



2021

LEADING CAUSES OF DEATH

Fresno County Department of Public Health
Epidemiology, Surveillance, and Data Management



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COUNTY OF FRESNO

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2021

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Technical Notes

Acronyms

AIAN = American Indian/Alaska Native

Cal-IVRS = California Integrated Vital Records System

CCDF = California Comprehensive Death File

HwPI = Hawaiian/Pacific Islander

ICD-10 = International Classification of Diseases, Tenth Revision

YPLL = Years of Potential Life Lost

Definitions

1. Leading Causes of Death:

LEADING CAUSES OF DEATH are defined as the underlying cause of death as categorized by ICD-10 groupings, such as Heart Diseases, Malignant Neoplasms, Accidents, etc., that usually account for large numbers of deaths within a specified population group and time period.

2. Calculation:

Counts of cause of death sorted in rank order from high to low.

3. Cause of Death Ranking:

The leading causes of death are grouped into standard categories based on the underlying cause of death code assigned to each death. Currently, there are seven standard lists of cause of death that are used for ranking under the *International Classification of Diseases, Tenth Revision*. These seven lists are used for ranking deaths in specific situations, as follows:

- I. **List of 358 Selected Causes of Death** – Causes that comply with WHO Tabulation Regulations
- II. **List of 113 Selected Causes of Death** - Data tabulation and analysis of general mortality and ranking leading causes of death
- III. **List of 130 Selected Causes of Infant Death** - Data tabulation and analysis of infant mortality and ranking leading causes of infant death
- IV. **List of 39 Selected Causes of Death** - Tabulations by smaller geographic areas
- V. **List of 124 Selected Causes of Fetal Death** - Data tabulation and analysis of fetal mortality
- VI. **List of Motor Vehicle Accident Deaths** - Tabulations comparable with ICD-10 categories
- VII. **List of Injury, Poisoning and Certain Other Consequences of External Causes** - Cross-tabulations of external causes and nature of injury

These lists organize ICD-10 cause of death codes into specific groupings. The lists identify groupings that are “rankable” as a leading cause of death. Categories that include signs and symptoms or that are a residual category, as in the category “Other unspecified infectious and parasitic diseases” are not considered rankable. Deaths due to a more detailed cause of death would not be considered during ranking when included within a broader ranked cause of death category. For example, hypertensive heart disease would not be considered as a possible leading cause of death because it is included within the ranked category “Heart Disease”.

For details on these classifications see: http://www.cdc.gov/nchs/data/dvs/im9_2002.pdf.pdf

4. Death Certificates

Death certificates made it possible for the reporting of medical conditions that medical certifiers attribute as cause or contributing factors to death. A death record is designed to allow the certifying physician to record multiple causes of death for a decedent and to arrange them so that the causal or etiological relationship of the medical conditions that led to the death are recorded.

To evaluate the reported mortality information, conditions listed by the medical certifier are coded using standard cause of death classifications developed by the World Health Organization. The cause of death coding system currently used in the United States is described in the *International Classification of Diseases, Tenth Revision* (ICD-10).

From the information provided on the death certificate by the medical certifier, an underlying cause of death is selected using accepted international rules for determining the underlying cause of death. The underlying cause of death codes are arranged into groupings in order to develop meaningful, uniform and relevant information on mortality.

Ranking mortality data based purely on the underlying cause of death code assigned would be very difficult to interpret. The need for standardized cause of death categories when determining leading causes of death branches from details to which deaths are classified. With over 8,000 underlying cause of death codes under the current classification system, some agreement on the appropriate grouping of these cause codes is essential to compare leading cause of death between regions and over time.

While useful as an indicator of health status, leading causes of death should be considered a supplement to more traditional death statistics. There are other measures that can be used to gauge the relative importance of specific causes of death. These include age-adjusted death rates, cause-eliminated life tables and cause-associated years of productive life lost. Measures such as these are useful in monitoring health status over time, across geographic area or between population subgroups.

5. Years of Potential Life Lost (YPLL) and Premature Deaths

Years of potential life lost involves the years lost to all persons who died prior to age 75. Therefore, persons who died younger than age 75 were considered to have died prematurely. For instance, a person who died at age 50 would be said to have lost 25 years of expected life while someone who died at age 80 would have lost no additional years of expected life. In this report, years of potential life lost is calculated for all who died before age 75 during the specified year. All years of potential life lost from each cause were added together to attain the total years lost for the specified category. Premature deaths are also defined as those who died prior to reaching age 75.

6. Excess Deaths

Excess deaths are defined as the difference between the observed numbers of deaths in the specified period and the expected numbers of deaths for that period. For this report, an average of deaths from the five years prior to the specified year was taken as the expected deaths for the specified period. Rate of death was calculated by dividing the number of deaths by the population multiplied by 100,000. A comparison is then made to determine whether the number of deaths in the specified period is higher than expected.

Leading Causes of Death

Determining and monitoring the leading causes of death is considered a primary and important indicator of a geographic area’s (country, state, county) overall health status or quality of life. Cause-of-death ranking is a metric used for comparing the relative burden of cause-specific mortality across jurisdictions. For this purpose, rankings are based on the most frequently occurring causes of death eligible to be ranked nationwide and may not denote the causes of death of greatest public health importance within each locality. The data in this report were based on information from death certificates filed in the State of California and the causes of death were defined by the *International Classification of Diseases, Tenth Revision* (ICD-10). Rankings in this report were made in accordance with the number of deaths assigned to rankable causes, consistent with procedures used by the National Center for Health Statistics.

Deaths among Fresno County Residents

In 2021, there were 9,303 deaths in Fresno County (Table 1). The death rate was 917.8 deaths per 100,000 population, an increase of 6.2% from the prior year. In 2020, the year the COVID-19 pandemic began, there were 8,714 deaths, an increase of 1,723 deaths from 2019’s total. The 2020 death rate was 863.9, an increase in rate of 23.5% from the 2019 rate of 699.7.

Table 1. Deaths by Year, County of Fresno, 2017-2021

	2017	2018	2019	2020	2021
Deaths	7,015	7,068	6,991	8,714	9,303
Rate per 100,000	709.1	710.8	699.7	863.9	917.8
Men	3,678	3,745	3,742	4,698	5,139
Women	3,337	3,323	3,249	4,016	4,164
Men Death Rate	745.8	755.1	754.5	*	1,011.3
Women Death Rate	672.7	666.7	649.9	*	823.9
Mean Age Men	68.8	68.6	68.4	68.3	67.1
Mean Age Women	75.2	75.1	75.8	75.5	74.3

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2010-2021, Accessed 21 September 2022 Population obtained from www.data.census.gov, American Community Survey, ACS 1-Year Estimates Subject Tables, TableID: S0101, Accessed 21 September 2022

* 2020 ACS 1-Year Population Estimates not available at time of publish

There were 5,139 deaths among men and 4,164 deaths among women in 2021. In 2020, men accounted for 4,698 deaths compared with 4,016 for women. Overall, men appeared to die at a younger age than women. The mean (average) age at death was 67 years for men compared with more than 74 years for women, a difference of 7 years. Similarly, the overall annual death rate was higher for men than for women (Table 1).

Among the predominant race/ethnicity groups in Fresno County, the lowest annual death rates were among Hispanic (615.7 per 100,000 population), followed by Asian (727.3 deaths per 100,000 population). The highest death rates were White (1,648.6 per 100,000 population) and Black (1,433.1 per 100,000 population). Rates among the predominate race/ethnicity groups increased since the

pandemic started (Table 2a). Rates among non-predominant races/ethnicities such as American Indian/Alaska Native (AIAN), Hawaiian/Pacific Islander (HwPI), and other may not be stable due to low counts, resulting in extremely high rates.

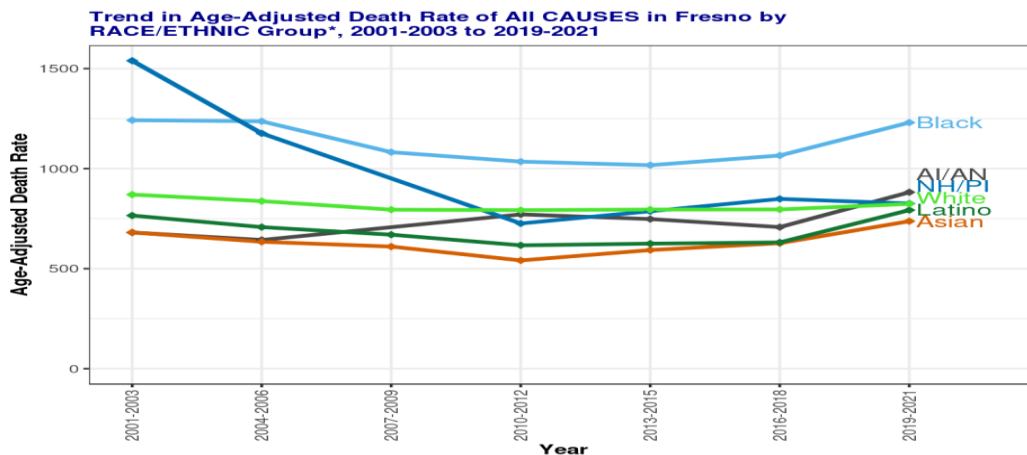
Table 2a. Deaths by Year by Race/Ethnicity, County of Fresno, 2017-2021

	2017	2017 Rate	2018	2018 Rate	2019	2019 Rate	2020	2020 Rate	2021	2021 Rate
White	3,935	1,358.6	3,903	1,357.6	3,800	1,332.1	4,338	1,595.5	4,401	1,648.6
Black	437	979.0	411	976.1	466	1,068.8	539	1,216.8	595	1,433.1
AIAN	43	1,161.2	62	1,098.7	47	751.9	87	1,432.3	84	2,305.8
Asian	478	476.8	534	528.9	491	485.4	666	607.3	780	727.3
HwPI	68	4,456.1	65	5,499.2	66	3,644.4	84	6,812.7	17	988.9
Other	7	29.7	6	23.7	9	37.8	12	34.5	11	29.1
Hispanic	2,047	389.2	2,087	392.5	2,112	393.2	2,988	552.6	3,415	615.7
Total	7,015	709.1	7,068	710.8	6,991	699.7	8,714	863.9	9,303	917.8

NOTE: Crude Rates are per 100,000 persons

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2010-2020, Accessed 21 September 2022
 Population obtained from www.data.census.gov, American Community Survey, ACS 1-Year I Subject Tables, TableID: S0101, Accessed 21 September 2022

Table 2b. Age-Adjusted Death Rate by Year by Race/Ethnicity, County of Fresno, 2001-2021



Data and Figure Source: State of California, California Department of Public Health, California Community Burden of Disease Engine, Accessed at <https://skylab.cdph.ca.gov/communityBurden/> on 19 January 2023

Whereas Table 2a shows the crude death rates among the various race/ethnicity groups, Table 2b shows the age-adjusted death rate of each group. When adjusted for age, Black seemed to die at a higher rate than other groups.

In 2021, a total of 9,303 people died in the county, which translates to an *average of more than 25 deaths per day, with heart disease as the top cause at 5 per day, 4 from COVID-19, 4 from cancer, 1 from Alzheimer, and the rest being other causes (Table 3). Comparatively, in 2020, there were 8,714 deaths in the county, translating to an average of 24 deaths per day, including 5 from heart disease, 4 from cancer and 1 from Alzheimer. Although COVID-19 is not rankable by international standard when tabulating leading causes of death, COVID-19 was the second leading cause of death in 2021 and the third leading cause of death for Fresno County in 2020.

* These numbers represent a simple average and were calculated by dividing the total number of deaths from within each category by the number of days in the corresponding year. During 2020, there were 366 days, while in 2021 there were 365. In actuality, the total number of deaths from each of these top conditions varied each day and is not literally represented by the average daily value.

Table 3. Leading Causes of Death among Residents, County of Fresno

Cause	2021	¹ Rank	Cause	2020	¹ Rank
All Causes	9,303	--	All Causes	8,714	--
Heart Disease	1,752	1	Heart Disease	1,835	1
COVID-19 ²	1,399	2	Cancer	1,367	2
Cancer	1,337	3	COVID-19 ²	932	3
Alzheimer	525	4	Alzheimer	534	4
Cerebrovascular	421	5	Cerebrovascular	417	5
Diabetes	313	6	Chronic Lower Respiratory	332	6
Chronic Lower Respiratory	290	7	Diabetes	320	7
Bronchitis	254	8	Bronchitis	280	8
Hypertension	229	9	Hypertension	222	9
Cirrhosis	222	10	Cirrhosis	170	10
Drug Overdose ²	196	11	Drug Overdose ²	167	11
Nephritis	147	12	Unintentional Accidents	135	12
Unintentional Accidents	141	13	Influenza	132	13
Septicemia	138	14	Septicemia	119	14
Homicide	111	15	Nephritis	112	15
Influenza	108	16	Suicide ²	105	16
Parkinson	102	17	Homicide	99	17
Opioid ^{**2}	94	18	Opioid ^{**2}	74	18
Suicide ²	91	19	Pneumonitis Solid	69	19
Pneumonitis Solid	82	20	Parkinson's	65	21
Fentanyl ^{**2}	71	21	Nutritional Deficiencies	47	22

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest. Deaths in this report were analyzed using information found on death certificate data from Cal-IVRS. The death counts only included permanent residents of the county, regardless of where the death occurred, and excluded anyone who died in the county but was not a county resident. Prior to June/July 2023, COVID-19 associated deaths reported on COVID-19 specific reports and dashboards may differ from how the deaths were originally classified on the death certificate. Historical FCDPH dashboard counts 1) may not be based on permanent residence on death certificate, but on residence at time of infection and 2) may be classified by death certificate data in combination with additional clinical reviews by the local health department. This methodology does not allow for comparison among other causes and thus cannot be used in this report.

****Opioid and Fentanyl deaths are not mutually exclusive of Drug Overdose, but they are shown here due to public interest**

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

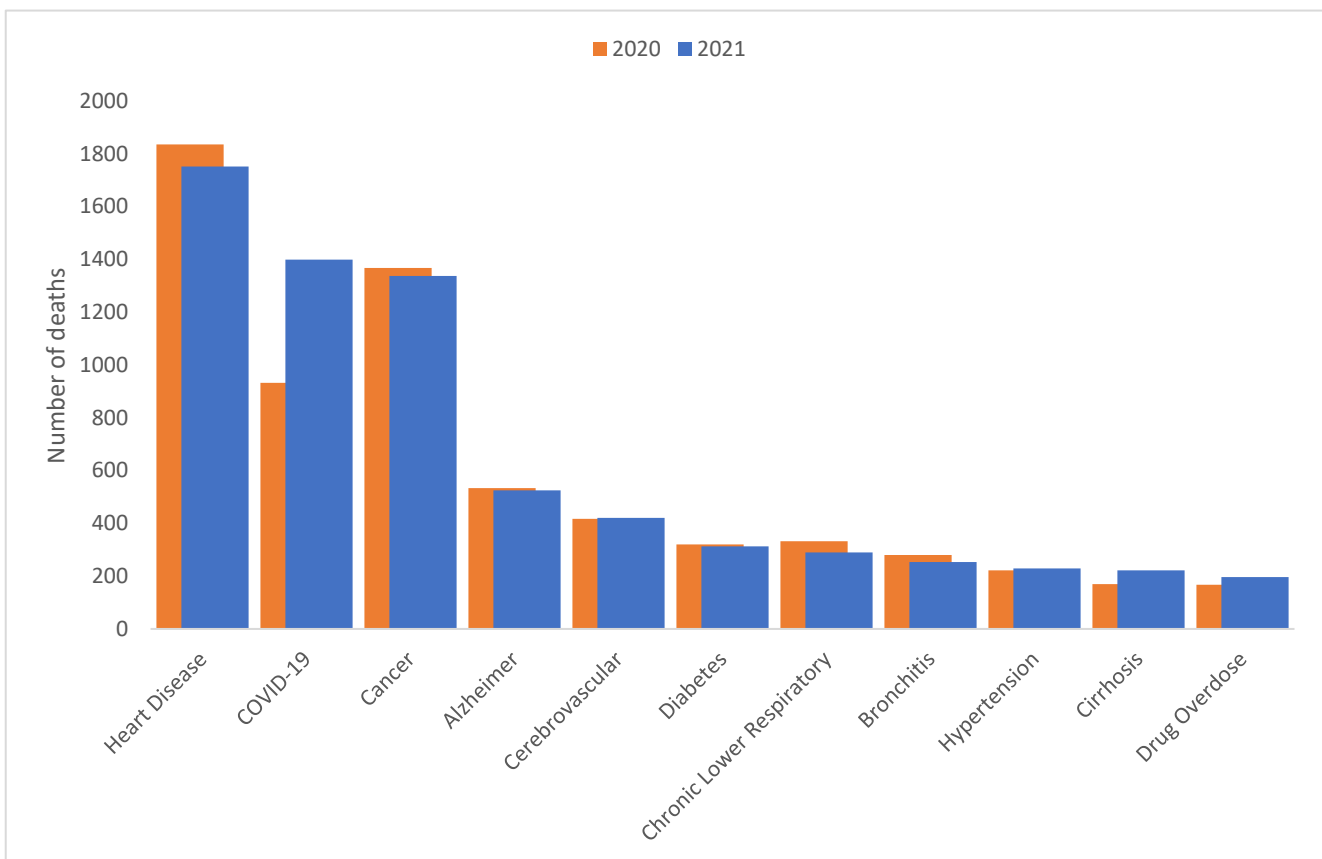
Nineteen percent, nearly one out of every five deaths in 2021, were caused by heart disease, the leading cause of death; and the second leading cause of death – COVID-19 – accounted for 15% of all deaths

(Table 3). By comparison, in 2020, 21% of all deaths were due to heart disease, followed by cancer at 16%, and COVID-19 at nearly 11%.

Alzheimer, which in prior years was the third leading cause of death, moved to fourth place when COVID-19 was included in years 2020 and 2021.

The top ten leading causes of death accounted for more than 72% of all deaths in 2021 and 74% of all deaths in 2020.

Figure 1. A Comparison of the Leading Causes of Death, County of Fresno



Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, Accessed 21 September 2022

Figure 1 above displays the total deaths and the leading causes of death in years 2020 and 2021. While many deaths resulting from the top causes appeared lower in 2021 compared to 2020, COVID-19 caused 462 more deaths in 2021 than in 2020, an increase of nearly 50%.

Table 4. Leading Causes of Death among Residents by Sex, County of Fresno, 2021

Men	2021	¹ Rank	Women	2021	¹ Rank
All Causes	5,139	--	All Causes	4,164	--
Heart Disease	973	1	Heart Disease	779	1
COVID-19 ²	793	2	Cancer	610	2
Cancer	727	3	COVID-19 ²	606	3
Cerebrovascular	182	4	Alzheimer	348	4
Diabetes	181	5	Cerebrovascular	239	5
Alzheimer	177	6	Chronic Lower Respiratory	157	6
Cirrhosis	149	7	Diabetes	132	7
Drug Overdose ²	148	8	Bronchitis	116	8
Bronchitis	138	9	Hypertension	115	9
Chronic Lower Respiratory	133	10	Cirrhosis	73	10
Hypertension	114	11	Nephritis	67	11
Unintentional Accident	96	12	Septicemia	63	12
Homicide	92	13	Drug Overdose ²	48	13
Nephritis	80	14	Influenza	47	14
Suicide ²	76	15	Unintentional Accident	45	15
Septicemia	75	16	Parkinson	33	16
Parkinson	69	17	Nutritional Deficiencies	30	17
Opioid ^{**2}	67	18	Opioid ^{**2}	27	18
Influenza	61	19	Pneumonitis Solid	26	19
Pneumonitis Solid	56	20	Neoplasm Benign	20	20
Fentanyl ^{**2}	53	21	Homicide	19	21
HIV	20	22	Fentanyl ^{**2}	18	22
Pelvic Inflammation	20	22	Perinatal	17	23

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

** Opioid and fentanyl deaths are not mutually exclusive of Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

In 2021, the leading cause of death among both men and women was heart disease, followed by cancer among women and COVID-19 among men (Table 4); COVID-19 was the third leading cause of death among women while, among men, cancer was the third leading cause. Alzheimer, which normally was the third leading cause of death among women prior to the pandemic, was bumped by COVID-19 to the fourth leading cause. Alzheimer accounted for more than 8% of deaths among women and more than 3% of deaths among men. Unlike with women, cerebrovascular disease and diabetes appeared to kill more men than Alzheimer, a disease that normally affects older people. This may be at least partially

explained by the average age of death being lower for men (Table 1), resulting in them dying of other causes prior to being overtaken by Alzheimer.

Drug overdose killed 100 more men than women in 2021. While more women appeared to die of conditions related to advanced age, more men appeared to die of preventable causes and chronic conditions, such as unintentional accident, diabetes, and cirrhosis.

Table 5. Leading Causes of Death by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Ranked Causes	3,865	--	521	--	72	--	696	--	15	--	11	--	2,996	--	8,176
Other	536	--	74	--	12	--	84	--	<10	--	<10	--	419	--	1,127
Heart Disease	1,007	1	128	1	16	2	138	2	<10	4	<10	1	460	2	1,752
COVID-19 ²	440	3	77	2	18	1	152	1	<10	1	<10	4	705	1	1,399
Cancer	711	2	71	3	<10	3	110	3	<10	2	<10	4	433	3	1,337
Alzheimer	323	4	25	4	<10	7	33	6	<10	8	<10	8	142	5	525
Cerebrovascular	212	5	22	6	<10	7	49	4	<10	4	<10	8	135	6	421
Diabetes	91	9	18	8	<10	7	41	5	<10	8	<10	4	160	4	313
Chronic Lower Respiratory	203	6	14	10	<10	7	19	9	<10	8	<10	1	50	15	290
Bronchitis	135	7	13	11	<10	14	24	7	<10	8	<10	8	81	9	254
Hypertension	123	8	20	7	<10	6	23	8	<10	8	<10	8	60	12	229
Cirrhosis	68	11	<10	15	<10	4	14	10	<10	4	<10	8	127	7	222
Drug Overdose ²	71	10	17	9	<10	4	<10	14	<10	8	<10	8	96	8	196
Nephritis	59	13	12	12	<10	7	14	10	<10	8	<10	4	59	13	147
Unintentional Accidents	38	18	11	13	<10	14	10	13	<10	4	<10	8	80	10	141
Septicemia	59	13	11	13	<10	20	<10	16	<10	3	<10	8	59	13	138
Homicide	21	21	25	4	<10	14	<10	20	<10	8	<10	8	61	11	111
Influenza	52	15	<10	21	<10	7	12	12	<10	8	<10	1	37	18	108
Parkinson	67	12	<10	22	<10	7	<10	18	<10	8	<10	8	25	20	102
Opioid ^{**2}	37	19	<10	18	<10	14	<10	19	<10	8	<10	8	47	16	94
Suicide ²	44	17	<10	18	<10	20	<10	16	<10	8	<10	8	35	19	91
Pneumonitis Solid	47	16	<10	16	<10	14	<10	20	<10	8	<10	8	24	21	82
Fentanyl ^{**2}	22	20	<10	17	<10	14	<10	20	<10	8	<10	8	39	17	71
Nutritional Deficiencies	18	22	<10	20	<10	20	<10	14	<10	8	<10	8	12	22	42

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but is shown here due to public interest

<10 data suppressed to preserve privacy

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

During 2021, among the predominant race/ethnicity groups, except white, COVID-19 replaced the usual top two leading causes of death, namely heart disease and cancer. Although heart disease remained the number one cause among White and Black groups, COVID-19 became the number one cause of death among Asian and Hispanic groups. Among the predominant race/ethnicity groups, the percentage of death attributed to COVID-19 were White (10%); Black (13%); Asian (19%); and Hispanic (21%). While the second leading cause of death among White was still cancer, COVID-19 became the third leading cause of death among White. Cancer was the third leading cause of death among Black, Asian, and Hispanic (Table 5).

Following the top three causes of death among the different race/ethnicity groups, the cause of death appeared varied, suggesting that factors causing death were different among the various groups. For White and Black, the fourth leading cause of death was Alzheimer; for Hispanic, diabetes; and for Asian, cerebrovascular disease (Table 5).

Table 6. Leading Causes of Death among Men by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Ranked Causes	1,936	--	292	--	40	--	367	--	<10	--	<10	--	1,722	--	4,373
Other Causes	335	--	46	--	<10	--	53	--	<10	--	<10	--	326	--	765
Heart Disease	528	1	73	1	11	1	73	2	<10	2	<10	1	285	2	973
COVID-19 ²	231	3	46	2	<10	2	77	1	<10	1	<10	2	424	1	793
Cancer	383	2	39	3	<10	3	62	3	<10	2	<10	2	237	3	727
Cerebrovascular	85	6	10	8	<10	6	22	4	<10	6	<10	7	64	7	182
Diabetes	54	8	11	7	<10	6	21	5	<10	6	<10	7	94	4	181
Alzheimer	105	4	<10	12	<10	19	11	8	<10	6	<10	7	55	8	177
Cirrhosis	39	12	<10	12	<10	6	13	6	<10	2	<10	7	89	5	149
Drug Overdose ²	53	9	13	5	<10	4	<10	12	<10	6	<10	7	71	6	148
Bronchitis	68	7	<10	9	<10	6	10	10	<10	6	<10	7	51	10	138
Chronic Lower Respiratory	89	5	<10	14	<10	6	11	8	<10	6	<10	2	26	18	133
Hypertension	52	10	13	5	<10	5	12	7	<10	6	<10	7	35	12	114
Unintentional Accidents	25	18	<10	10	<10	6	<10	11	<10	2	<10	7	53	9	96
Homicide	17	20	21	4	<10	6	<10	20	<10	6	<10	7	51	10	92
Nephritis	31	16	<10	10	<10	6	<10	14	<10	6	<10	2	34	13	80
Suicide ²	36	13	<10	14	<10	19	<10	14	<10	6	<10	7	29	16	76
Septicemia	34	15	<10	17	<10	19	<10	18	<10	6	<10	7	34	13	75
Parkinson	47	11	<10	20	<10	6	<10	16	<10	6	<10	7	15	20	69
Opioid ^{**2}	25	18	<10	19	<10	6	<10	17	<10	6	<10	7	34	13	67
Influenza	28	17	<10	21	<10	6	<10	12	<10	6	<10	2	23	19	61
Pneumonitis Solid	35	14	<10	14	<10	6	<10	20	<10	6	<10	7	13	21	56
Fentanyl ^{**2}	16	21	<10	17	<10	6	<10	18	<10	6	<10	7	29	16	53

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but is shown here due to public interest

<10 data suppressed to preserve privacy

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

In year 2021, among men by race/ethnicity (Table 6), heart disease ranked as the top cause of death, followed by COVID-19 as the number two cause -- except for Asian and Hispanic, where the top two causes were reversed with COVID-19 being number one and heart disease being number two.

Because of COVID-19, the third leading cause appeared to be different among the different race/ethnicity groups. For White men, the third leading cause of death was COVID-19; for Black, Asian, and Hispanic, it was cancer. In years prior to the pandemic, the third leading cause of death among White men would likely be Alzheimer, which became the fourth leading cause in 2021. The fourth leading cause for Black men was homicide; for Asian, cerebrovascular; and for Hispanic, diabetes (Table 6).

Table 7. Leading Causes of Death among Women by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Ranked Causes	1,838	--	219	--	32	--	314	--	<10	--	<10	--	1,185	--	3,598
Other Causes	292	--	38	--	<10	--	45	--	<10	--	<10	--	182	--	566
Heart Disease	479	1	55	1	<10	2	65	2	<10	5	<10	5	175	3	779
Cancer	328	2	32	2	<10	3	48	3	<10	1	<10	5	196	2	610
COVID-19 ²	209	4	31	3	<10	1	75	1	<10	3	<10	5	281	1	606
Alzheimer	218	3	19	4	<10	5	22	5	<10	5	<10	5	87	4	348
Cerebrovascular	127	5	12	5	<10	6	27	4	<10	3	<10	5	71	5	239
Chronic Lower Respiratory	114	6	<10	6	<10	6	<10	9	<10	5	<10	1	24	14	157
Diabetes	37	9	<10	7	<10	6	20	6	<10	5	<10	1	66	6	132
Bronchitis	67	8	<10	10	<10	14	14	7	<10	5	<10	5	30	8	116
Hypertension	71	7	<10	7	<10	6	11	8	<10	5	<10	5	25	10	115
Cirrhosis	29	10	<10	17	<10	4	<10	15	<10	5	<10	5	38	7	73
Nephritis	28	11	<10	10	<10	6	<10	9	<10	5	<10	5	25	10	67
Septicemia	25	12	<10	7	<10	14	<10	12	<10	1	<10	5	25	10	63
Drug Overdose ²	18	15	<10	12	<10	6	<10	21	<10	5	<10	5	25	10	48
Influenza	24	13	<10	15	<10	6	<10	12	<10	5	<10	1	14	15	47
Unintentional Accidents	13	17	<10	12	<10	14	<10	15	<10	5	<10	5	27	9	45
Parkinson	20	14	<10	23	<10	6	<10	15	<10	5	<10	5	10	19	33
Nutritional Deficiencies	15	16	<10	15	<10	14	<10	11	<10	5	<10	5	<10	22	30
Opioid ^{**2}	12	18	<10	17	<10	14	<10	21	<10	5	<10	5	13	16	27
Pneumonitis Solid	12	18	<10	17	<10	14	<10	15	<10	5	<10	5	11	17	26
Benign Neoplasm	11	20	<10	17	<10	14	<10	14	<10	5	<10	1	<10	23	20
Homicide	<10	22	<10	12	<10	14	<10	15	<10	5	<10	5	10	19	19
Fentanyl ^{**2}	<10	21	<10	17	<10	14	<10	21	<10	5	<10	5	10	19	18
Perinatal	<10	23	<10	17	<10	14	<10	15	<10	5	<10	5	11	17	17

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

During year 2021, among women (Table 7), heart disease ranked as the top cause for Whites and Blacks, while COVID-19 outranked other diseases as the top leading cause of death among Asians and Hispanics. Cancer was the second leading cause of death among White, Black, and Hispanic women while heart disease became the second leading cause among Asian women.

Alzheimer was the third leading cause of death among White women, fourth among Black and Hispanic, and fifth among Asian women. The third leading cause of death among Black women was COVID-19; among Asian women, it was cancer; and among Hispanic women, heart disease (Table 7).

Premature deaths

Any death occurring prior to age 75 results in years lost because such individuals are considered to have died prematurely. Table 8 compares the number of deaths with the number of premature deaths from 2016 through 2021. Each year, the number of deaths as well as the number of premature deaths increased. Since the population of Fresno County increased with time, a slight increase in the number of deaths should not be alarming. However, the percent of premature deaths would be expected to remain stable and/or even drop given the advancement in medical technology and care. From 2016 to 2021, the rate of premature death increased nearly 7 percent. However, 2021 was an abnormal year due to the COVID-19 pandemic where many deaths were attributed to the disease. Within the last decade, though, the rate of premature death within Fresno County did not significantly drop, suggesting that there is a need for better health access within Fresno County.

Table 8. Number of Deaths and Premature Deaths among Residents by Year, County of Fresno

	2016	2017	2018	2019	2020	2021
All Deaths	6,636	7,015	7,068	6,991	8,714	9,303
Premature	3,236	3,347	3,438	3,369	4,288	4,848
% Premature Death	48.8	47.7	48.6	48.2	49.2	52.1

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2016-2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey

Years of Potential Life Lost

Table 9. Number of Premature Deaths and Years of Potential Life Lost among Residents by Race/Ethnicity, County of Fresno

	Number of Premature Deaths						2021
	2016	2017	2018	2019	2020	2021	YPLL <75
White	1,520	1,530	1,596	1,428	1,675	1,748	24,616
Black	293	297	275	319	355	408	8,870
AIAN	26	28	43	35	56	55	946
Asian	216	237	267	259	328	407	8,267
HwPI	31	30	30	32	40	12	314
Other	4	3	5	5	6	7	67
Hispanic	1,146	1,222	1,222	1,291	1,828	2,211	48,428
Total	3,236	3,347	3,438	3,369	4,288	4,848	91,508

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2016-2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey

In 2021, there were 4,848 people who died prematurely, resulting in 91,508 years of potential life lost (YPLL) in the County (Table 9). In 2020, the YPLL was 78,020 among 4,288 individuals. The increase in YPLL in 2021 over the previous year was due partly to people dying of COVID-19 where there were 869 persons whose cause of premature death was due to the disease, resulting in YPLL of 14,265.

Table 10. Number of Premature Deaths and Years of Potential Life Lost among Residents by Sex, County of Fresno

	Number of Premature Deaths						2021
	2016	2017	2018	2019	2020	2021	YPLL <75
Women	1,231	1,306	1,352	1,251	1,599	1,779	31,009
Men	2,004	2,041	2,086	2,118	2,689	3,069	60,499
Unknown	1	0	0	0	0	0	0
Total	3,236	3,347	3,438	3,369	4,288	4,848	91,508

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2016-2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey

Among those who died prematurely in 2021, there were nearly twice as many men (3,069) than there were women (1,779), with YPLL among men at 60,499 compared to women with YPLL at 31,009 (Table 10).

Table 11. Years of Potential Life Lost among Residents by Sex, County of Fresno, 2021

	YPLL Men	YPLL Women	YPLL Total
White	15,739	8,877	24,616
Black	5,895	2,975	8,870
AIAN	517	429	946
Asian	5,199	3,068	8,267
HwPI	233	81	314
Other	27	40	67
Hispanic	32,889	15,539	48,428
Total	60,499	31,009	91,508

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey

Table 11 above compares the YPLL among men and women as well as among the race/ethnicity groups. It is important to note that the higher YPLL in each category do not indicate that persons within the category lost more potential life. This is because the aggregate YPLL may come from a higher count of deaths within the category.

Table 12. Average Years of Potential Life Lost among Residents by Sex by Race/Ethnicity, County of Fresno, 2021

	Average YPLL Men	Average YPLL Women	Average YPLL Total	Median Age
White	14.7	13.1	14.1	64
Black	23.3	19.2	21.7	59
AIAN	17.8	16.5	17.2	61
Asian	21.5	18.6	20.3	59
HwPI	25.9	27.0	26.2	48
Other	9.0	10.0	9.6	66
Hispanic	22.5	20.7	21.9	58
Total	19.7	17.4	18.9	61

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey

Table 12 displays the average YPLL within the group and within each gender. This is an attempt to show how many years an average person within each category lost from dying prematurely. The median age is also indicated to mark the age at which half of those within each race/ethnicity died.

Table 13. Leading Causes of Premature Death and Years of Potential Life Lost among Residents, County of Fresno, 2021

Cause	Number of Premature Deaths	¹Rank	YPLL <75 (N=4,848)	Median Age
All Causes	4,848	--	91,508	61
Other	806	--	17,986	58
COVID-19 ²	869	1	14,265	62
Cancer	746	2	9,930	64
Heart Disease	690	3	8,598	64
Drug Overdose ²	196	4	2,691	42
Cirrhosis	180	5	3,373	58
Diabetes	177	6	2,292	63
Cerebrovascular	161	7	2,379	64
Unintentional Accidents	130	8	4,422	40
Homicide	111	9	4,704	29
Bronchitis	105	10	1,139	65
Chronic Lower Respiratory	99	11	1,031	67
Opioid** ²	94	12	2,449	35
Suicide ²	85	13	2,713	39
Hypertension	83	14	1,089	64
Septicemia	83	14	1,268	63
Nephritis	77	16	732	65
Fentanyl** ²	71	17	2,449	30
Influenza	45	18	621	63
Perinatal	37	19	2,775	0
Alzheimer	35	20	170	71
Pneumonitis Solid	33	21	587	60

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

Among those who died prematurely in 2021, COVID-19 was the leading cause of death resulting in 869 premature deaths (18%) and a YPLL of 14,265. Cancer, the second leading cause of premature death, killed 746 people (15%) prematurely, with a YPLL of 9,930. Heart disease killed 690 people (14%) prematurely in 2021, resulting in a YPLL of 8,598.

While COVID-19 was the third leading cause of premature deaths in 2020 (472 deaths), it nearly doubled the number of deaths to become the top killer among premature deaths in 2021 (869 deaths). A high YPLL of 14,265 indicates that COVID-19 killed many people who were below the age of 75.

The median age column tracks the age when a half of the people died from the attributed cause. From looking at the column, those who died from homicide (median age 29) and fentanyl (median age 30) were fairly young.

Table 14. Leading Causes of Premature Death and Years of Potential Life Lost among Residents by Sex, County of Fresno, 2021

Men	2021	¹ Rank	YPLL <75 (N=3,069)	Women	2021	¹ Rank	YPLL <75 (N=1,779)
All Causes	3,069	--	60,499	All Causes	1,779	--	31,009
Other	529	--	12,434	Other	277	--	5,552
COVID-19 ²	524	1	8,864	COVID-19 ²	345	1	5,401
Heart Disease	460	2	5,920	Cancer	337	2	4,712
Cancer	409	3	5,218	Heart Disease	230	3	2,678
Drug Overdose ²	148	4	2,117	Cerebrovascular	69	4	895
Cirrhosis	129	5	2,508	Diabetes	59	5	617
Diabetes	118	6	1,675	Cirrhosis	51	6	865
Cerebrovascular	92	7	1,484	Chronic Lower Respiratory	48	7	502
Homicide	92	7	3,930	Drug Overdose ²	48	7	574
Unintentional Accidents	91	9	2,967	Septicemia	41	9	604
Suicide ²	71	10	2,272	Bronchitis	40	10	363
Opioid ^{**2}	67	11	1,928	Unintentional Accidents	39	11	1,455
Bronchitis	65	12	776	Hypertension	29	12	302
Hypertension	54	13	787	Nephritis	28	13	360
Fentanyl ^{**2}	53	14	1,928	Opioid ^{**2}	27	14	521
Chronic Lower Respiratory	51	15	529	Alzheimer	23	15	107
Nephritis	49	16	372	Homicide	19	16	774
Septicemia	42	17	664	Fentanyl ^{**2}	18	17	521
Influenza	29	18	403	Perinatal	17	18	1,275
Pneumonitis Solid	23	19	352	Congenital Malformation	16	19	899
HIV	20	20	416	Suicide ²	14	20	441
Perinatal	20	20	1,500	Parkinson	10	21	49
Hepatitis Viral	16	22	219	Pneumonitis Solid	10	21	235

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

Table 14 shows that COVID-19 was the leading premature killer of both men (YPLL of 8,864) and women (YPLL of 5,401). Heart disease and cancer were the second and third causes that killed men

prematurely. Those causes flipped to cancer being second and heart disease being third when compared with women. The top causes killed men at a higher rate than women.

The following tables show various aspects of leading causes that resulted in premature deaths among race/ethnicity and sex.

Table 15. Leading Causes of Premature Death among Residents by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Causes	1,748	--	408	--	55	--	407	--	12	--	7	--	2,211	--	4,848
Ranked Causes	1,445	--	346	--	45	--	350	--	10	--	7	--	1,839	--	4,042
Other Causes	303	--	62	--	10	--	57	--	2	--	0	--	372	--	806
COVID-19 ²	208	3	54	2	14	1	95	1	4	1	1	2	493	1	869
Cancer	335	1	45	3	4	3	68	2	1	3	0	6	293	2	746
Heart Disease	309	2	85	1	5	2	53	3	1	3	2	1	235	3	690
Drug Overdose ²	71	4	17	5	4	3	8	10	0	7	0	6	96	6	196
Cirrhosis	50	7	7	12	4	3	13	6	1	3	0	6	105	4	180
Diabetes	45	9	12	8	2	6	18	5	0	7	1	2	99	5	177
Cerebrovascular	57	6	14	6	1	10	24	4	0	7	0	6	65	8	161
Unintentional Accidents	32	13	11	9	1	10	9	9	1	3	0	6	76	7	130
Homicide	21	17	25	4	1	10	3	16	0	7	0	6	61	9	111
Bronchitis	49	8	6	14	0	17	11	7	0	7	0	6	39	12	105
Chronic Lower Respiratory	68	5	7	12	2	6	4	14	0	7	1	2	17	18	99
Opioid ^{**2}	37	11	5	16	1	10	4	14	0	7	0	6	47	10	94
Suicide ²	38	10	5	16	0	17	7	11	0	7	0	6	35	15	85
Hypertension	33	12	13	7	2	6	11	7	0	7	0	6	24	17	83
Septicemia	28	14	9	11	0	17	2	18	2	2	0	6	42	11	83
Nephritis	21	17	10	10	1	10	7	11	0	7	0	6	38	14	77
Fentanyl ^{**2}	22	15	6	14	1	10	3	16	0	7	0	6	39	12	71
Influenza	22	15	0	22	2	6	5	13	0	7	1	2	15	20	45
Perinatal	3	22	3	18	0	17	1	19	0	7	0	6	30	16	37
Alzheimer	20	19	3	18	0	17	1	19	0	7	0	6	11	22	35
Pneumonitis Solid	18	20	2	20	1	10	0	22	0	7	0	6	12	21	33
Congenital Malformation	11	21	2	20	0	17	1	19	0	7	0	6	17	18	31

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

Table 16. Leading Causes of Premature Death among Men by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Causes	1,071	--	253	--	29	--	242	--	9	--	3	--	1,462	--	3,069
Ranked Causes	877	--	213	--	26	--	211	--	7	--	3	--	1,203	--	2,540
Other Causes	194	--	40	--	3	--	31	--	2	--	0	--	259	--	529
COVID-19 ²	123	3	34	2	7	1	45	1	3	1	1	2	311	1	524
Heart Disease	200	1	51	1	3	2	33	3	1	2	2	1	170	2	460
Cancer	184	2	22	3	2	4	36	2	1	2	0	3	164	3	409
Drug Overdose ²	53	4	13	5	3	2	8	7	0	6	0	3	71	5	148
Cirrhosis	31	7	6	10	1	5	12	5	1	2	0	3	78	4	129
Diabetes	32	6	8	7	1	5	10	6	0	6	0	3	67	6	118
Cerebrovascular	30	9	8	7	1	5	14	4	0	6	0	3	39	9	92
Homicide	17	14	21	4	1	5	2	17	0	6	0	3	51	7	92
Unintentional Accidents	23	12	7	9	1	5	8	7	1	2	0	3	51	7	91
Suicide ²	31	7	5	12	0	17	6	10	0	6	0	3	29	11	71
Opioid ^{**2}	25	11	3	16	1	5	4	11	0	6	0	3	34	10	67
Bronchitis	28	10	4	14	0	17	4	11	0	6	0	3	29	11	65
Hypertension	20	13	9	6	1	5	8	7	0	6	0	3	16	17	54
Fentanyl ^{**2}	16	15	4	14	1	5	3	15	0	6	0	3	29	11	53
Chronic Lower Respiratory	34	5	2	17	1	5	4	11	0	6	0	3	10	19	51
Nephritis	15	16	5	12	1	5	4	11	0	6	0	3	24	14	49
Septicemia	15	16	2	17	0	17	2	17	0	6	0	3	23	15	42
Influenza	14	18	0	21	1	5	3	15	0	6	0	3	11	18	29
Pneumonitis Solid	14	18	1	19	1	5	0	19	0	6	0	3	7	20	23
HIV	8	20	6	10	0	17	0	19	0	6	0	3	6	21	20
Perinatal	0	21	1	19	0	17	0	19	0	6	0	3	19	16	20

¹Rank based on number of total deaths.

²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

Table 17. Leading Causes of Premature Death among women by Race/Ethnicity, County of Fresno, 2021

Cause	White	¹ Rank	Black	¹ Rank	AIAN	¹ Rank	Asian	¹ Rank	HwPI	¹ Rank	Other	¹ Rank	Hispanic	¹ Rank	Total
All Causes	677	--	155	--	26	--	165	--	3	--	4	--	749	--	1,779
Ranked Causes	568	--	133	--	19	--	139	--	3	--	4	--	636	--	1,502
Other Causes	109	--	22	--	7	--	26	--	0	--	0	--	113	--	277
COVID-19 ²	85	3	20	3	7	1	50	1	1	2	0	4	182	1	345
Cancer	151	1	23	2	2	3	32	2	0	3	0	4	129	2	337
Heart Disease	109	2	34	1	2	3	20	3	0	3	0	4	65	3	230
Cerebrovascular	27	5	6	5	0	10	10	4	0	3	0	4	26	6	69
Diabetes	13	10	4	8	1	5	8	5	0	3	1	1	32	4	59
Cirrhosis	19	7	1	18	3	2	1	10	0	3	0	4	27	5	51
ChronicRespiratory	34	4	5	6	1	5	0	17	0	3	1	1	7	18	48
Drug Overdose ²	18	8	4	8	1	5	0	17	0	3	0	4	25	7	48
Septicemia	13	10	7	4	0	10	0	17	2	1	0	4	19	9	41
Bronchitis	21	6	2	13	0	10	7	6	0	3	0	4	10	13	40
Unintentional Accidents	9	14	4	8	0	10	1	10	0	3	0	4	25	7	39
Hypertension	13	10	4	8	1	5	3	7	0	3	0	4	8	17	29
Nephritis	6	17	5	6	0	10	3	7	0	3	0	4	14	10	28
Opioid ^{**2}	12	13	2	13	0	10	0	17	0	3	0	4	13	11	27
Alzheimer	14	9	2	13	0	10	1	10	0	3	0	4	6	19	23
Homicide	4	21	4	8	0	10	1	10	0	3	0	4	10	13	19
Fentanyl ^{**2}	6	17	2	13	0	10	0	17	0	3	0	4	10	13	18
Perinatal	3	23	2	13	0	10	1	10	0	3	0	4	11	12	17
CongenitalMalformation	6	17	1	18	0	10	0	17	0	3	0	4	9	16	16
Influenza	8	15	0	22	1	5	2	9	0	3	1	1	4	22	16
Suicide ²	7	16	0	22	0	10	1	10	0	3	0	4	6	19	14
Parkinson	5	20	1	18	0	10	1	10	0	3	0	4	3	23	10
PneumonitisSolid	4	21	1	18	0	10	0	17	0	3	0	4	5	21	10

¹Rank based on number of total deaths.

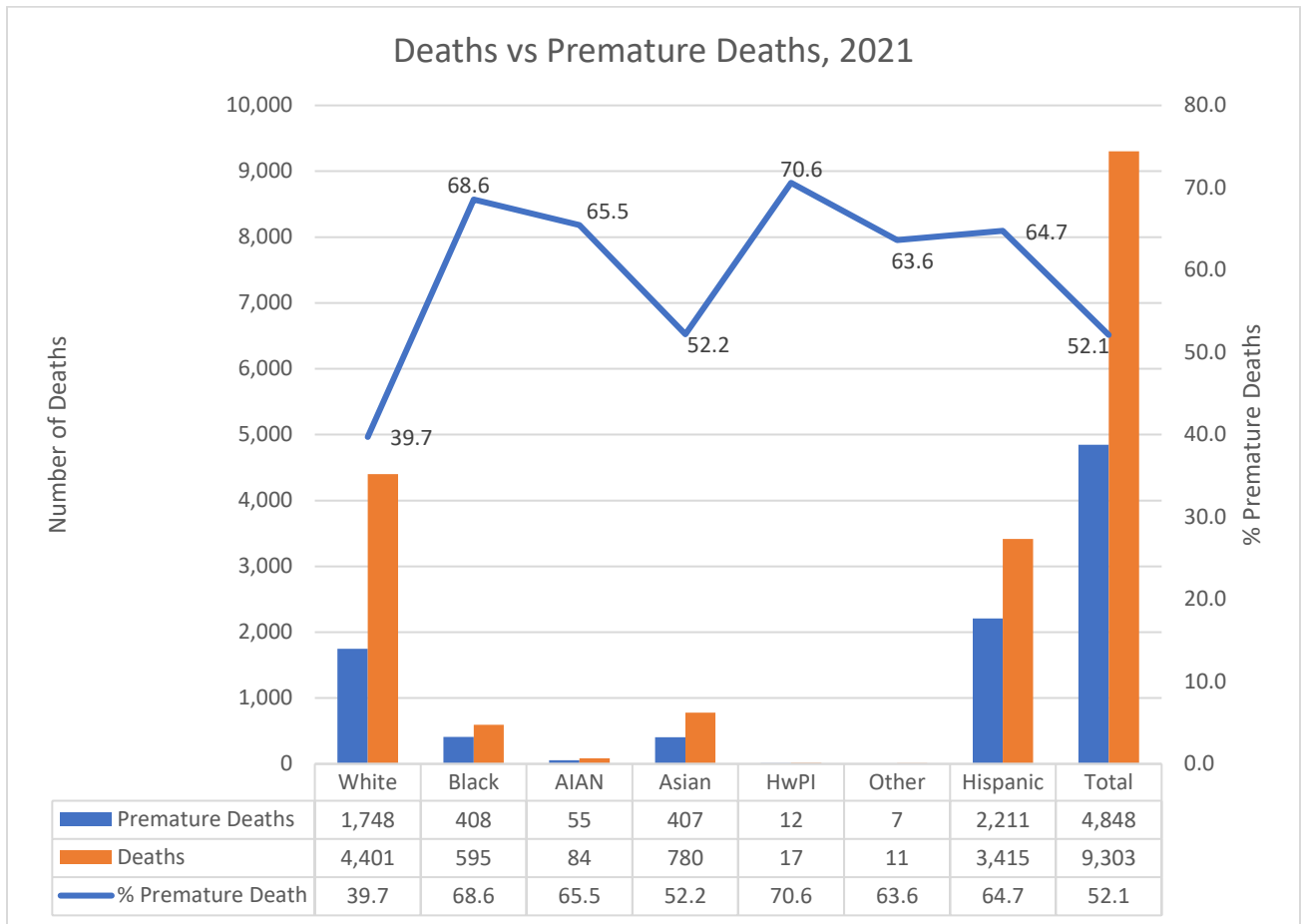
²Not rankable by international standard but shown here due to public interest.

**Opioid and fentanyl are included in Drug Overdose, but are shown here due to public interest

Data Source: State of California, California Department of Public Health, Cal-IVRS

California Comprehensive Death File, Accessed 21 September 2022

Figure 2. A Comparison of Premature Death and Annual Death among Residents, County of Fresno, 2021



Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, Accessed 21 September 2022

Figures 2 show the percentage of premature deaths by race/ethnicity. In 2021, there appears to be a lower percentage of premature deaths among White (39.7%) when compared to the other race/ethnicity groups. Among the larger race/ethnicity groups, Black has the highest proportion of individuals dying prematurely (68.5%), followed by Hispanic (64.7%) and Asian (52.2%). The proportions among all the other race/ethnicity groups were also higher than the county total (52.1%). This highlights the issue of premature death among minority groups.

Figure 3. Years of Potential Life Lost among Residents, County of Fresno, 2021

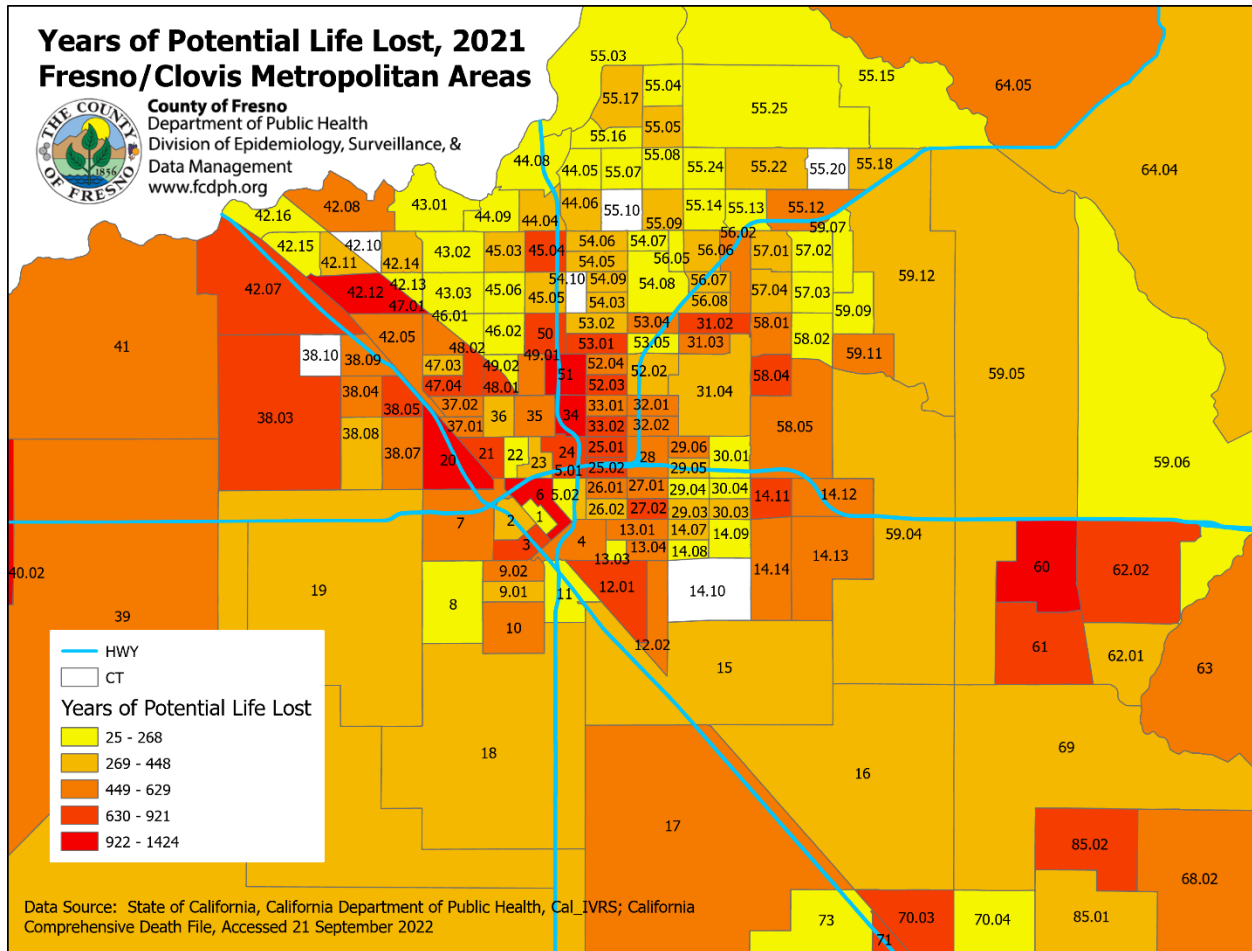


Figure 3 highlights the years of potential life lost by residents within the metropolitan areas of Fresno and Clovis.

Excess Deaths

For this report, excess death is the difference between the observed number of deaths and the expected numbers of deaths. The observed numbers of deaths were the deaths occurring in year 2021. The expected numbers of deaths were the average of deaths from the preceding five years.

Table 19 displays the numbers of expected deaths and observed numbers of deaths for year 2021.

In 2021, the excess deaths were 2,018, an increase of 28% from the deaths expected. When accounting for the population difference, the rate of death (per 100,000 population) increased was 25.3%.

Table 18. Expected and Observed Deaths, County of Fresno

	Expected 2016-2020			
	Average	Observed	Excess	% Increase
Deaths	7,285	9,303	2,018	27.7
Rate per 100,000	732.7	917.8	185.2	25.3

Table 19. Rate per 100,000 Population of Expected and Observed Deaths by Race/Ethnicity, County of Fresno

	Expected 2016-2020		Observed	Excess	% Increase
	Average	2021			
White	1384.0	1648.6	265	19.1	
Black	1034.1	1433.1	399	38.6	
AIAN	1113.4	2305.8	1,192	107.1	
Asian	514.7	727.3	213	41.3	
HwPI	5273.8	988.9	-4,285	-81.2	
Other	32.3	29.1	-3	-10.1	
Hispanic	418.2	615.7	197	47.2	
Total	732.7	917.8	185	25.3	

Data Source: State of California, California Department of Public Health, Cal-IVRS California Comprehensive Death File, 2016-2021, Accessed 21 September 2022
Population obtained from www.data.census.gov, American Community Survey, ACS 1-Year Estimates Subject Tables, TableID: S0101, Accessed 21 September 2022

By race/ethnicity, in 2021, the rate of excess death among White was more than 19% (Table 20); among Black, nearly 39%; Asian, more than 41%; and Hispanic, more than 47%. Likely, the dramatic increase in deaths was related to the COVID-19 pandemic, if not directly linked to the disease.

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