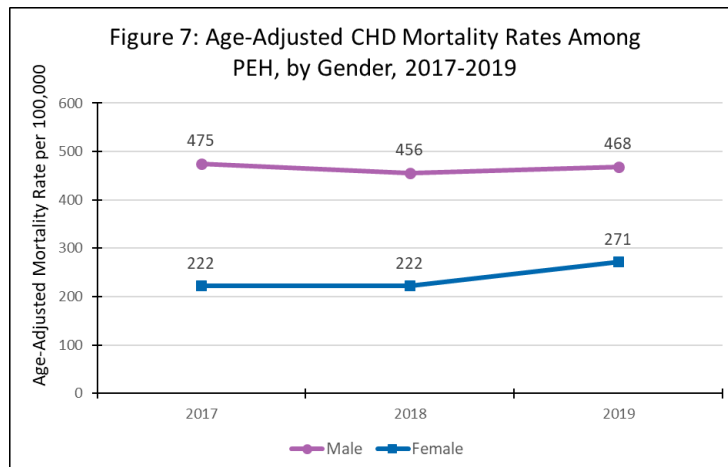
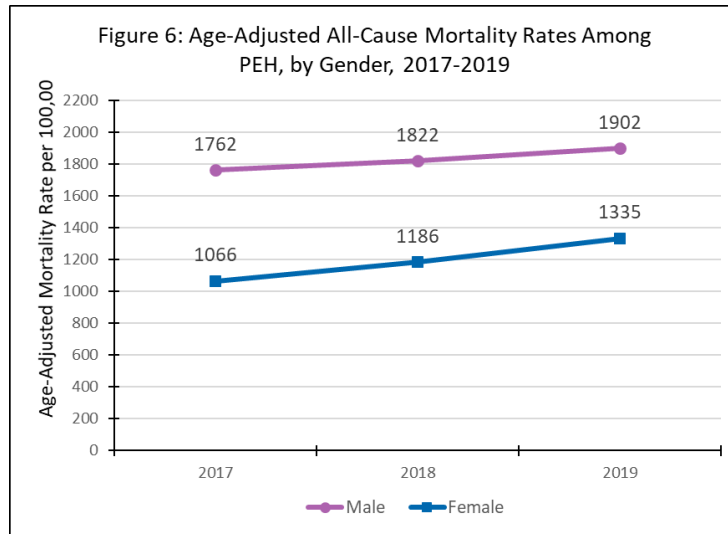
*Asians, Pacific Islanders, and American Indians/Alaskan Natives were not included in these analyses due to very small numbers of deaths. Each of these groups represented approximately 1% of the LA County homeless population in the years analyzed.



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CHD mortality rates were highest among white PEH across all years, but they decreased over time among white PEH, while they increased among Latinx and Black PEH (Figure 4). Overdose mortality rates were also highest among whites across all years, but while they decreased slightly among white PEH, they increased among Latinx and Black PEH (Figure 5).

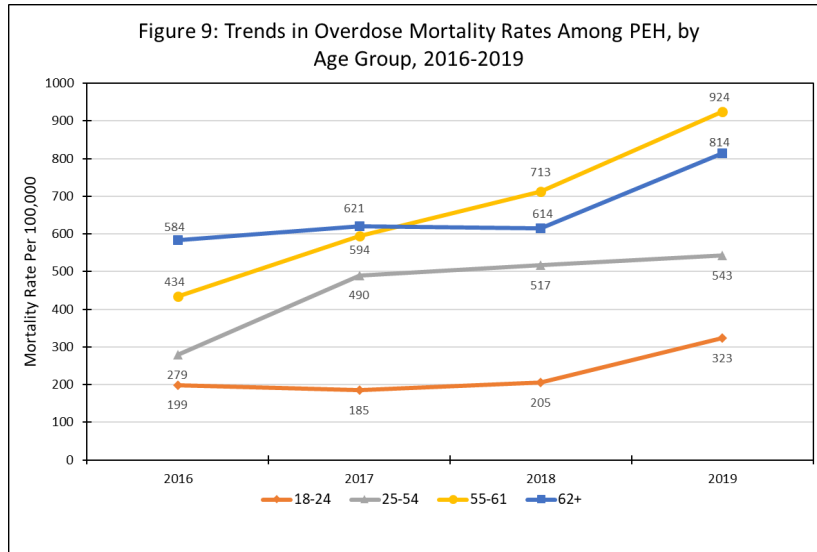
Figures 6-8 show trends in all-cause and cause-specific age-adjusted mortality rates among PEH by gender. Across all three years, overall mortality rates were higher for males, with rates increasing for both groups. (Figure 6). CHD mortality rates were higher for males across all years (Figure 7). While overdose mortality rates were also consistently higher for males, the gender difference was less pronounced—a notable finding given that the overdose mortality rate among men in the general population is more than twice the rate among women.¹⁵ From 2017-19 the overdose mortality rate increased for both male and female PEH (Figure 8).



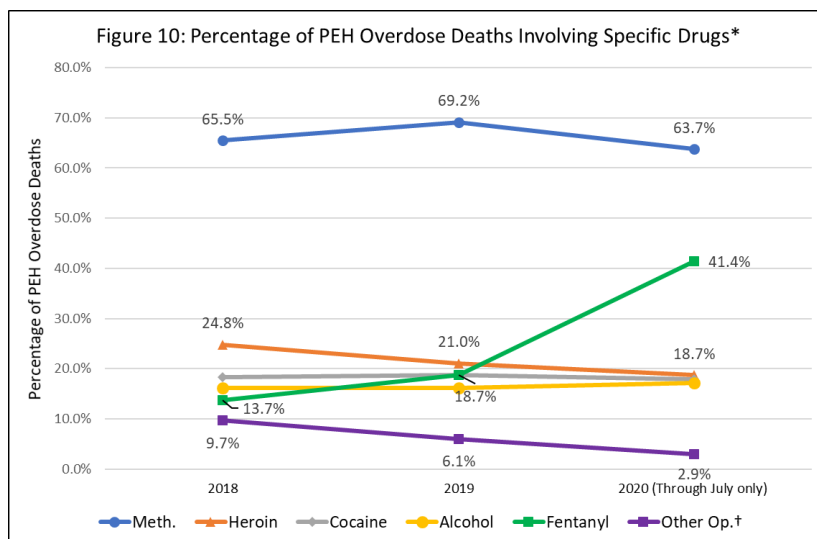
¹⁵ Los Angeles County Department of Public Health. Patterns of Mortality in Los Angeles County, 2008-2017. December 2019. <http://publichealth.lacounty.gov/dca/data/documents/mortalityrpt14.pdf>

Trends in PEH Overdose Death Rates by Age Group and by Types of Drugs Involved

Figure 9 shows temporal trends in overdose mortality rates by age group. Older PEH had higher rates across all years, although in 2018 and 2019 rates were highest for those aged 55-61. Also, while the rates increased over time for all age groups, the shapes of the curves differ considerably. For 25 to 54-year-olds, who experienced the largest number of deaths, the rate increased in 2017 and then stabilized. For those 18 to 24 and 62+, the rates were stable until 2019, when they notably increased. Meanwhile, the overdose mortality rate increased most steadily and precipitously among 55 to 61-year-olds, who experienced the second highest number of overdose deaths and whose overdose rate more than doubled from 2016 to 2019.



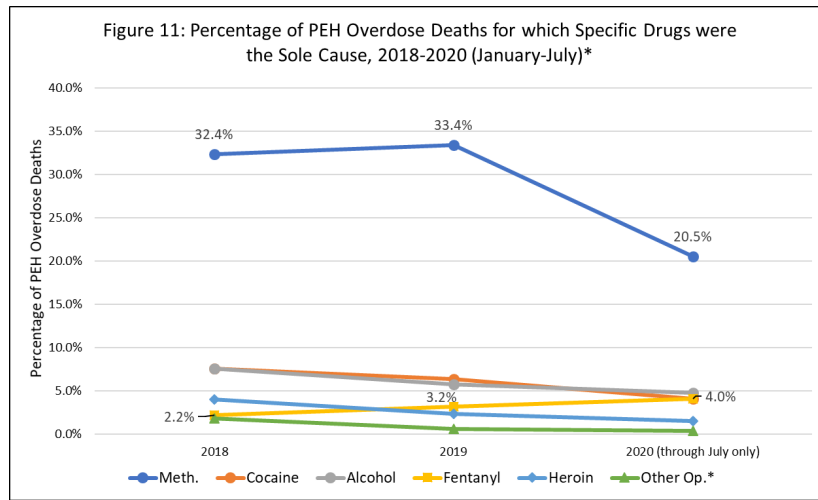
Trends in the types of drugs involved in PEH overdose deaths are displayed in Figure 10. Given that drug overdoses were driving overall increases in PEH mortality through 2019, Figure 10 includes a preview of data for the first seven months of 2020. Methamphetamine was the drug involved in the greatest percentage of overdose deaths across all three years and those percentages remained relatively stable. The percentage of overdose deaths involving fentanyl, a powerful synthetic opioid, tripled between 2018 and 2020 while the percentage of deaths involving heroin and other opiates decreased. Since overdose deaths often involve multiple drugs, it is also useful to look at trends in the percentages of deaths involving only one drug.



* Percentages per year add up to more than 100% because each death can involve multiple drugs.

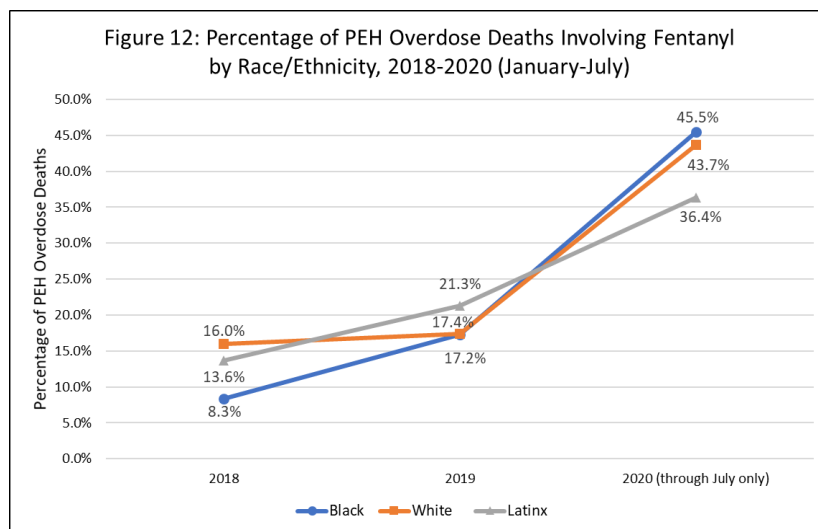
† Methadone, Morphine, Oxycodone, Hydrocodone, Oxymorphone, Tramadol, Codeine, Opiate

As shown in Figure 11, every drug except fentanyl had a decrease in the percentage of deaths for which it was the only drug involved, with methamphetamine decreasing by over a third between 2019 and 2020. Because fentanyl is cheaper and more addictive than other drugs, drug sellers often blend it with other drugs to increase profits.¹⁶ Figures 10 and 11 suggest that, beginning in 2019 and particularly in 2020, fentanyl has been involved in an increasing percentage of PEH overdose deaths at least in part because it is being used in combination with other drugs at an increasing rate.



* These represent percentages of the total number of PEH overdose deaths per year.

Given the increasing involvement of fentanyl in PEH overdose deaths, and the racial/ethnic disparity in recent trends in these deaths (Figure 5), an examination of trends in fentanyl involvement in overdose deaths by race/ethnicity may shed light on these overlapping phenomena. Figure 12 shows that, between 2018 and 2019, there was no change in fentanyl involvement in white PEH deaths, but the percentage of Black PEH deaths with fentanyl involvement doubled, and the percentage for Latinx PEH increased by over 50%. Thus, the racial/ethnic disparity in the direction of the overdose trends in Figure 5 appears to be explained by differences in fentanyl involvement. What is potentially more concerning in Figure 12 is the even larger increase in fentanyl involvement from 2019 to 2020. While we don't yet have population denominator data for 2020, it appears that fentanyl may contribute to a continuing increase in PEH overdose rates in 2020. However, since these most recent increases in fentanyl involvement are occurring across racial/ethnic groups, 2020 may see a lessening of racial/ethnic disparities in the PEH overdose rates, if rates begin to increase among whites as well.



¹⁶ National Institute of Drug Abuse, Fentanyl Drug Facts. <https://www.drugabuse.gov/publications/drugfacts/fentanyl>

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

Adjusting for differences in the age and gender makeup of the homeless population compared with the general LA County population, the overall mortality rate for the combined years of 2017-19 was almost three times higher among PEH than among the county population (Table 2). The mortality rate ratios (MRRs) were even higher for the five leading causes of death among PEH. PEH were 35.1 times more likely to die from a drug or alcohol overdose, 3.6 times more likely to die from CHD, 16.3 times more likely to die from transportation-related injuries, 15 times more likely to die by homicide, and 7.7 times more likely to die by suicide than people in the general LA County population.

Table 2: Age- and Gender-Adjusted Mortality Rate Ratios, PEH Compared to LA County Population, 2017-2019 (Combined Years)

Cause of Death	MMR
All Causes of Death	2.8
Drug/Alcohol Overdose	35.1
Coronary Heart Disease	3.6
Transportation Related	16.3
Homicide	14.4
Suicide	7.7

Preview of Death Counts and Causes of Death for January through July of 2020

Table 3 compares the total number of deaths among PEH monthly from January through July of 2019 and 2020. In January and February of 2020 there were fewer PEH deaths compared to those same months in 2019 but beginning in March 2020 and coinciding with the arrival of the COVID-19 pandemic in LA County, the number of deaths began to increase compared to 2019. For the combined months of January through July, there were 26% more PEH deaths in 2020 than there were in 2019. It is important to note that changes in the number of PEH deaths between 2019 and 2020 are not adjusted for changes in the total number of PEH in each of those years and are thus not equivalent to changes in mortality rates.

Table 3: PEH Death Counts, by Month, January-July 2019 and January-July 2020

Month of Death	Year of Death		
	2019	2020	Percent Change*
January	136	110	-19.1%
February	115	106	-7.8%
March	96	132	37.5%
April	94	137	45.7%
May	100	146	46.0%
June	92	133	44.6%
July	103	165	60.2%
TOTAL	736	929	26.2%

* Changes in death counts DO NOT account for changes in the underlying number of PEH and thus are NOT equivalent to changes in mortality rates.

Table 4 compares the number of deaths from each of the top five causes (plus COVID-19) for 2019 versus 2020 for the combined months of January through July.¹⁷ The number of overdose deaths increased by 33%, transportation-related deaths increased by 10%, and homicide deaths increased by 7%. The number of CHD and suicide deaths decreased and stayed the same, respectively. There were 36 COVID-19 deaths among PEH from January through July of 2020. Thus, the largest contributor to the increase in PEH death counts in 2020 versus 2019 was drug/alcohol overdoses. COVID-19 was the fifth leading cause of death among PEH by the end of July 2020, but at that same point in time, COVID-19 was already the second leading cause of death in the general LA County population.¹⁸ A closer examination of the 36 COVID-19 deaths among PEH revealed that they occurred disproportionately among Asian/PI and Latinx PEH, who comprised 11% and 50% of COVID-19 deaths, respectively. Asian/Pis have represented only about 1% of the homeless population over the past several years and Latinx have represented about a third of PEH in LA County. The overrepresentation of Latinx among PEH COVID-19 death counts mirrors what has occurred in the general population. While we were unable to disaggregate Pacific Islanders from Asians in our PEH cause-of-death reporting, Pacific Islanders have also been overrepresented among COVID-19 deaths in the general population.

Table 4: PEH Death Counts, by Top Five Causes of Death (plus COVID-19), January-July 2019 and January-July 2020

Cause of Death	Year of Death		
	2019	2020	Percent Change*
Overdose	205	273	33.2%
CHD	155	132	-14.8%
Transport-Related	58	64	10.3%
Homicide	41	44	7.3%
COVID-19	N/A	36	N/A
Suicide	29	29	0.0%

* Changes in death counts DO NOT account for changes in the underlying number of PEH and thus are NOT equivalent to changes in mortality rates.

¹⁷ At the time of this analysis, cause of death was not yet available for 89 PEH deaths in 2020.

¹⁸ Analysis provide by LA County Department of Public Health Office of Health Assessment and Epidemiology. As of July 31st, 2020, CHD was the leading causes of death (7,000 deaths), followed by COVID-19 (4,326 Deaths).

Discussion

The overall mortality rate among PEH in LA County rose only slightly in 2019 compared to a steady increase by over 30% between 2014 and 2018. This flattening of the overall curve was due to an increase in the homeless population that kept pace with the increase in the number of deaths, which rose to a record total of 1,267 in 2019. Despite the relatively small increase in the overall mortality rate among PEH, the rate of drug overdose deaths continued to increase substantially in 2019 while rates for other major causes either decreased or remained stable. Drug overdose has been the leading cause of death among PEH in LA County since 2017, when CHD dropped to number two. From 2016 to 2019, the overdose mortality rate increased by 84%.

An examination of mortality rate trends by PEH sub-groups revealed notable disparities by race/ethnicity. The all-cause mortality rate among Black and Latinx PEH increased from 2017 to 2019, while the rate among white PEH decreased slightly. While the rate of overdose deaths was consistently highest among white PEH over the past three years, that rate has remained stable while the rate of overdose deaths among Black PEH nearly doubled and the rate among Latinx PEH increased by a third. Thus, the recent rise in the overdose mortality rate among PEH can largely be attributed to increases among Black and Latinx PEH.

An examination of trends in overdose death rates by age group revealed that while more than half of these deaths occurred among PEH aged 25-54, the age groups with the highest overdose rates in 2019 and the sharpest rate increases that year were those aged 55-61 followed by those aged 62+. This finding may be at odds with perceptions that drug use is greater among younger people and suggests potential patterns of drug use behavior or preexisting medical conditions among older adults that appear to increase the likelihood of fatal overdose.

Based on an analysis of trends in the types of drug involved in PEH overdose death, it appears that the continued increase in overdose mortality rates in 2019, especially among Black and Latinx PEH, was largely driven by the increased involvement of fentanyl in overdose deaths in these racial/ethnic groups. A preview of data on overdose deaths during the first seven months of 2020 suggests that fentanyl will likely contribute to further increases in overdose death rates, and that these increases will begin to occur among white PEH as well.

Recent stability in the overall CHD mortality rate among PEH belied disparities observed by race/ethnicity. While the CHD mortality rate decreased by 25% among white PEH from 2017-2019, it increased by 17% among Black PEH and by nearly 50% among Latinx PEH. Permanent supportive housing (PSH) targets the chronically homeless, who tend to be older and suffer from more comorbidities than other PEH. Recent increases in PSH placements in LA County¹⁹ should decrease mortality rates for CHD and other conditions associated with aging among PEH as these deaths increasingly occur among formerly homeless individuals in PSH. The decrease in CHD mortality among white PEH represents an important but limited success for LA County that may provide lessons for how to spread that success more equitably across the entire population of chronically homeless Angelenos.

Transportation-related injuries, particularly among pedestrians and cyclists, have consistently ranked 3rd among causes of death among PEH, comprising almost one in ten deaths over the past several years. The traffic safety measures that characterize initiatives such as Vision Zero can help reduce PEH traffic deaths by considering the unique needs of this population. However, it stands to reason that the unsheltered status of most of LA County's homeless population vastly increases their exposure to traffic hazards and is a primary driver of traffic-related deaths among PEH. Thus, efforts to increase access to temporary shelter would likely decrease traffic-related and overall mortality rates among PEH.

¹⁹ Los Angeles Homeless Services Authority, 2020 Greater Los Angeles Homeless Count, <https://www.lahsa.org/documents?id=4558-2020-greater-los-angeles-homeless-count-presentation.pdf>

Finally, PEH experience disproportionate amounts of violence in their daily lives, as evidenced in this analysis by rates of death by homicide and suicide exceeding those found in the general population by fifteen times and eight times, respectively. Violence among PEH can take many forms, including intimate partner violence, violence related to drug transactions, and interpersonal and self-inflicted violence linked to mental health problems. The precipitating factors contributing to the violent deaths included in this analysis were not determined, but a closer look at circumstances surrounding these deaths could help inform prevention strategies.

Recommendations

Enhancing and Expanding Substance Use Disorder and other Health Care Treatment and Related Housing Services for PEH

1. Enhance the reach, depth and quality of multidisciplinary team services for PEH, with an explicit focus on reaching Black and Latinx PEH, by establishing trust, offering interim housing options, providing chronic disease management, and extending harm reduction approaches to substance use disorder (SUD) and mental health treatment.
2. Through coordinated efforts across the LA County Departments of Public Health, Health Services, and Mental Health and the Los Angeles Homeless Services Authority (LAHSA), expand and improve SUD services for PEH, with an explicit focus on reaching Black and Latinx PEH, including:
 - Increased distribution of naloxone to PEH in street settings and shelter/interim housing settings, and to those exiting correctional facilities.
 - Expand peer-based outreach to PEH that includes street-based syringe exchange and overdose prevention education, with a focus on increasing understanding of the presence and risk of fentanyl, including when mixed with other drugs, and to encourage the use of SUD treatment services.
 - Increased education of providers and PEH about the signs, symptoms and dangers of methamphetamine overdose.
 - Once the Skid Row Sobering Center is no longer being used as a COVID-19 quarantine and isolation site, provide rapid transportation to the Center for Skid Row residents ready to engage in some form of treatment, and improve connections to the SUD treatment system after Center stays.
 - Diversify and ensure access to behavioral health treatment options available to meet the unique needs of PEH, including harm reduction services.
 - Provide immediate connection to the Substance Abuse Prevention and Control (SAPC) program's Substance Abuse Service Helpline (SASH) for SUD assessments of PEH on the street when requested by outreach teams.
 - Expand and enhance County contracted SUD provider utilization of LAHSA's Homeless Management Information System (HMIS) to improve coordination of care and housing focused case management for PEH with SUDs.
 - Decrease wait times between SUD screening and treatment admissions by improving County contracted providers' timely reporting of available beds using the Service Bed Availability Tool (SBAT), a web-based platform that tracks SUD services in LA County.
3. Increase investment in Recovery Bridge Housing (RBH) to ensure that all PEH receiving outpatient SUD treatment services have access to interim housing for the duration of their treatment. For PEH in other Interim Housing facilities, promote access to SUD treatment services through the SASH and through Client Engagement and Navigation Services (CENS) offices located in each Service Planning Area.

4. Prioritize housing placements for PEH completing inpatient or outpatient SUD and/or mental health treatment services.
5. Increase opportunities for diversion from jail to SUD treatment services for PEH with SUDs by:
 - Establishing an SUD diversion program in LA County modelled after Law Enforcement Assisted Diversion (LEAD), a community-based diversion program designed to increase public safety while reducing unnecessary justice system involvement of eligible people with SUDs
 - Fully utilizing the new Mark Ridley-Thomas Behavioral Health Center's 33 residential SUD treatment beds specifically designated for SUD diversion.
6. Enhance SUD and mental health treatment services for incarcerated PEH through jail in-reach and community reentry programs including:
 - medication assisted treatment (MAT) for inmates with indicated SUDs
 - The START-Community Program which provides community based, supervised residential treatment services to volunteer non-violent inmates with a minimum of 90 days left in their sentence
 - the In-Custody to Community Referral Program (ICRP), which links re-entry population with SUDs to SUD services in the community upon release from custody.

Protecting PEH from COVID-19

7. Protect PEH from COVID-19 by:
 - providing COVID-19 prevention messaging and distributing protective face coverings and hand sanitizer in shelters and through street outreach
 - implementing infectious disease protocols in shelters, encampments and other congregate settings where PEH live
 - connecting unsheltered PEH and those exiting jails, hospitals and other institutional settings to newly available shelter options including medical shelters, hotel rooms for isolation and quarantine, and the Project RoomKey and newly established Project HomeKey Housing Programs
 - ensuring all hospitals, homeless healthcare providers, and shelters have referral and transportation protocols in place for PEH in need of isolation and quarantine

Protecting PEH from Violence

8. Offer safe interim housing to PEH fleeing from violence, including inter-personal violence, human trafficking, and sexual abuse.

Policy and Systems Change

9. Support legislation that would allow safe and supervised injection drug use sites with syringe exchange programs in areas with high concentrations of overdose deaths among PEH to reduce overdose deaths, HIV, hepatitis C, and other infectious diseases in this vulnerable population.
10. Work with the California Department of Health Care Services (DHCS) to reduce the amount of time required to secure Drug Medi-Cal certification for new residential and non-residential service sites to enable the more rapid expansion of SUD treatment networks to meet the SUD service needs of PEH.

11. Increase the quantity and quality of the SUD treatment workforce through ongoing trainings, a workforce recruitment campaign, a tuition incentive pilot program, and collaboration with the three state-level SUD counselor certifying bodies on the SUD Workforce Enhancement for Longitudinal Learning (SWELL) Initiative.
 - Ensure that these workforce development efforts support career development and advancement for people with lived experiences of homelessness, with an explicit focus on engaging formerly homeless Black and Latinx people as part of an overall strategy to reduce racial/ethnic inequities in the experiences and consequences of homelessness and substance use.
12. Incorporate a specific focus on PEH in the Vision Zero Plan as part of efforts to reduce traffic fatalities in LA County.
13. Maximize federal matching dollars for services for PEH that are currently covered by Medi-Cal and explore opportunities to change Medi-Cal reimbursement policies to allow billing for services provided by multidisciplinary teams treating PEH in non-clinical settings.

Data and Other Information to Inform Services, Policies and Systems Change

14. Conduct an annual update of the LA County Homeless Mortality Report that includes data on drug types involved in overdose deaths, geographic clustering of homeless deaths, and trends in mortality rates by gender and racial/ethnic groups.
15. Launch a homeless death review process to provide a more comprehensive understanding of the circumstances surrounding selected homeless deaths from each of the major causes and inform specific recommendations for reducing homeless deaths from each of these causes.
16. Conduct analyses of deceased homeless clients' interactions with County and other service systems during the periods leading up to their deaths to inform intervention strategies to reduce homeless mortality.
17. Work with academic partners and County Departments to explore the use of machine learning and other data science methodologies to drive targeted mortality prevention interventions for PEH, including those involved in the justice system.

