March 2019

Preventing Violence in California

Data Brief 1: Overview of Homicide and Suicide Deaths in California

"Violence is a public health concern. Together with its state and local partners, the California Department of Public Health can play a leadership role in bringing people together to have a meaningful dialogue about violence and how it can be prevented through collective action."

- Karen L. Smith, M.D., M.P.H.

Director and State Public Health Officer,
California Department of Public Health

California Department of PublicHealth

California Department of Public Health
Violence Prevention Initiative

Preventing Violence in California

Data Brief 1: Overview of Homicide and Suicide Deaths in California

This data brief has been produced by the California Department of Public Health (CDPH) Violence Prevention Initiative, in partnership with the California Violent Death Reporting System (CalVDRS) program. It follows the *Volume 1: The Role of Public Health* report in the *Preventing Violence in California* series of resources for local health jurisdictions and other stakeholders.

A key function for governmental public health agencies in addressing violence is to collect and analyze data, to better understand the problem, identify risk and protective factors, and support the development of data-informed interventions that reduce the risk factors and support protective factors to mitigate violence. Data are an essential part of the dialogue around violence prevention and can guide in the development of sustainable prevention strategies.

This data brief is focused on a broad overview of the prevalence and burden of homicides and suicides in California.

Acknowledgements

We acknowledge and appreciate the efforts of the Violence Prevention Initiative team and the many partners who contributed to the development of this report.

Suggested Citation

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California Department of PublicHealth

Introduction
Overview of Violent Deaths

Violent deaths are a major public health concern in California that can both have immediate and long-term impacts on individuals, families, and entire communities. In this report, violent deaths include both homicides and suicides.

Over the last decade, more than 60,000 Californians died from either homicide or suicide.[1]

In 2017, there were nearly 6,500 violent deaths among California residents:

- **4,323 suicides**
- **2,113 homicides**

Non-fatal violence-related injuries also resulted in:

- **over 20,000 hospitalizations[2]**
- **over 171,000 emergency department visits for non-fatal violent injuries[3]**

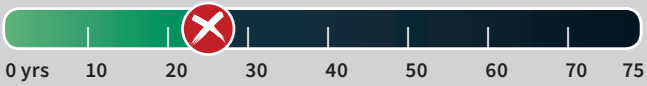
Violent deaths are defined as intentional deaths verified by coroners or medical examiners and captured on death certificates using International Classification of Diseases (ICD) codes. (See Appendix 1 for case definition). Homicide is the intentional killing of one person by another and suicide is the act of intentionally causing one's own death.

Homicides and suicides are leading causes of premature death and are major contributors of years of life lost due to their significant impact on young people. Specifically, suicide and homicide are the second and third leading causes of death, respectively, among adolescents and young adults ages 15-24 in California.

In addition to the human tragedies associated with violent deaths, there are also tremendous economic costs. Based on only medical and work-loss costs, violent deaths result in estimated costs of $8.0 billion* per year in California, with $4.9 billion of these costs due to suicides and $3.1 billion due to homicides.[5]

This report focuses on violent deaths because they represent the most severe outcome and irreversible consequence of violence. However, deaths must be seen in the broader context of all forms of fatal and non-fatal violence. Effective prevention and interventions will require understanding of the full continuum of violence.

Years of Life Lost: Years of life lost is a measure that captures the impact of premature death from violence by estimating the number of years of potential life lost with each death. For example, if the life expectancy for men in a given country is 75, but a man dies from homicide at the age of 20, this would be calculated as 55 years of life lost.[4]



* These costs are from only homicides and suicides and do not include costs from non-fatal violence related injury. Data were taken directly from 2017 Centers for Disease Control and Prevention (CDC) estimates, and are based on medical costs (transport, emergency department, hospitalization, nursing home, and other examination costs) and on lifetime work loss costs due to premature death (annual earnings and life expectancy estimates).

Introduction
Report Overview

Topics covered in this data brief:

- **Statewide rates and trends**
- **Geographic and demographic disparities**
- **Mechanism of harm**

This report presents data on violent deaths, utilizing the CDPH Vital Statistics Death Files, in order to provide a foundation of information around the nature of the problem and to support continuing dialogue around opportunities for preventing violence in California. Although all data sources have limitations, vital statistics are a well-established and consistent source of data on violent deaths.

Violent deaths are, however, only the "tip of the iceberg" of harm from violence. Violence has far-reaching impacts through non-fatal injury and disability as well as health and mental health consequences across the lifespan and even generations for individuals, families and communities exposed to violence.

Violence must be viewed in the context of broader socioeconomic factors, such as lack of educational and occupational opportunities. These factors may significantly impact the likelihood of violence by increasing or decreasing risk and protective factors, thus contributing to disparities and inequities.[6,7]

While the data in this report reflects rates and trends of violent deaths and can inform violence prevention efforts, the data alone do not provide explanations or answers to why these deaths occur.

Homicide and suicide are connected to one another and to other forms of violence, all of which share many of the same underlying causes. A more comprehensive public health investigation of multiple data sources would be required to understand the shared root causes and risk and protective factors associated with multiple forms of violence.

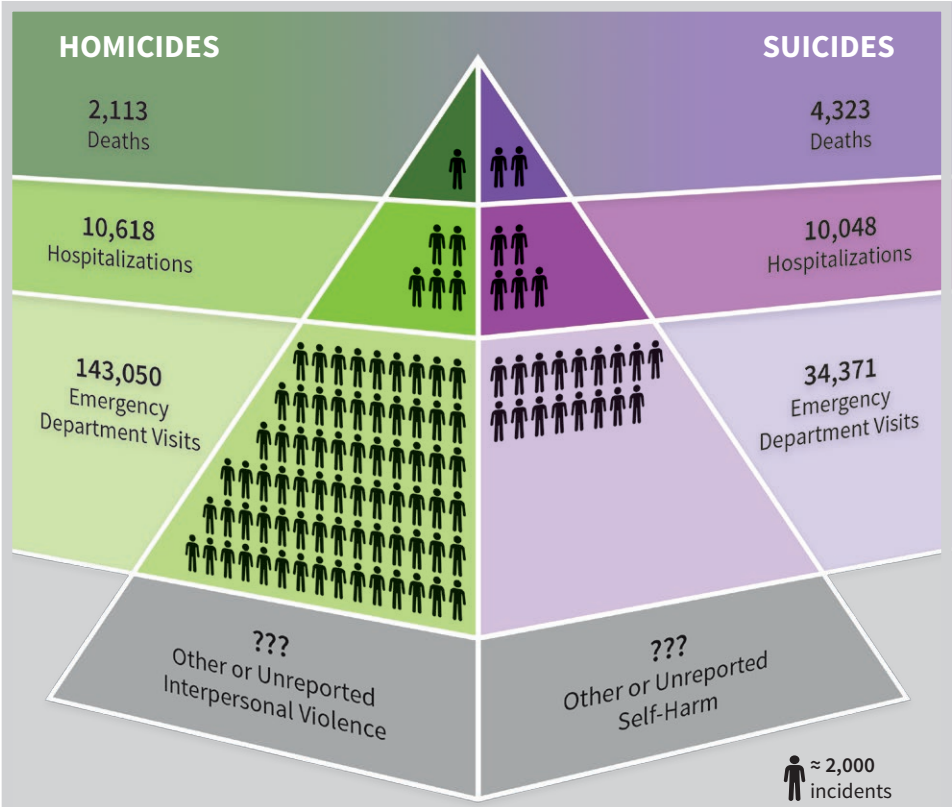
Infographic
Violent Death and Injury Pyramid

This violent death and injury pyramid infographic illustrates that for every homicide or suicide death there is an even greater number of hospitalizations and emergency department visits. In addition, these data sources only capture a fraction of the full impact of violence. There are many other instances of violence that do not result in hospitalizations or emergency department visits, or are not reported or captured in available data sources.

The left side of the pyramid displays non-fatal injuries due to assault and deaths due to homicide. The right side of the pyramid displays non-fatal injuries due to self-harm and deaths due to suicide.

There are different patterns reflected in each category of violence.

- There are more than twice as many suicides as homicides.
- However, for non-fatal assaults, the number of emergency department injuries are substantially higher than those for injuries due to self-harm.
  - In 2017, for every 2,000 deaths due to homicide there were approximately 143,000 emergency department visits for injuries due to assault.
  - For every 4,000 deaths due to suicide, there were approximately 34,000 emergency department visits for injuries due to self-harm.



Source: California Department of Public Health (CDPH) Vital Statistics Death File (2017); California Office of Statewide Health Planning and Development Inpatient Discharge Data (2017); California Office of Statewide Health Planning and Development Emergency Department Data (2017)

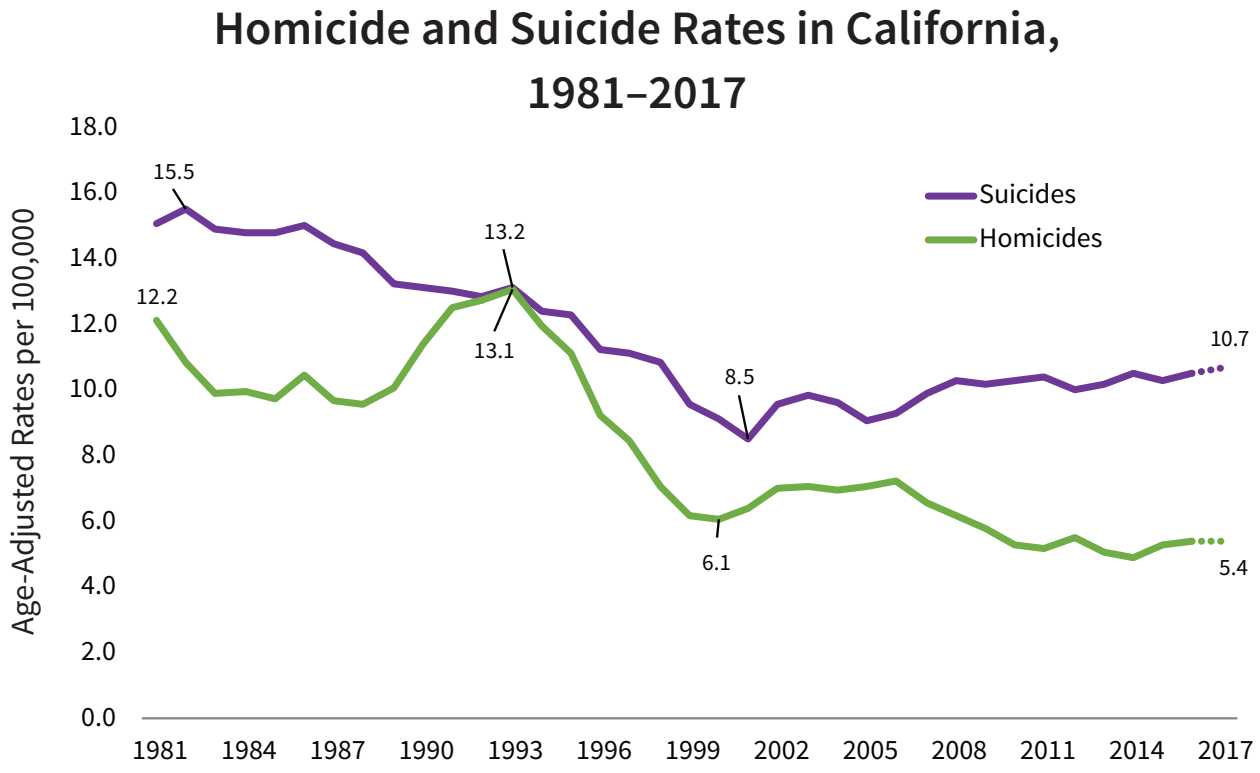
Prepared by: CDPH Fusion Center; CDPH Safe and Active Communities Branch

Although these data represent the best available estimates, violence in all its forms is often underreported, and the consistency and reliability of available data for specific forms of violence is limited (e.g., domestic violence, sexual violence, hate crimes, and child maltreatment). As a result, the full magnitude and consequences of violence are far greater than is reflected in these figures.

California Violent Death Rates

The chart below depicts age-adjusted homicide and suicide rates (incidence per 100,000 residents) in California since 1981. Overall, both homicide and suicide rates have been lower in the past ten years than they were in the previous three decades. Homicide rates first began to decline in the early 1990s, and this trend has continued through the last ten years. Suicide rates also declined in the 1990s but have increased in the most recent decade and are now double the homicide rates.

Based on recent national data, California rates are lower than the national rates for both homicides and suicides. California's homicide rate is 5.4 while the national rate is 6.1. California's suicide rate is 10.7 while the national suicide rate is 13.4.[8]

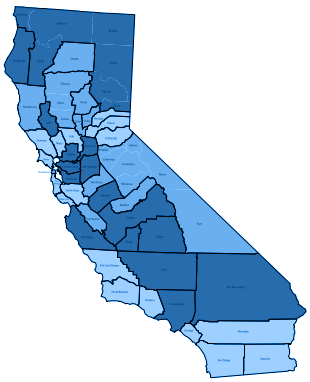


Source: CDC, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) (1981-2016); California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Geographic Disparities

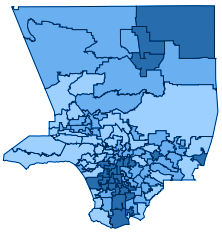
This report presents multiple ways to view the variation in violent deaths across the state. Here we start with geography. California is a large and diverse state with over 40 million people. There are widespread variations in violent death rates between and within counties.



County Rates

Rates of homicide and suicide vary greatly across the state, with some counties experiencing rates more than twice the statewide level. This section includes statewide maps and tables displaying county-level rates of homicide and suicide based on county of residence of the victims. The color-coding within each map indicates three levels of homicide or suicide rates for each county based on statistical testing: significantly above the state rate, not significantly different than the state rate, and significantly below the state rate. Data are presented in three-year aggregates for 2015-2017 and small counties that are adjacent to one another were combined for statistical stability.

High rates indicate increased burden in certain areas, but do not necessarily indicate high numbers (magnitude). While focusing on rates allows meaningful comparisons between counties and communities (by taking into account the population size), there are some areas with lower rates, but large populations, and therefore large numbers of deaths, also suggesting the need for attention. Thus, counts (number of deaths) are also included in the accompanying tables.



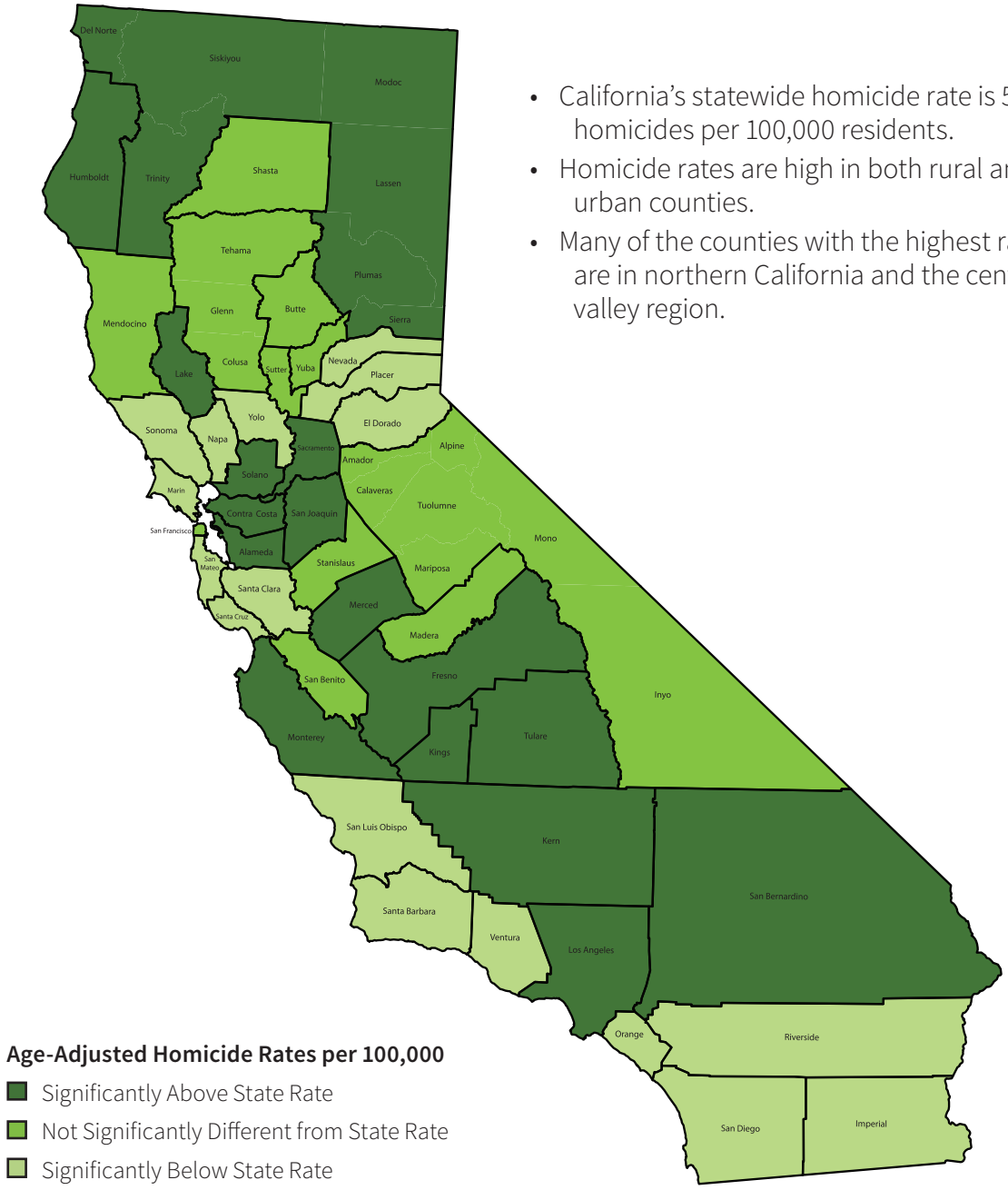
Sub-County Rates

There is also significant variation in violent deaths at the sub-county level. Just as socioeconomic and health status differ greatly among communities within a county, so too do the exposure to and effects of violence, including homicide and suicide.

Within some counties with low overall rates, there are communities with very high rates, just as within some counties with high overall rates, there are communities with low rates. In fact, within some counties with lower rates there are communities that have among the highest rates in the state. Examples of sub-county maps are included for the several counties with the highest number of violent deaths in northern and southern California.

These differences underscore the importance of looking at both county and community level data to gain a more comprehensive understanding of the geographic patterns of burden of violent deaths across California.

Homicide Rates in California Counties/County Groups, 2015–2017



- California's statewide homicide rate is 5.4 homicides per 100,000 residents.
- Homicide rates are high in both rural and urban counties.
- Many of the counties with the highest rates are in northern California and the central valley region.

Age-Adjusted Homicide Rates per 100,000

- Significantly Above State Rate
- Not Significantly Different from State Rate
- Significantly Below State Rate

Note: Significantly different than state rate ($p < 0.05$)

Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2015-2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Fusion Center

Geographic Disparities:
Homicide Rates by County

Age-Adjusted Homicide Rates by County in California, 2015-2017

While the overall homicide rate in California is 5.4, the highest county rate is in Lake County (14.4) and the lowest rate is in Napa and Placer Counties (1.7).

County	Count	Rate	Lower CI	Upper CI	Rank Highest to Lowest Rate
California (Overall)	**6388**	**5.4**	**5.3**	**5.5**	**-**
Alameda	329	6.6 **	6.1	7.1	16
Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, and Tuolumne	22	4.2	2.9	5.5	27
Butte	28	4.3	3.2	5.5	25
Colusa, Glenn, and Tehama	16	4.8	3.1	6.6	23
Contra Costa	210	6.4 *	5.8	7.0	17
Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, and Trinity	40	9.6 **	7.4	11.8	5
El Dorado	14	2.5 ‡	1.5	3.4	38
Fresno	233	7.9 **	7.2	8.6	11
Humboldt	35	8.6 *	6.6	10.7	9
Imperial	18	3.4 ‡	2.3	4.5	31
Kern	258	9.7 **	8.9	10.6	4
Kings	40	8.9 **	6.9	10.9	6
Lake	26	14.4 **	10.4	18.5	1
Los Angeles	1936	6.3 **	6.1	6.5	18
Madera	19	4.3	2.9	5.7	26
Marin	18	2.2 ‡	1.5	3.0	41
Mendocino	16	6.0	3.9	8.2	19
Merced	69	8.4 **	7.0	9.8	10
Monterey	161	12.3 **	10.9	13.6	2
Napa	7	1.7 ‡	0.8	2.7	43
Nevada	6	1.8 ‡	0.7	2.9	42
Orange	239	2.5 ‡	2.3	2.7	37
Placer	19	1.7 ‡	1.2	2.3	44
Riverside	330	4.7 ‡	4.4	5.1	24
Sacramento	304	6.8 **	6.2	7.3	14
San Benito	6	3.5	1.5	5.5	30
San Bernardino	448	7.0 **	6.5	7.4	13
San Diego	317	3.2 ‡	3.0	3.5	32
San Francisco	141	5.3	4.6	5.9	22
San Joaquin	223	10.2 **	9.2	11.1	3

Geographic Disparities:
Homicide Rates by County

County	Count	Rate	Lower CI	Upper CI	Rank Highest to Lowest Rate
San Luis Obispo	19	2.3 ‡	1.6	3.1	39
San Mateo	52	2.3 ‡	1.9	2.8	40
Santa Barbara	48	3.5 ‡	2.8	4.3	29
Santa Clara	172	3.0 ‡	2.7	3.3	33
Santa Cruz	23	2.8 ‡	2.0	3.6	36
Shasta	36	6.7	5.1	8.3	15
Solano	111	8.7 **	7.5	9.8	8
Sonoma	41	2.8 ‡	2.2	3.5	35
Stanislaus	94	5.9	5.1	6.8	20
Sutter	17	5.9	3.9	7.9	21
Tulare	121	8.7 **	7.6	9.8	7
Ventura	92	3.6 ‡	3.1	4.2	28
Yolo	17	2.9 ‡	1.9	3.8	34
Yuba	17	7.6	5.0	10.2	12

Note: Significantly above the state rate (*p< 0.05, **p< 0.001). Significantly below the state rate (†p< 0.05, ‡p< 0.001). The confidence interval (CI) provides information on the precision of the rates being shown. Estimates with wide confidence intervals are less stable and should be interpreted with caution, especially when comparing the estimate to another group or over time.

Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2015-2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

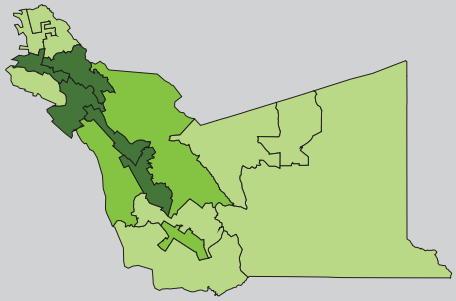
Geographic Disparities
Homicide Rates Sub-County Examples

Four sub-county maps are included below, displaying sub-county variation for the counties with the two highest numbers of homicides in northern and southern California. Sub-county variations can be masked on the county level but indicate significant geographical distribution of homicides within these counties.

Alameda:

County rate (6.6) is significantly above the state rate.

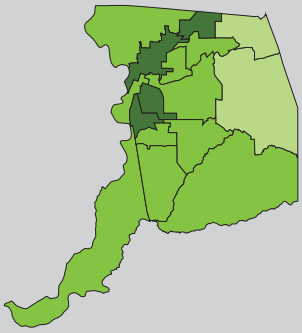
Four communities are significantly above the state rate, with rates from 6.7 - 21.4.



Sacramento:

County rate (6.8) is significantly above the state rate.

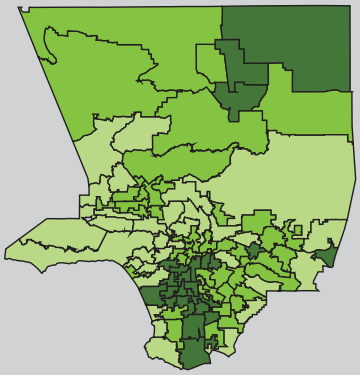
Four communities are significantly above the state rate, with rates from 7.1 - 13.9.



Los Angeles:

County rate (6.3) is significantly above the state rate.

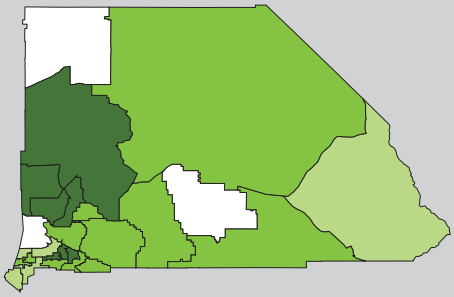
Twenty-four communities are significantly above the state rate, with rates from 6.9 - 29.3.



San Bernadino:

County rate (7.0) is significantly above the state rate.

Seven communities are significantly above the state rate, with rates from 6.9 - 15.3.



Note: Rate is significantly different than state rate ($p < 0.05$).

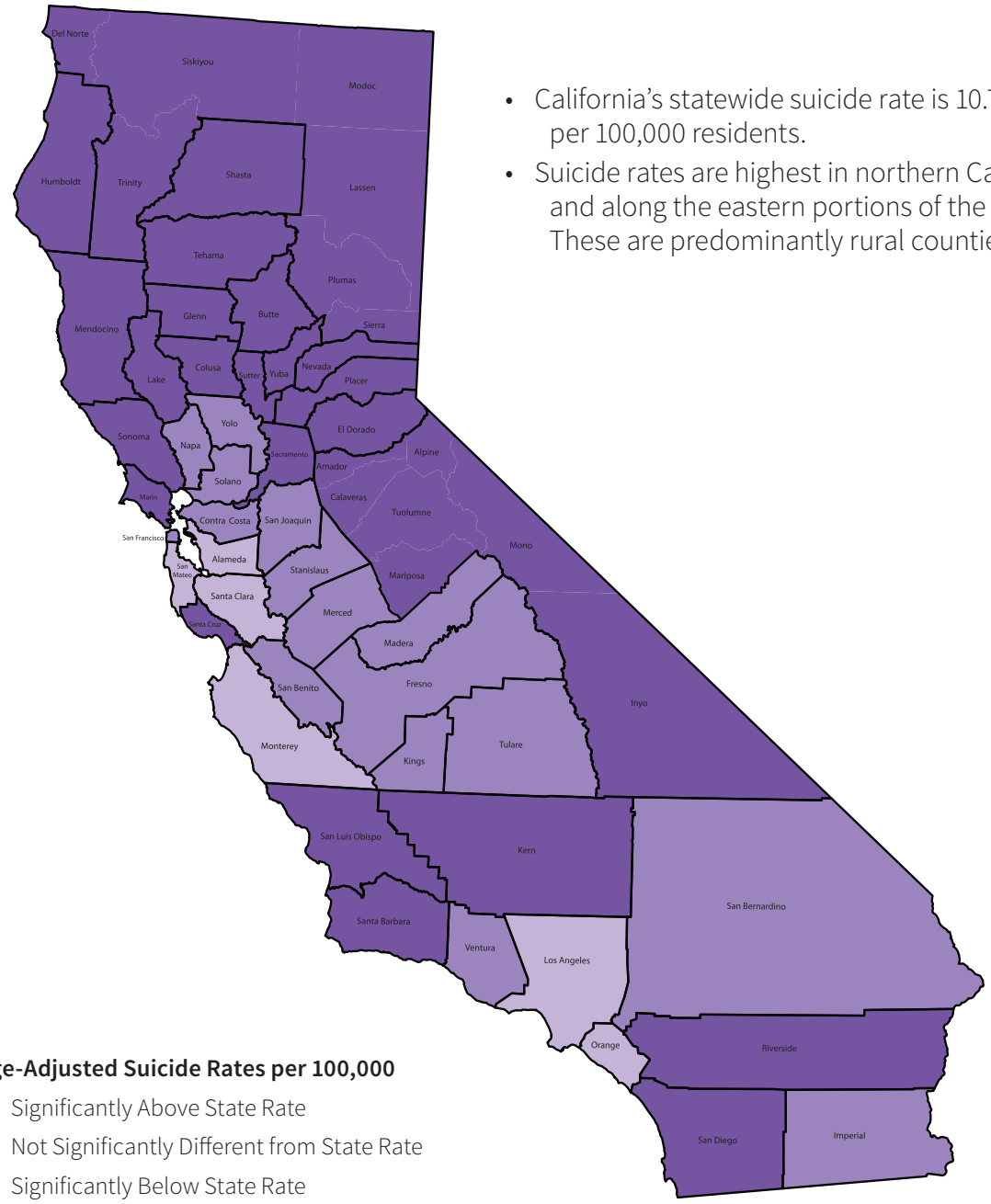
In these sub-county community maps, communities are defined by California Office of Statewide Planning and Development (OSHPD) "Medical Service Study Areas". In order to enhance statistical stability, the data in these maps are aggregated over five years (2013-2017).

- Significantly Above
- Not Significantly Different
- Significantly Below
- Missing

Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2013-2017); U.S. Census Bureau; 2016 American Community Survey 5-Year Estimates, Table B01001

Prepared by: CDPH, Fusion Center

Suicide Rates in California Counties/County Groups, 2015–2017



- California's statewide suicide rate is 10.7 suicides per 100,000 residents.
- Suicide rates are highest in northern California and along the eastern portions of the state. These are predominantly rural counties.

Age-Adjusted Suicide Rates per 100,000

- Significantly Above State Rate
- Not Significantly Different from State Rate
- Significantly Below State Rate

Note: Significantly different than state rate ($p < 0.05$)

Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2015-2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Fusion Center

Geographic Disparities:
Suicide Rates by County

Age-Adjusted Suicide Rates by County in California, 2015-2017

The overall suicide rate in California is 10.7, the highest county rate is in Lake County (30.4) and the lowest rate is in Santa Clara County (7.5).

County	Count	Rate	Lower CI	Upper CI	Rank Highest to Lowest Rate
California (Overall)	**12831**	**10.7**	**10.5**	**10.8**	**-**
Alameda	449	8.9 ‡	8.3	9.5	41
Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, and Tuolumne	141	23.0 **	20.1	25.8	5
Butte	131	19.1 **	16.7	21.5	9
Colusa, Glenn, and Tehama	67	19.6 **	16.2	23.0	8
Contra Costa	361	10.5	9.7	11.3	35
Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, and Trinity	112	24.4 **	21.1	27.7	3
El Dorado	105	18.7 **	16.1	21.3	11
Fresno	311	10.8	9.9	11.6	33
Humboldt	99	24.3 **	20.8	27.7	4
Imperial	50	9.2	7.3	11.0	40
Kern	362	13.9 **	12.8	14.9	16
Kings	57	13.0	10.6	15.5	20
Lake	61	30.4 **	24.8	36.1	1
Los Angeles	2566	8.2 ‡	8.0	8.4	42
Madera	52	11.3	9.1	13.5	28
Marin	121	14.1 **	12.2	15.9	15
Mendocino	60	21.9 **	17.9	26.0	6
Merced	90	11.5	9.8	13.2	25
Monterey	125	9.4 †	8.2	10.6	39
Napa	48	10.7	8.5	12.9	34
Nevada	65	20.4 **	16.7	24.1	7
Orange	946	9.6 ‡	9.2	10.1	38
Placer	151	12.8 *	11.3	14.3	21
Riverside	820	11.5 *	10.9	12.0	26
Sacramento	601	13.2 **	12.4	13.9	17
San Benito	18	10.8	7.2	14.4	31
San Bernardino	680	10.8	10.2	11.4	32
San Diego	1260	12.6 **	12.1	13.1	22
San Francisco	314	11.3	10.4	12.2	27
San Joaquin	224	10.2	9.3	11.2	37

Geographic Disparities:
Suicide Rates by County

County	Count	Rate	Lower CI	Upper CI	Rank (High to Low)
San Luis Obispo	165	18.5 **	16.4	20.6	12
San Mateo	181	7.6 ‡	6.8	8.4	43
Santa Barbara	180	13.2 **	11.8	14.5	18
Santa Clara	446	7.5 ‡	7.0	8.0	44
Santa Cruz	138	16.4 **	14.4	18.3	13
Shasta	137	24.8 **	21.8	27.8	2
Solano	153	11.6	10.3	12.9	24
Sonoma	207	13.1 **	11.8	14.3	19
Stanislaus	167	10.3	9.2	11.4	36
Sutter	44	14.7 *	11.6	17.8	14
Tulare	150	11.0	9.7	12.2	30
Ventura	295	11.2	10.3	12.1	29
Yolo	79	12.3	10.4	14.3	23
Yuba	42	18.8 **	14.8	22.9	10

Note: Significantly above the state rate (*p< 0.05, **p< 0.001). Significantly below the state rate (†p< 0.05, ‡p< 0.001) The confidence interval (CI) provides information on the precision of the rates being shown. Estimates with wide confidence intervals are less stable and should be interpreted with caution, especially when comparing the estimate to another group or over time. *The total number of suicides listed for California 2015-2017 has been updated as of 3/18/19.*

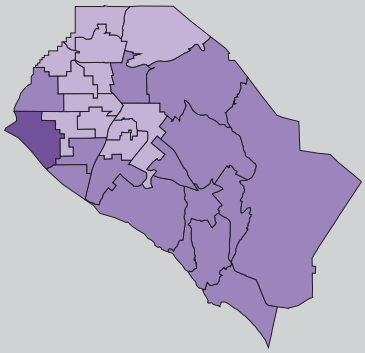
Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2015-2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

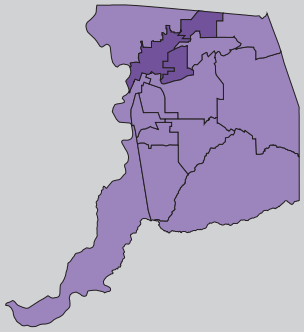
Geographic Disparities
Suicide Rates Sub-County Examples

Four sub-county maps are included below, displaying sub-county variation as examples of counties with high numbers of suicides in northern and southern California. As with homicide, overall county suicide rates can mask important differences within communities in those counties.

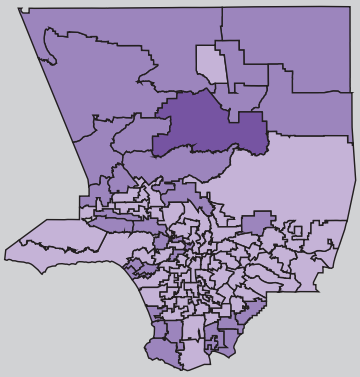
Orange:
County rate (9.6) is significantly below the state rate.
One community is significantly above the state rate, with the rate of 14.7.



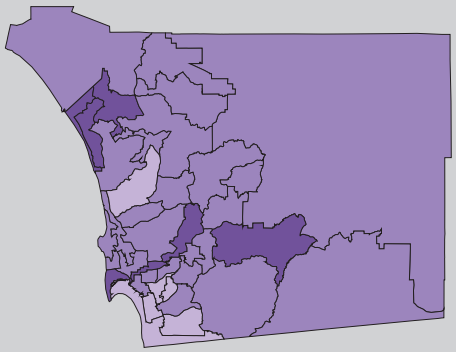
Sacramento:
County rate (13.2) is significantly above the state rate.
Three communities are significantly above the state rate, with rates from 16.0 - 19.5.



Los Angeles:
County rate (8.2) is significantly below the state rate.
One community is significantly above the state rate with the rate of 29.2.



San Diego:
County rate (12.6) is significantly above the state rate.
Eight communities are significantly above the state rate, with rates from 14.0 - 19.0.



Note: Significantly different than state rate ($p < 0.05$)

In these sub-county community maps, communities are defined by California Office of Statewide Planning and Development (OSHPD) "Medical Service Study Areas". In order to enhance statistical stability, the data in these maps are aggregated over five years (2013-2017).

- Significantly Above
- Not Significantly Different
- Significantly Below

Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2013-2017); U.S. Census Bureau; 2016 American Community Survey 5-Year Estimates, Table B01001

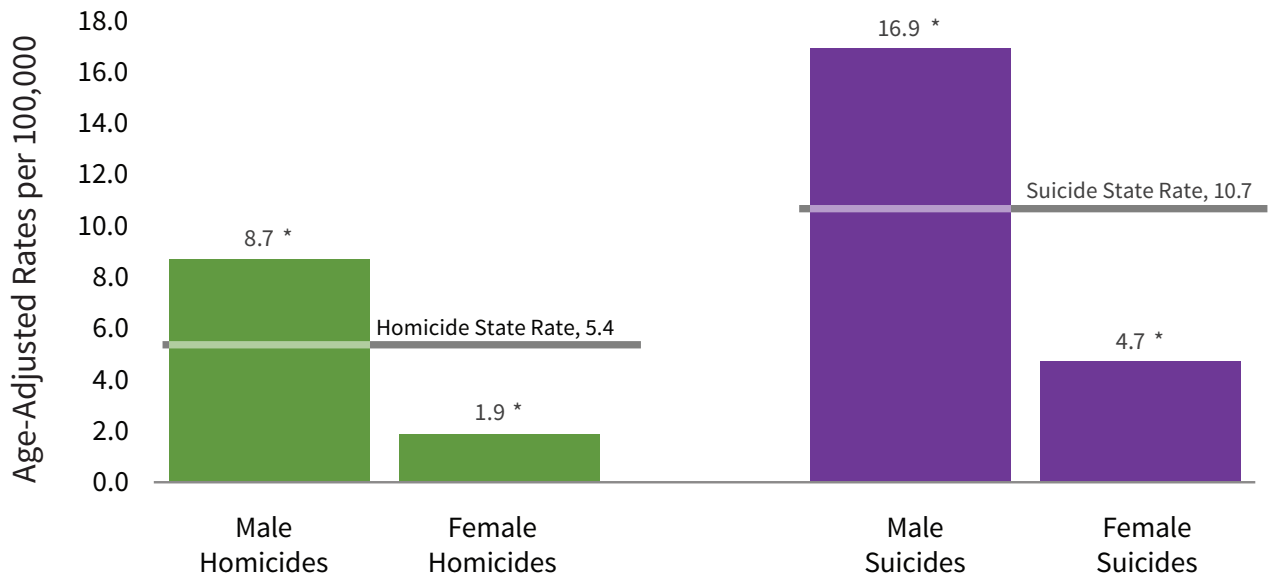
Prepared by: CDPH, Fusion Center

Demographic Disparities: Homicide & Suicide Rates by Sex

In addition to geography, variations in violent deaths can be described by looking at demographic characteristics. This section includes charts displaying rates of homicide and suicide by sex, age group, and race/ethnicity. These data demonstrate that disparities also exist in homicide and suicide rates among these population demographics.

Homicide and suicide rates are higher among males than females. The male homicide rate is nearly five times the rate among females and the rate of suicide among males is over three times the rate among females.

Homicide and Suicide Rates by Sex in California, 2017



Note: Significantly different than state rate (*p<0.0001)

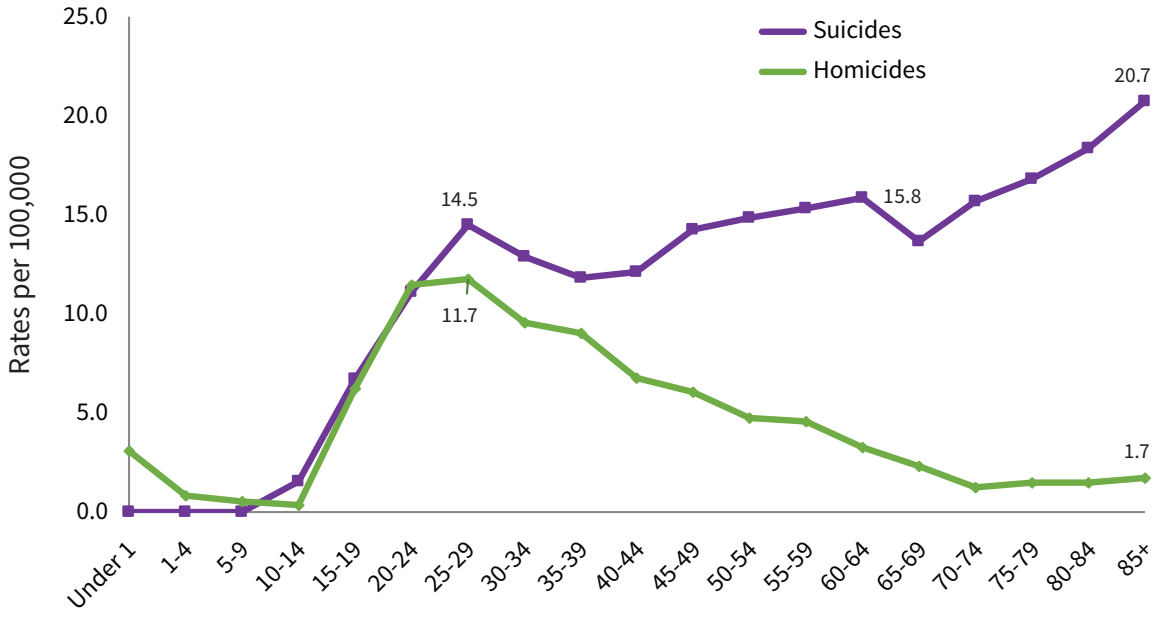
Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Demographic Disparities: Homicide & Suicide Rates by Age Group

- The homicide rate is highest among young adults between the ages of 20 and 39.
- Suicide rates peak at multiple stages throughout the lifespan, first among young adults (ages 25-29), followed by middle age (ages 50-64), and are highest at ages 85 and above.
- Among youth and adolescents, rates of homicide and suicide are very similar until ages 25-29, when suicide rates become higher.
- After age 30, homicide rates begin to decline.
- After age 40, rates of suicide begin to increase dramatically.

Homicide and Suicide Rates by Age Group in California, 2017



Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

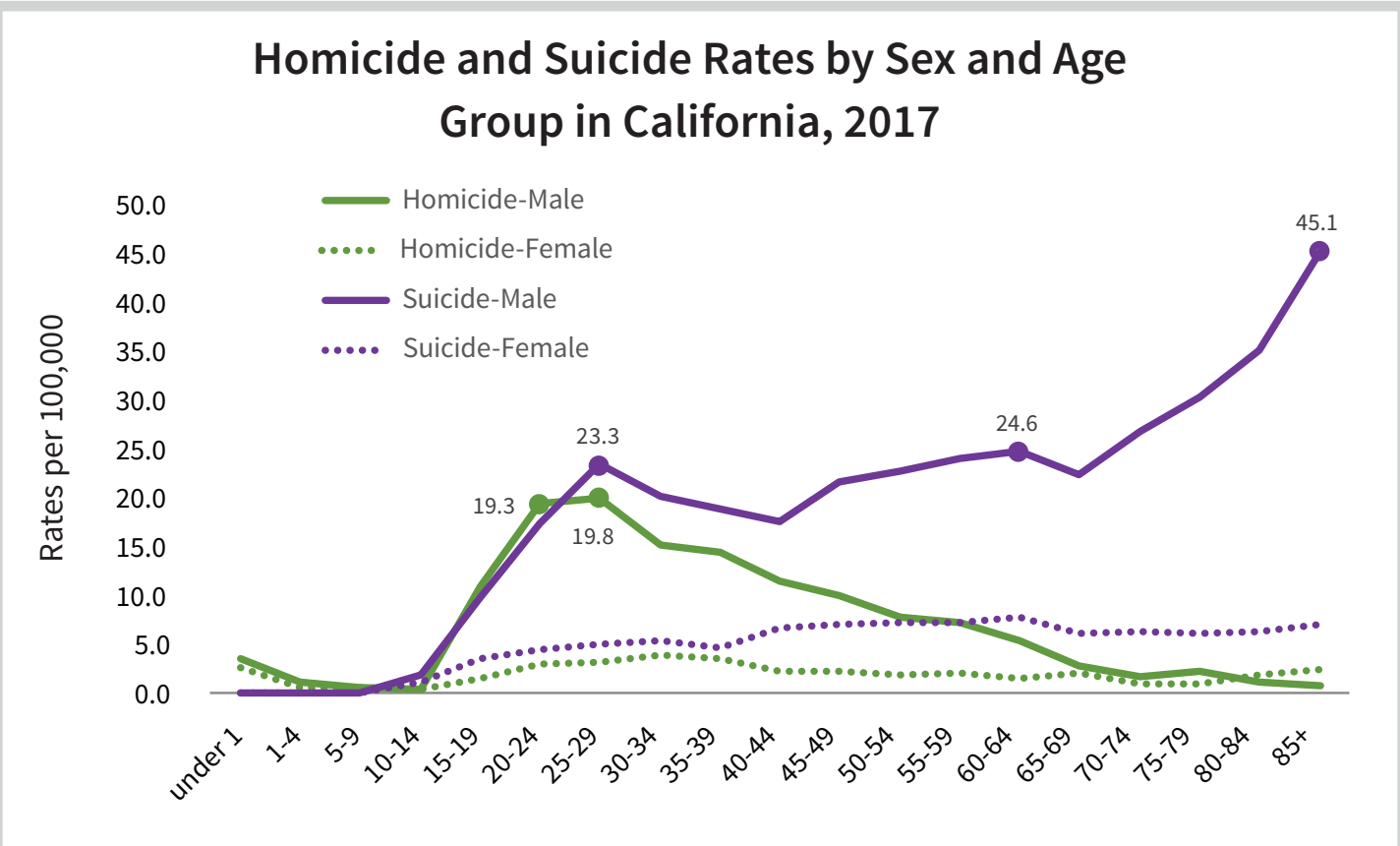
Demographic Disparities:
Homicide & Suicide Rates by Sex and Age

When looking at rates by sex and age group, male rates are higher than female rates for both homicide and suicide.

- The highest homicide rates (19.3, 19.8) are among young adult males (ages 20-24 and 25-29, respectively).
- The highest suicide rate (45.1) is among older adult males, ages 85 and above.

Among both males and females, rates of homicide and suicide are similar through early adulthood. After peaking in young adulthood, homicide rates among males decrease steadily with age. Suicide rates among males also peak in young adulthood (ages 25-29), but then remain steady through age 65-69 and increase substantially thereafter.

As noted earlier, suicide rates are substantially higher than homicide rates in California. This is in large part due to the much higher rates of suicide among older males.



Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

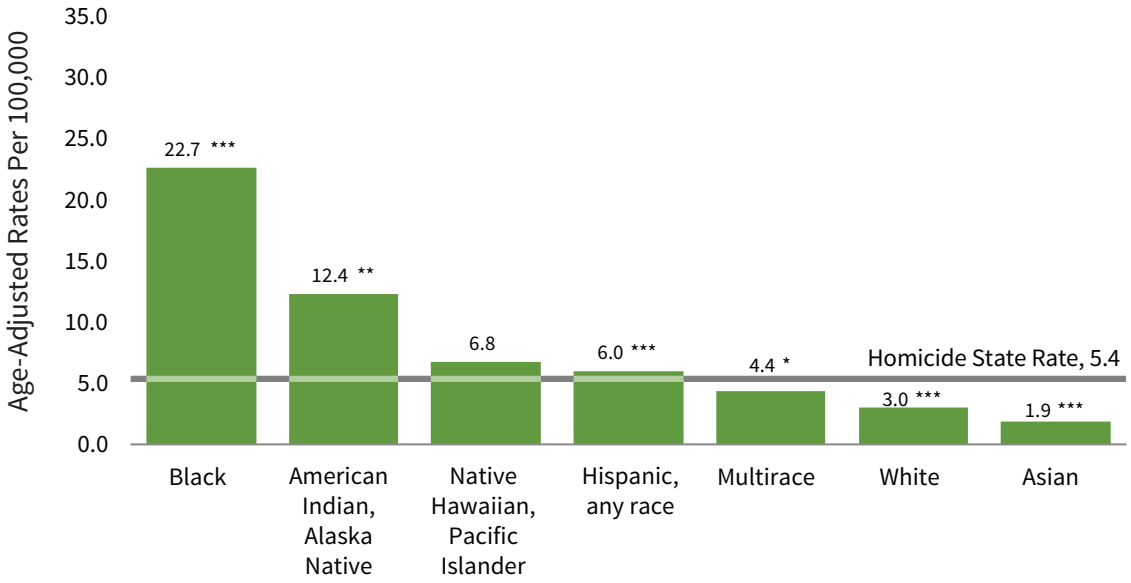
Demographic Disparities:
Homicide Rates by Ethnicity

For both homicide and suicide there are racial/ethnic populations that experience rates notably higher than the statewide rate. However, these patterns vary by each form of violence.

- The homicide rate is highest among the Black population, with rates more than five times the statewide rate. Additionally, the rates for American Indian/Alaska Native, and Hispanic populations are also significantly higher than the statewide rate.
- Suicide rates are highest among American Indian/Alaska Native and White populations.

Race/ethnicity data have inherent limitations, due both to the social construction of these classifications, and to the limitations of data collection systems to capture and convey racial/ethnic diversity. In addition, race/ethnicity data do not capture the broader context of socioeconomic factors that differentially impact health outcomes and contribute to disparities and inequities.

Homicide Rates by Race/Ethnicity in California, 2017

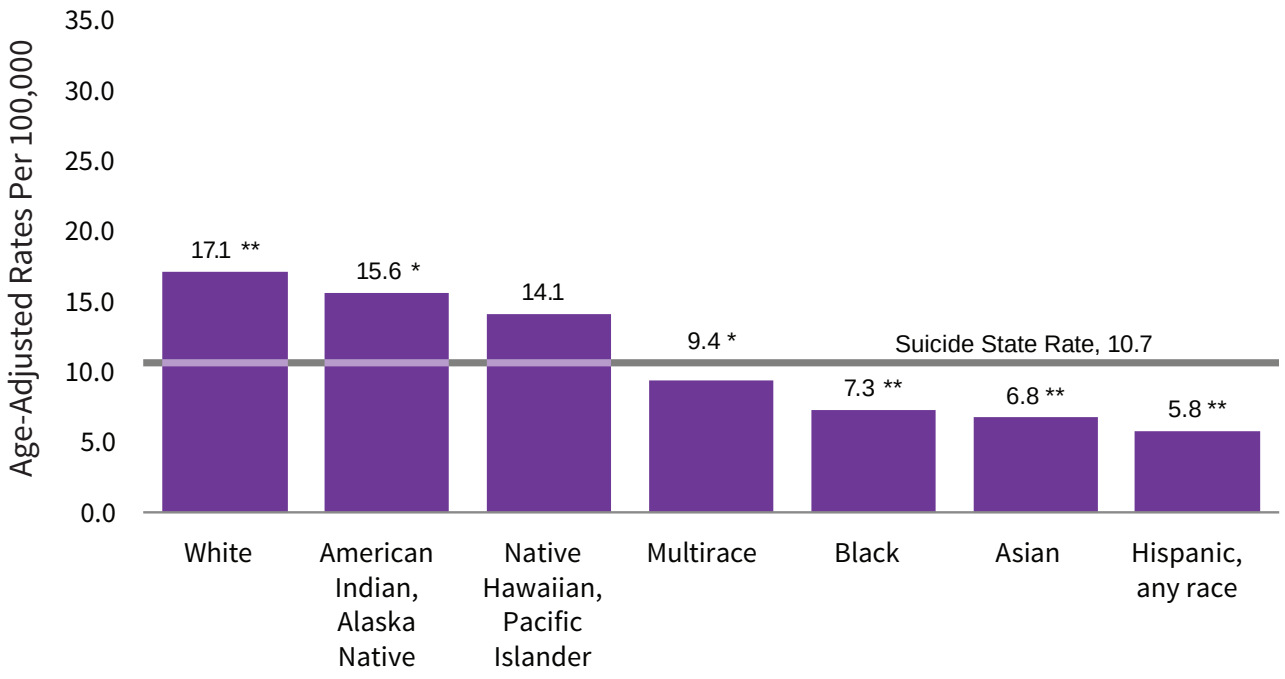


Note: Significantly different than state rate at (*p<0.05, ** p<0.001, *** p<0.0001)

Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Demographic Disparities:
Suicide Rates by Ethnicity



Note: Significantly different than state rate (*p<0.05,**p<0.0001)

Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Homicide & Suicide by Mechanism

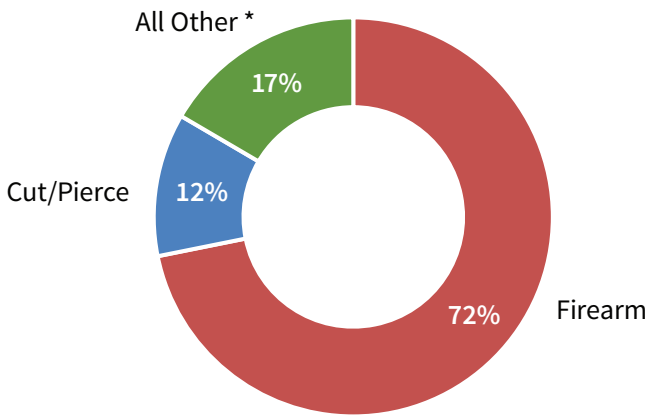
Mechanism of harm is included in violent death data collection as part of the cause and manner of death. Mechanism is useful in understanding risk and protective factors associated with both homicides and suicides. For example some mechanisms are more likely to be fatal than others.

The following charts show the proportion of homicides and suicides by mechanism. Homicide mechanisms are divided into the categories of "firearm," "cut/pierce," and "all other." Suicide mechanisms are captured by the categories of "firearm," "hanging/suffocation," "poisoning," and "all other."

Firearms have been the leading mechanism for both homicides and suicides over the past ten years.

- Nearly one in two violent deaths in California (48.6%) are firearm related; 1,518 homicides and 1,612 suicides in 2017.
- Firearms accounted for 72% of homicides - more than two times all other mechanisms combined.
- When examining suicides, there is a broader range of mechanisms, but firearms are still the leading single category, accounting for 37% of suicides.

Proportion of Homicides by Mechanism in California, 2017, n=2, 113

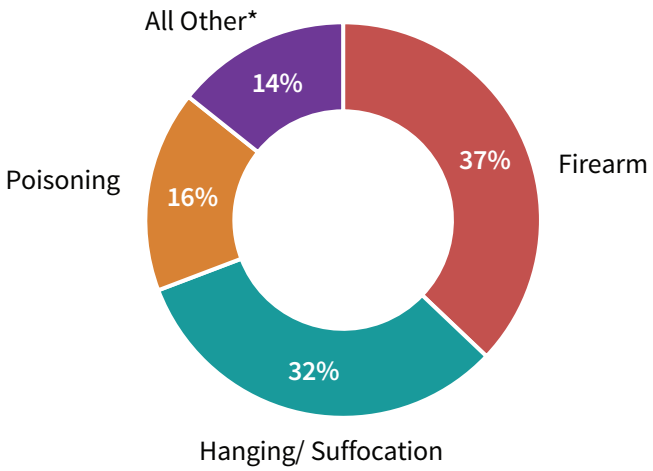


Note: * "All Other" includes: Abuse and Neglect, Blunt Object, Unarmed Fight, Late Effects, Non-Firearm Legal Intervention, and Other. "Late Effects" are deaths that occur over one year after the initial incident but are still directly related to the initial cause.

Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Proportion of Suicides by Mechanism in California, 2017, n=4, 323



Note: * "All Other" includes: Cut/Pierce, Jump, Late Effects, and Other. "Late Effects" are deaths that occur over one year after the initial incident but are still directly related to the initial cause.

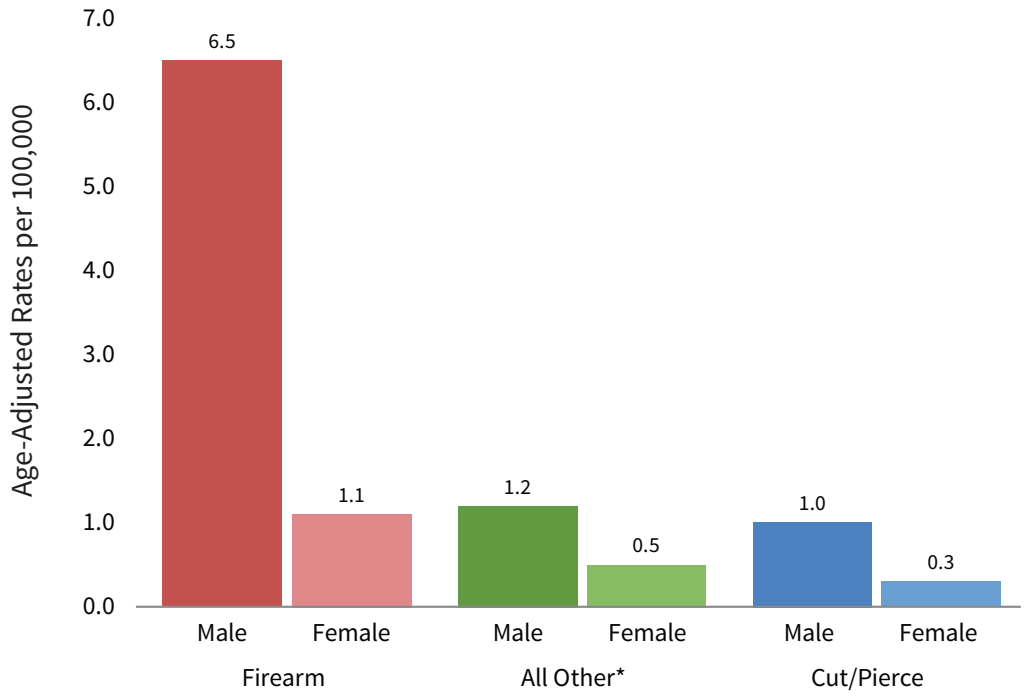
Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Homicide Rates by Mechanism and Sex

Homicide and suicide rates displayed by mechanism and sex show that males are seven times more likely to be victims of firearm related homicides compared to females. Males are also more likely to use firearms and hanging/suffocation as suicide mechanisms compared to females. For females, there is no primary mechanism for either homicide or suicide, rather the distribution is spread across multiple mechanisms.

Homicide Rates by Mechanism and Sex in California, 2017

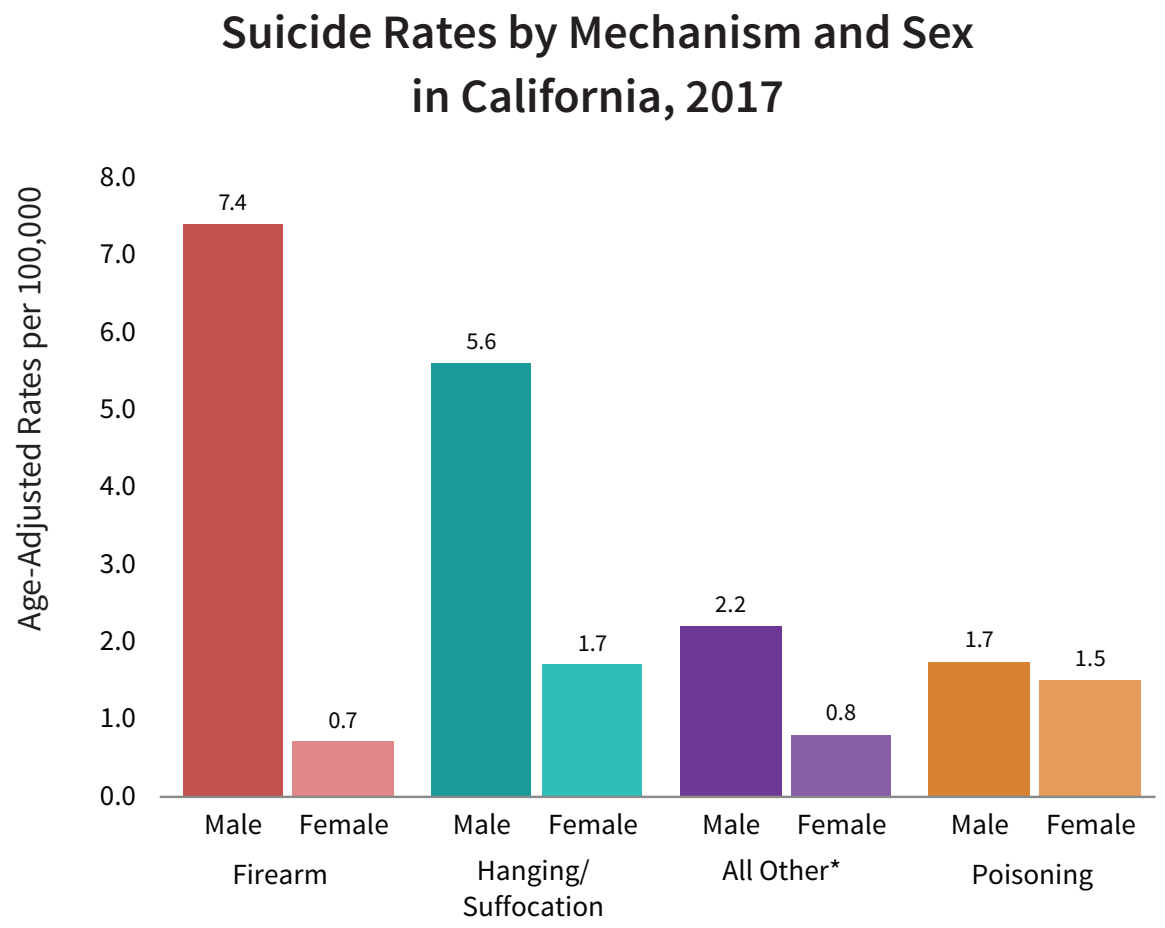


Note: * "All Other" includes: Abuse and Neglect, Blunt Object, Unarmed Fight, Late Effects, Non-Firearm Legal Intervention, and Other

Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Suicide Rates by Mechanism and Sex



Note: * "All Other" includes: Cut/Pierce, Jump, Late Effects, and Other

Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

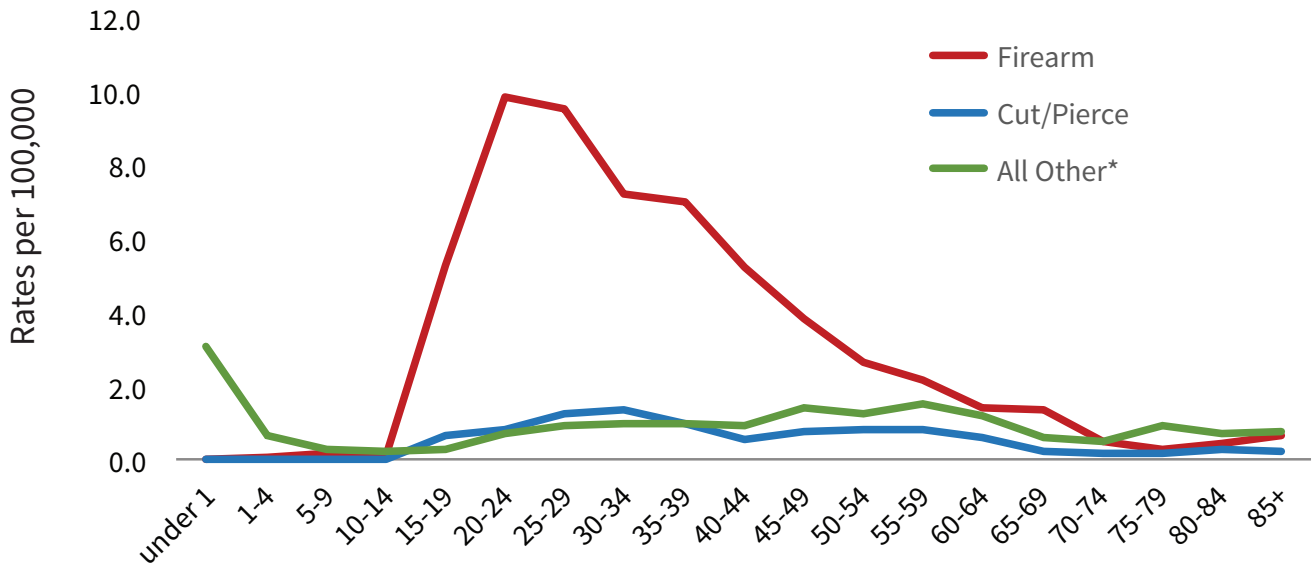
Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Homicide Rates by Mechanism/Age Group

When examining homicide rates by mechanism and age group, young adults, ages 20-40, experience the highest rates of death from firearm homicides compared to other age groups.

Although there is some variation, there are no substantial disparities between the age groups when looking at the "all other" homicide mechanism category by age group.

Homicide Rates by Mechanism and Age Group in California, 2017



Note: * "All other" includes: Abuse and Neglect, Blunt Object, Unarmed Fight, Late Effects, Non-Firearm Legal Intervention, and Other

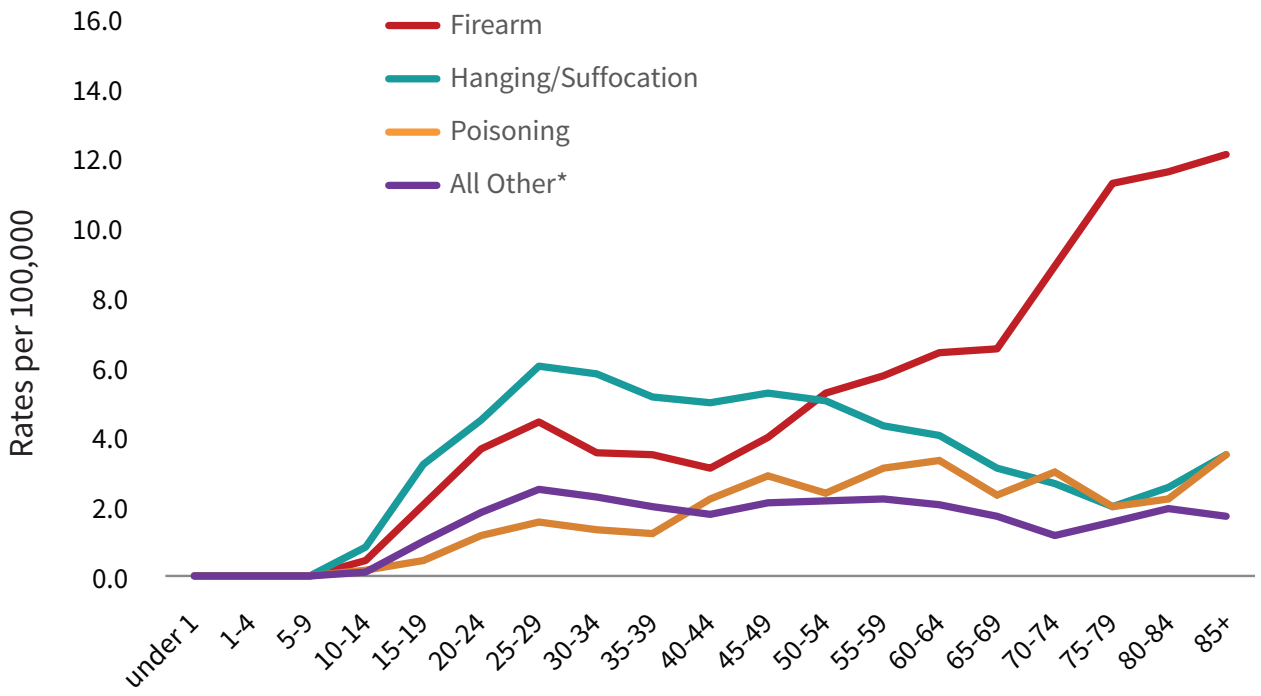
Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Suicide Rates by Mechanism/Age Group

Firearm suicide rates generally increase with age and firearms are the leading mechanism for suicides among all ages 50 and above. In addition, hanging/suffocation is the leading mechanism for younger age groups.

Suicide Rates by Mechanism and Age Group in California, 2017



Note: * "All Other" includes: Cut/Pierce, Jump, Late Effects, and Other

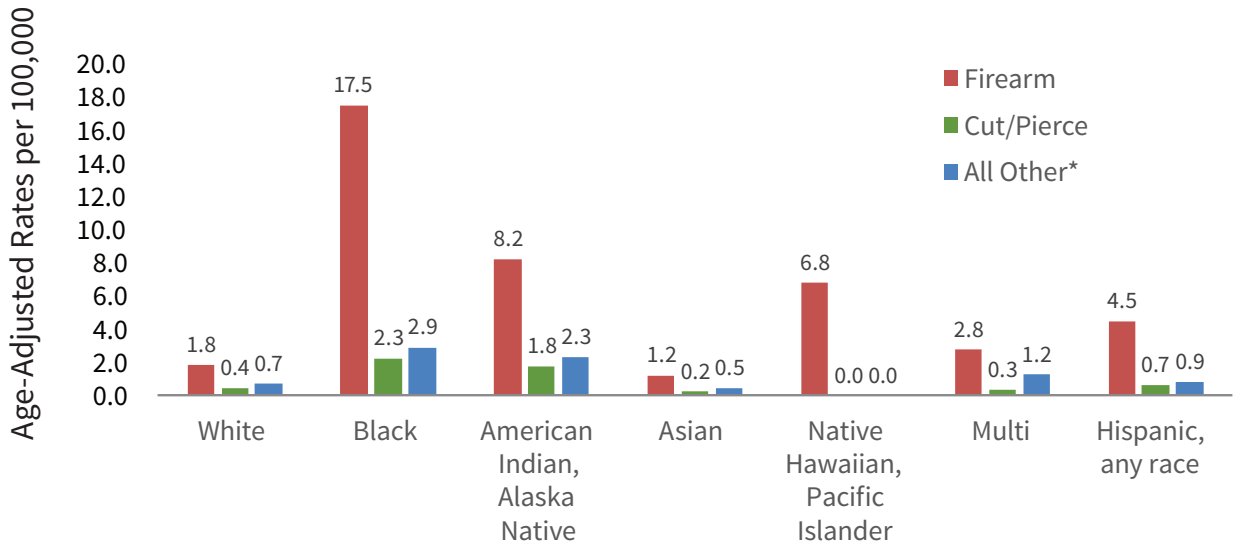
Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Homicide Rates by Mechanism/Ethnicity

Homicide rates by mechanism and race/ethnicity show that the Black population is 4-12 times more likely to be victims of firearm-related homicides compared to other race/ethnicity categories. They experience the highest rate among race/ethnicity groups for all other homicide mechanisms as well.

Homicide Rates by Mechanism and Race/Ethnicity in California, 2017



Note: * "All other" includes: Abuse and Neglect, Blunt Object, Unarmed Fight, Late Effects, Non-Firearm Legal Intervention, and Other

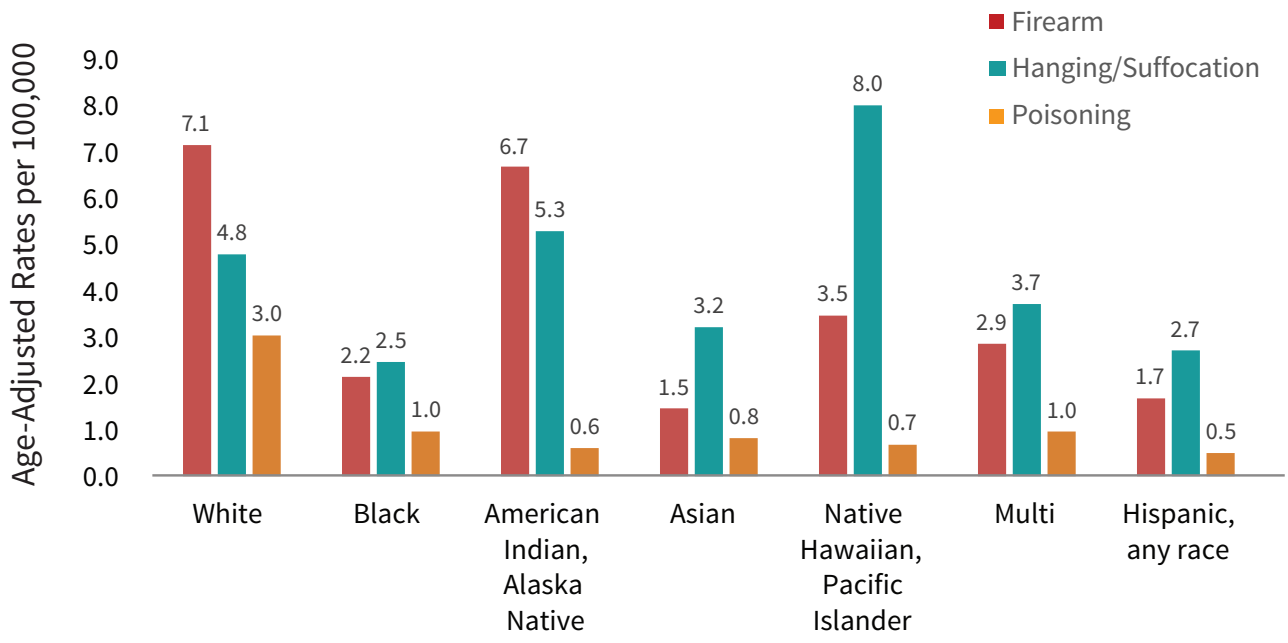
Sources: California Department of Public Health (CDPH) Vital Statistics Death Files (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Mechanism by Demographics:
Suicide Rates by Mechanism/Ethnicity

Suicide rates by selected mechanism and race/ethnicity show that firearm suicide rates are highest among the White population and are the leading suicide mechanism for two of the seven race/ethnicity categories.

Suicide Rates by Mechanism and Ethnicity in California, 2017



Sources: California Department of Public Health (CDPH) Vital Statistics Death File (2017); Department of Finance P-3 Population Projection File (2010-2060)

Prepared by: CDPH, Safe and Active Communities Branch

Results at a Glance

Violent deaths are a major public health problem that affect all Californians, and, as evidenced in this report, some populations experience a greater burden than others.

Statewide

- In 2017, there were nearly 6,500 violent deaths, including 4,323 suicides and 2,113 homicides; over 20,000 hospitalizations and 177,000 emergency department visits for non-fatal violent injuries.
- California's statewide homicide rate is 5.4 homicides per 100,000 residents.
- California's statewide suicide rate is 10.7 suicides per 100,000 residents.
- There are more than twice as many suicides as homicides in California.
- Over the past decade, statewide suicide rates have been rising while homicide rates have been declining.
- California rates are lower than national rates for both homicide and suicide.

Geographic Variation

- Rates of homicide and suicide vary greatly across the state with some counties experiencing rates more than twice the statewide level.
  - The highest county homicide rate is in Lake County (14.4) and the lowest rate is in Napa and Placer Counties (1.7).
  - The highest county suicide rate is in Lake County (30.4) and the lowest rate is in Santa Clara County (7.5).
  - At the sub-county level, there are communities that experience rates of homicide and suicide significantly higher than the statewide rate regardless of the overall county rate.

Sex

- Both homicide and suicide rates are higher among males than females in California.
  - The homicide rate for males is 9.2 homicides per 100,000 residents and the rate for females is 1.7.
  - The suicide rate for males is 16.7 suicides per 100,000 residents and the rate for females is 4.9.

Age

- Homicide rates are highest among young adult age groups, specifically males ages 20-29 with rates peaking at 19.8.
- Suicide rates peak at multiple stages throughout the lifespan in California; young adults, middle age, and are highest at ages 85 and above.
- Males ages 85 and above experience the highest rate of suicide (45.1) of any age group.

Race/Ethnicity

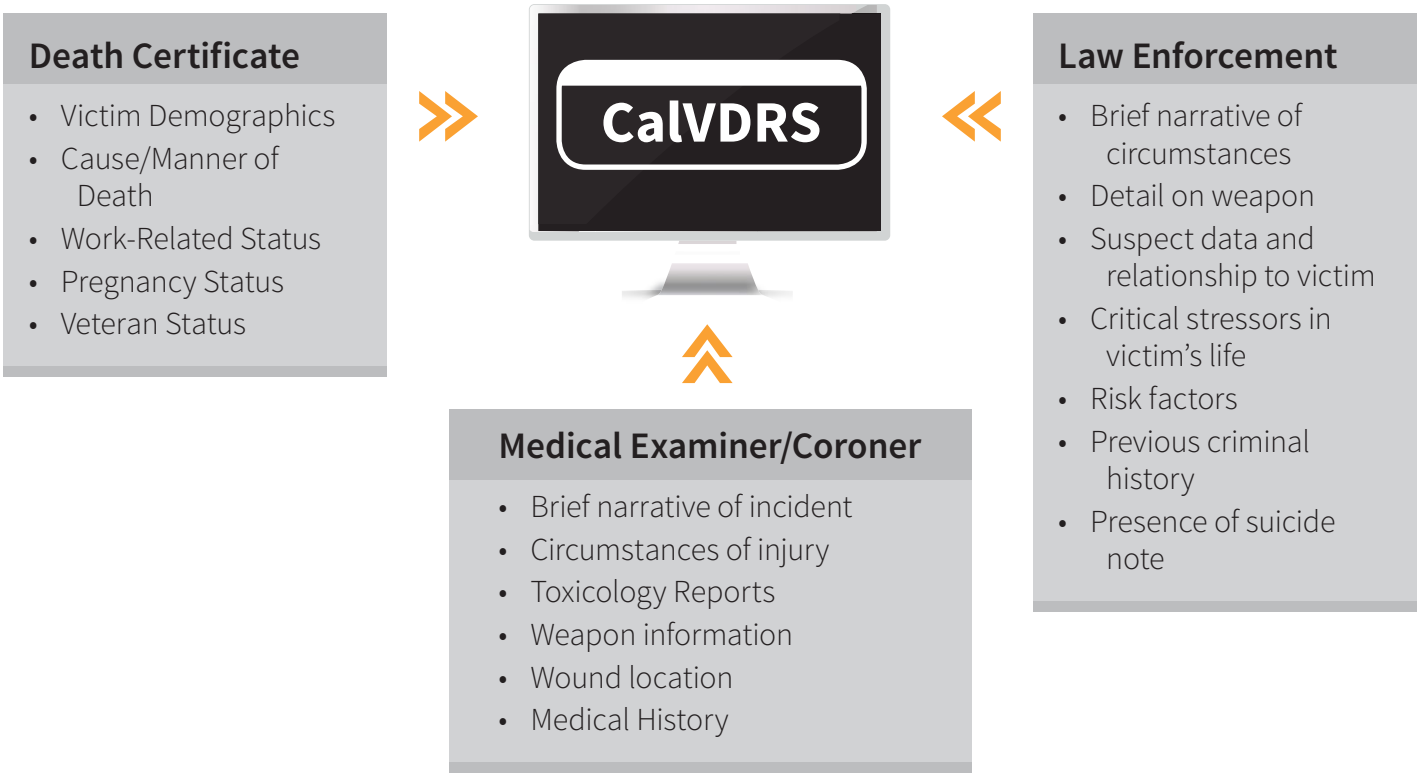
- Homicide rates are highest among Black and American Indian/Alaska Native populations in California (26.2 and 12.0, respectively).
- Suicide rates are highest among White and American Indian/Alaska Native populations (18.5 and 17.3, respectively).

Mechanism of Harm

- Firearms are the leading mechanism for both homicides (72%) and suicides (37%).
- Nearly one in two violent deaths in California (48.6%) are firearm related; 1,518 homicides and 1,612 suicides in 2017.

Strengthening Data: California Violent Death Reporting System

While the data in this report provide basic information about rates and trends of violent death and can inform violence prevention efforts, they do not provide a complete picture or understanding of why these deaths occur. Additional sources of data, such as coroner reports and law enforcement records, can provide critical information on the circumstances surrounding these deaths (e.g. perpetrator-victim relationship, mental health status at time of death, familial stressors, toxicology) and can provide more detail than that available from Vital Statistics records alone. Through participation in the Centers for Disease Control and Prevention's National Violent Death Reporting System, CDPH seeks to gain a more comprehensive understanding of violent death in California.



CalVDRS is California's program for the National Violent Death Reporting System. This web-based surveillance system supplements current vital statistics surveillance and provides more detailed data on violent death. CalVDRS starts with basic demographic information collected by CDPH through death certificate data and links this to comprehensive death data from medical examiners and coroners (including investigative reports, toxicology information, and medical history) and reports from law enforcement (such as weapon information and circumstances of the incident). CDPH has started implementing this system and recruiting local participation and plans to expand the CalVDRS program throughout the state as more local jurisdictions participate in this public health surveillance effort. As it becomes available, the data from CalVDRS will be shared with local jurisdictions and translated into actionable information to be used by state and local partners to better understand and address violent death.

Next Steps:
The Public Health Approach to Violence Prevention

Public health recognizes that violence is preventable and takes a primary prevention approach, working "upstream" to address underlying causes to prevent violence from happening in the first place.[9]

The public health approach to violence prevention focuses on the following four-step process.[10]

1. **Define and monitor the problem**
2. Identify risk and protective factors
3. Develop and test prevention strategies
4. Assure widespread dissemination of effective practices

This data brief is a contribution to the first step of defining and monitoring the problem of violence in California. The information presented in this report can be used by state and local public health practitioners to target and inform prevention strategies and interventions based on an understanding of the landscape of communities and populations most affected.

Homicide and suicide represent the most extreme outcomes of multiple forms of violence. Different forms of violence such as child abuse and neglect, youth violence, intimate partner violence, sexual violence, elder abuse, and suicidal behavior share common risk and protective factors. Prevention strategies that target common root causes can make an impact on multiple forms of violence collectively and also address overall health.[6] With this goal in mind, public health works to: promote safe, stable, nurturing, healthy relationships and environments; address individual, interpersonal, community, and societal risk and protective factors; decrease structural violence; and, build individual and community resilience.[9]

The California Department of Public Health (CDPH) is committed to preventing violence and exploring innovative approaches to address this complex issue through the lens of public health. CDPH focuses on preventing multiple forms of violence and has established the Violence Prevention Initiative (VPI), with the purpose of elevating violence as a departmental priority, integrating and aligning efforts across multiple CDPH programs, and framing the public health state governmental role in addressing violence.

Additional Resources and Tools

EpiCenter

More information about violent deaths and other injury topics is available through the CDPH EpiCenter website administered by the Safe and Active Communities Branch (SACB). Additional topics include traumatic brain injuries, alcohol/drug consequences, and linked car crash-medical data. A query system enables data (i.e. counts and rates) for topics by demographics and counties to be easily produced. Additionally, SACB staff can be contacted for additional technical support.

Let's Get Healthy California

The Let's Get Healthy California Task Force was started in 2012 with the purpose of developing a ten year plan to make California the healthiest state in the nation. Indicators related to preventing multiple forms of violence such as neighborhood safety, child maltreatment, and suicide are used to track California's progress. For more information, visit the Let's Get Healthy California website.

CDC Technical Packages for Violence Prevention: Using Evidence-based Strategies in Your Violence Prevention Efforts

The Centers for Disease Control and Prevention (CDC) has developed the following technical packages to help states and communities take advantage of the best available evidence to prevent violence.

- Intimate Partner Violence
- Suicide
- Youth Violence
- Sexual Violence
- Child Abuse and Neglect

Connecting the Dots

- CDC's Preventing Multiple Forms of Violence: A Strategic Vision for Connecting the Dots describes the Division of Violence Prevention's 5-year vision and areas of strategic focus to help us understand, respond to, and ultimately prevent violence across the lifespan.
- Connecting the Dots: An Overview of the Links Among Multiple Forms of Violence is a resource co-developed by CDC's Division of Violence Prevention and Prevention Institute. This brief shares research on connections between different forms of violence and describes how these connections affect communities.

Additional Resources and Tools

California Department of Public Health, Office of Health Equity –

Portrait of Promise: The Statewide Plan to Promote Health and Mental Health Equity

Portrait of Promise presents background and evidence on the root causes and consequences of health inequities in California. This report explores a broad range of socioeconomic forces that shape the health of entire communities, especially the vulnerable and underserved communities

Suicide/Crisis Hotlines

- Call a trained helper at National Suicide Hotline at 1-800-273-8255
- Text a Crisis Counselor at **Crisis Text Line**. Text HERE at 741-741
- Call a trained counselor at **The Trevor Project** (for LGBTQ youth, friends, and family members) at 1-866-488-7386
- Call a trained counselor at **the Veteran/ Military Crisis Line** at 1-800-273-8255 and press 1

If you or someone you know needs urgent medical help and are in a life-threatening situation, please call 911.

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8. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control (2017). Web-based injury statistics query and reporting system (WISQARS). Retrieved from www.cdc.gov/injury/wisqars
9. California Department of Public Health (2017). Preventing Violence in California Volume 1: The Role of Public Health. Sacramento, CA: California Public Health Department.
10. National Center for Injury Prevention and Control. (2015). The public health approach to violence prevention. Retrieved from https://www.cdc.gov/violenceprevention/pdf/PH_App_Violence-a.pdf

Appendix

Data Sources:

Suicide and homicide counts and demographic breakdowns for 2017 death data:

- CDPH Vital Statistics California Comprehensive Death Files (2017).

California population for calculation of 2017 homicide and suicide rates:

- Department of Finance, P-3: Population Projections by Race/Ethnicity, Detailed Age, and Gender (Years 2010-2060).

Historical suicide and homicide rates for years 1981-2016, (presented in chart "Homicide and Suicide Rates in California, 1981-2017"):

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. (2005) Available at: WISQARS (Web-based Injury Statistics Query and Reporting System).

Statewide county-level maps:

- 3-year counts for homicide and suicide by county: CDPH Vital Statistics California Comprehensive Death Files (2015-2017).
- Population by county: Department of Finance, P-3: Population Projections by Race/Ethnicity, Detailed Age, and Gender (Years 2010-2060).

Sub-county level maps:

- 5-year counts for homicide and suicide: CDPH Vital Statistics California Comprehensive Death Files (2013-2017).
- Population: US Census Bureau; 2016 American Community Survey 5-Year Estimates, Table B01001.

Appendix

Case Definition:

The cause of death on a death certificate is coded using the ICD classification system. Deaths have been coded using ICD-10 codes since 1999. The grouping of ICD-10 codes used in this report is based on the suicide and homicide case definitions utilized by the National Violent Death Reporting System (NVDRS) funded by the Centers for Disease Control and Prevention (CDC).

Manner of Death	ICD-10 Codes
Homicides	X85-X99, Y00-Y09 Y87.1 (late effects) Y35.0-Y35.4; Y35.6-Y35.7 (Legal Intervention, excluding legal executions) Y89.0 (late effects) U010-U019, U02 (Terrorism)
Suicides	X60-X84 Y87.0 (late effects) U031, U039 (Terrorism)

Based on data standards within the Safe and Active Communities Branch, CDPH, death records were excluded from analyses if they were non-residents, iatrogenic, and/or had an age that was unknown or older than 119 years.

Statistical Analyses:

- All rates, except age-specific rates, were age-adjusted using the 2000 US Population standard.
- P-values for statistical significance testing were calculated using a z-statistic for comparing 2 rates. Rates were compared to the corresponding state rate (e.g., homicide or suicide).
- While this report examines a large number of homicides and suicides occurring in 2017, when data are broken down by demographic characteristics small numbers may result. This is particularly true when looking at racial groupings, such as American Indian/Alaska Native and Native Hawaiian/Pacific Islander, where both population sizes and the number of events can be small. With the exception of the county and sub-county level data, the rates presented here provide one-year rates. Caution should be used in interpreting rates based on small counts which may vary widely year to year.

CDPH Violence Prevention Initiative

In 2015, the California Department of Public Health (CDPH) launched the Violence Prevention Initiative by linking efforts of many programs to elevate violence prevention as a departmental priority. Key functions of the Violence Prevention Initiative include providing actionable data and serving as convener to facilitate engagement across sectors, systems, and initiatives

Through the Violence Prevention Initiative's collective efforts in collaboration with local health departments and partners in many sectors, CDPH is committed to advancing primary prevention and intervention efforts to reduce violence across California.

This department-wide initiative is facilitated with support from the Fusion Center for Strategic Development and External Relations in its role to inform, explore, and advance the future of public health.

Preventing Violence in California

The Preventing Violence in California series of resources includes issue reports and data briefs on the public health role in violence prevention.

- Preventing Violence in California Volume 1: The Role of Public Health (2017)
- Preventing Violence in California Data Brief 1: Overview of Homicide and Suicide Deaths in California (2019)

Future issue reports and data briefs will delve into specific topics based on input from local health jurisdictions and may include child maltreatment, intimate partner violence, and gun violence.

- For more information on the role of public health in violence prevention and to access reports and materials, please visit the Violence Prevention Initiative webpage.
  (link: https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/SACB/Pages/ViolencePreventionInitiative.aspx)

Feedback

If you have feedback or questions, please contact:

violenceprevention@cdph.ca.gov

California Department of PublicHealth