

ORANGE COUNTY HEALTH CARE AGENCY

2022

DRUGS AND ALCOHOL

Deaths, Emergency Department Visits, and Hospitalizations

Trends from 2009 to 2020, Orange County, California



Executive Summary

Drug and Alcohol-related mortality has generally been rising since 2012, with the most dramatic rise from 2019 to 2020 attributed to an increase in drug-related deaths. When accounting for all the substances involved in a drug or alcohol-related death, alcohol and opioids are most frequently present. In fact, there was a 45% increase in the number of deaths involving opioids from 2019 to 2020.

Non-Hispanic whites consistently had the highest rates of mortality from drugs and alcohol, although from 2015, those identified as other race (includes Alaska Native/American Indian, multi-race, other and/or unknown) nearly matched the rates of non-Hispanic whites. Males, compared to females, also had the highest rates of mortality, as well as those ages 45 to 64 years.

Unlike mortality rates, the rate of Emergency Department (ED) visits for drug and alcohol-related diagnoses has been decreasing since 2017. However, from 2019 to 2020, the visit rates for diagnoses relating to opioids increased by 22%. Those identified as “other” race consistently had the highest rates of ED visits for drug and alcohol-related reasons, followed by non-Hispanic whites for all years except 2019. Males had a higher rate of ED visits compared to females. Residents 15 to 24 years visited the ED at the greatest rates, until 2016, when residents 25 to 44 years had the highest ED visit rates through 2020.

The rate of hospitalizations for drug and alcohol-related diagnoses has been relatively constant since 2016. In particular, the hospitalization rate for opioids was similar between 2019 and 2020, which breaks from the trend of increased fatality and ED visits due to opioids in those years. Non-Hispanic whites and those identified as “other” race alternated between having the highest hospitalization rate, until 2017. By 2018, residents identified as “other” race surpassed the rate of hospitalization of non-Hispanic whites and continued on an upward trajectory until 2020. Males and residents 45 to 64 years had the highest rates of hospitalization. The exception was 2019 to 2020 where the rate of hospitalization for residents ages 25 to 44 surpassed all other age groups.

Geographically, the coastal ZIP Codes had the highest rates of mortality, ED visits, and hospitalizations, when looking at the aggregate three year trends in 2009 to 2011, and 2018 to 2020.

Based on the dramatic increase in mortality solely from 2019 to 2020, we can conjecture that the COVID-19 pandemic had an impact on behavior that led to the increase in mortality. Furthermore, the increase in mortality did not correspond with an increase in ED visit rates or hospitalizations, potentially suggesting that there could be some degree of avoidance or inability to seek care in hospitals. This conjecture is strengthened as there was not a corresponding increase of those who died while receiving care in a hospital from 2019 to 2020 for drug or alcohol-related reasons. Further study would be needed to see if these trends expand into 2021 as the pandemic continued, and whether these rates will fall again as COVID-19 infection rates decrease in our community.

Introduction

The misuse of drugs and alcohol has long been associated with negative health consequences that ultimately impacts an individual's longevity, and the longevity of communities, overall.

In the United States, for example, longevity decreased between 2014 and 2017, the first time in several years (Xu, Murphy, Kochanek, & Arias, 2016; Murphy, Xu, Kochanek, & E, 2018). During this same period, drug mortality increased (Hedegaard, Miniño, & Warner, 2018), leading many researchers to suggest that the decline in longevity was a result of rising drug mortality (Woolf & Schoomaker, 2019).

Drug and alcohol use not only affects mortality, but also the quality of life lived with the long-term health impacts of these substances. In the United States, drug-use disorders were associated with 2,019 disability adjusted life years (DALYs)¹ per 100,000 people, and an age-adjusted mortality rate of 21 per 100,000 in the year 2019 (Pan American Health Organization, 2021a). Alcohol-related diseases were associated with 549 disability adjusted life years per 100,000, and an age-adjusted mortality of 7 per 100,000 in the United States for the same year (Pan American Health Organization, 2021b).

The COVID-19 pandemic further complicated the noted trends with drug and alcohol-related disease and mortality. At the national level, the overdose mortality was 58% higher in May 2020 of the pandemic year compared to May 2019 (Friedman & Akre, 2021). Similarly, in California, there was a 50% increase in the rate of drug overdose deaths from 2019 to 2020, and a 17% increase in alcohol-related deaths (California Department of Public Health, 2022).

By surveilling deaths, Emergency Department visits, and hospitalizations related to drugs and alcohol in Orange County (OC), we can better understand the impact these substances have on our community, as well as the persons and places most at risk.

The OC Health Care Agency had released prior reports on the burden of disease from drugs and alcohol to its residents (Orange County Health Care Agency and Orange County Sheriff-Coroner Department, 2014; 2017). Like prior reports, the data for this report is sourced from the California Department of Public Health (CDPH) Vital Records for death data, and the California Department of Health Care Access and Information (HCAI, formerly OSHPD) for Emergency Department visits and hospitalizations, and is limited to Orange County residents. Cases are selected based on the ICD-9 or 10 codes in the principal cause of death or the principal diagnosis.

The previous reports summarized the most recent two or three years in aggregate to describe the trends in drug and alcohol consequences in Orange County. While this was our initial approach, the unique circumstances of the COVID-19 pandemic led us to a different track in presenting our findings. During the first pandemic year, lifestyles and behaviors dramatically changed due to quarantine, isolation, and other pressures. Aggregating 2020 with prior years can mask the unique impacts of the COVID-19 pandemic. Even where the trend lines do not appear affected by the pandemic, we believe it important to show if and where the special circumstances regarding the response to COVID-19 affected the drug and alcohol morbidity and mortality measures.

For this reason, this report describes timeline trends, beginning in 2009 to 2020. We have avoided aggregating multiple years, except in places where the cell sizes were too small to have reliable rates and privacy of data (for example, with mortality by race and ethnicity).

¹ DALY is a measure of the community burden of disease. One DALY year is the loss of one year of full health. (World Health Organization, 2022)

Also, this report departs from other Drug and Alcohol reports produced by the OC Health Care Agency, as the inclusion criteria was updated to align with the CDPH EpiCenter criteria for drug and alcohol poisonings (California Department of Public Health, 2017). Their criteria cover physical disease, mental disorders, and poisonings from drugs and alcohol. However, because this criterion is applied to the principal cause of death (mortality data) or the principal diagnosis (ED visit and hospitalization data), the report does not include cases where alcohol or drugs contributed to the deaths but was not the principal cause, such as accidental deaths from motor vehicle collisions involving intoxicated drivers.

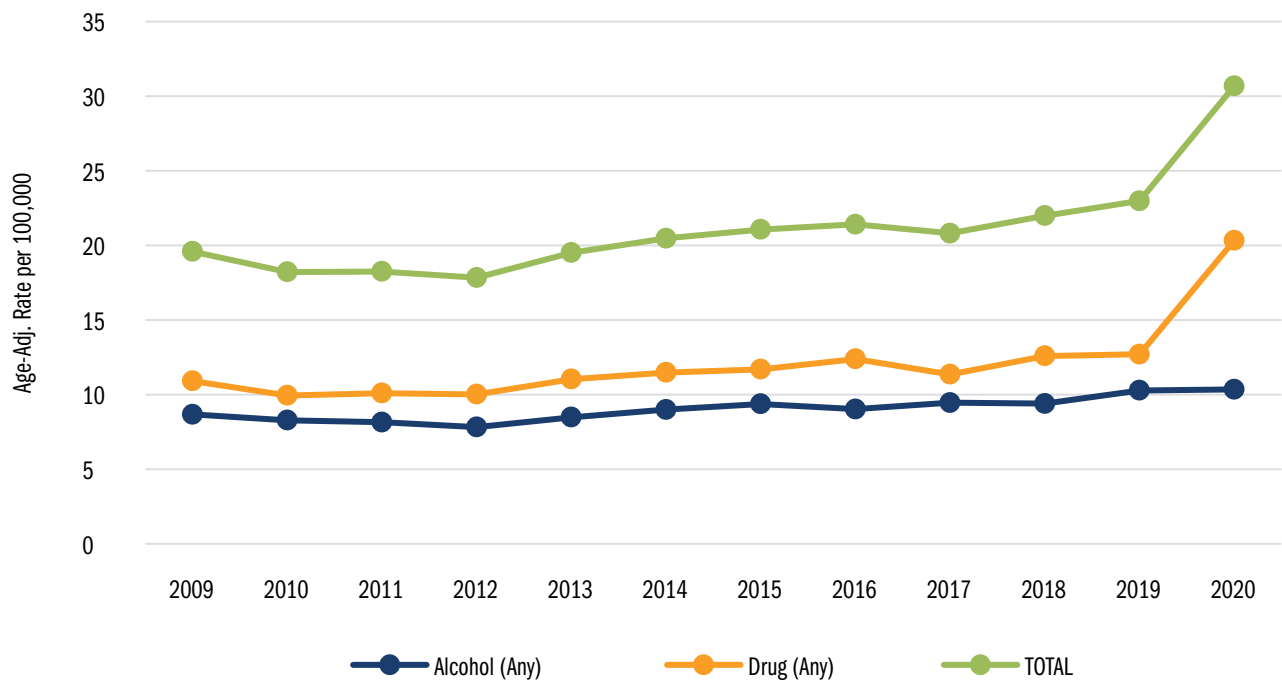
The choice to use the CDPH criteria was due, in part, to the desire to better compare with state trends, but also because the prior selection criteria was based on ICD-9 coding schemes. Because the ICD coding schemes changed from ICD-9 to ICD-10 in late 2015 for hospitalizations and emergency department visits, the classification for drugs and alcohol system inevitably changed. The impact of this coding scheme change potentially affected some diagnostic patterns, particularly in 2015 and 2016, which may be noted in the trend line figures for ED visits and hospitalizations.



Mortality

Overall, drug and alcohol-related deaths are on the rise since 2009 (Fig. 1; Table 1). During the pandemic year in particular, the mortality rate increased by 34% compared to the year prior. Drug-related deaths are responsible for the dramatic rise, increasing in rate by 60% from 2019 to 2020. Alcohol-related deaths were unchanged for those two years. Drug-related deaths consistently occurred at higher rates throughout the period of measure compared to alcohol-related deaths.

FIGURE 1: DEATHS BY ALCOHOL AND DRUGS, 2009-2020



On the national and statewide scale, we find the drastic uptick in drug and alcohol-related deaths during the pandemic year of 2020 consistent with the trends in Orange County (Fig. 2). Between 2019 and 2020, there was a 20% increase in mortality in the US, and a 32% increase for California. Orange County's increase between those years was only slightly higher (34%). However, despite a greater percent increase, Orange County always had a lower mortality rate than the US and California (Centers for Disease Control and Prevention, National Center for Health Statistics, 2021).

FIGURE 2: DRUG AND ALCOHOL-RELATED MORTALITY, DOMESTIC AND NATIONAL TRENDS

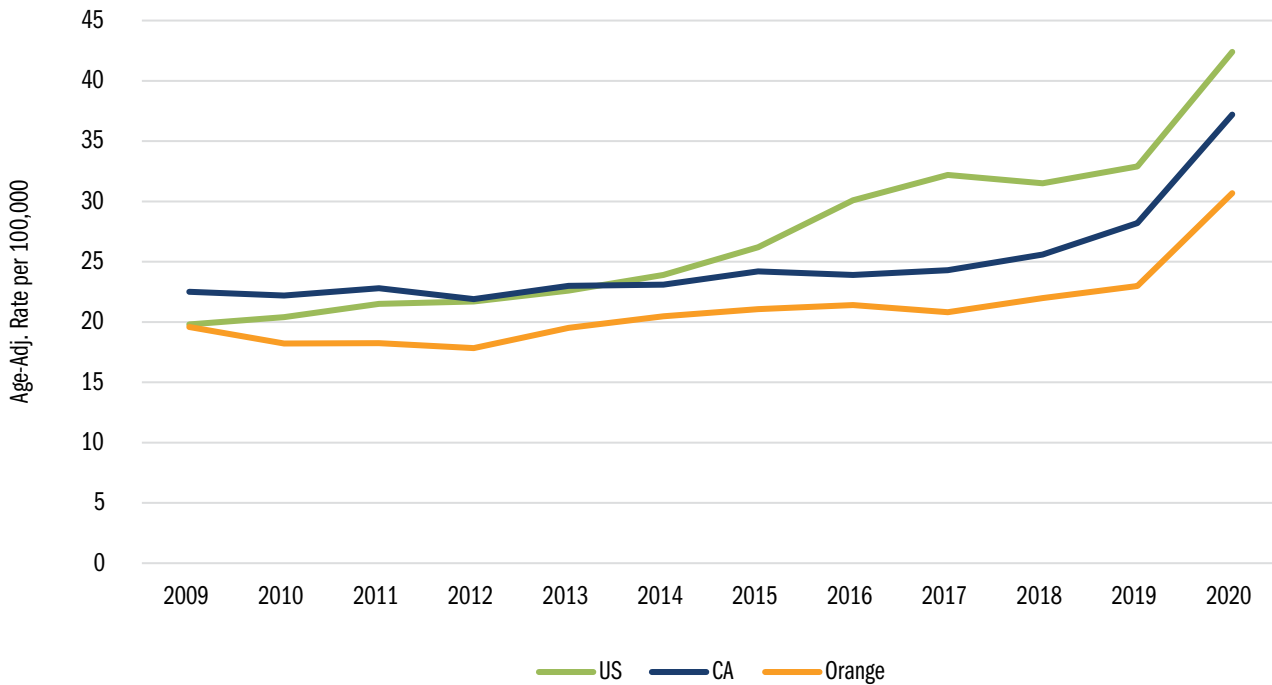
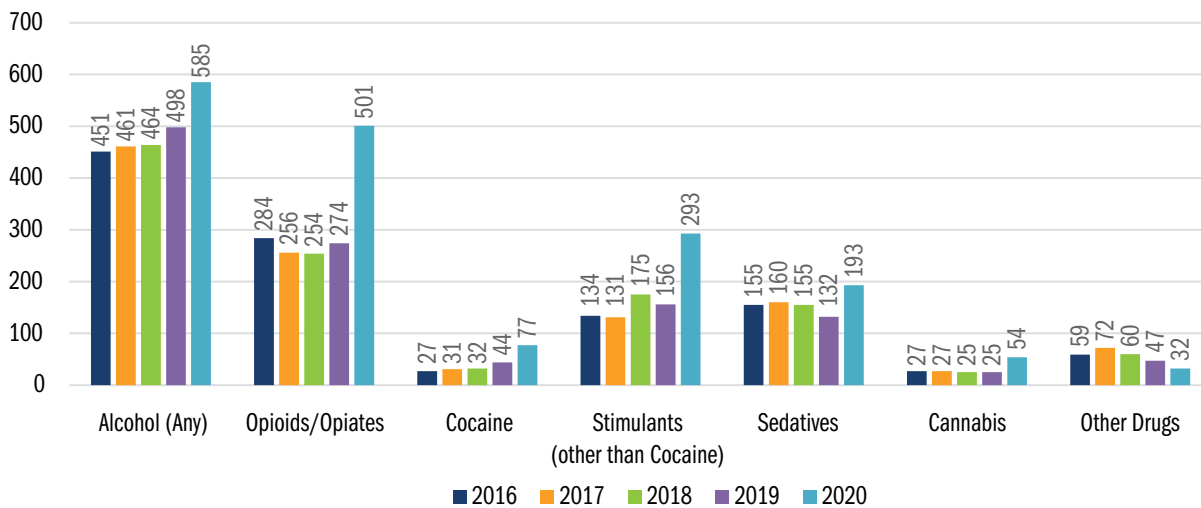


FIGURE 3: DRUG AND ALCOHOL DEATHS BY SPECIFIC SUBSTANCE(S) INVOLVED IN DEATH

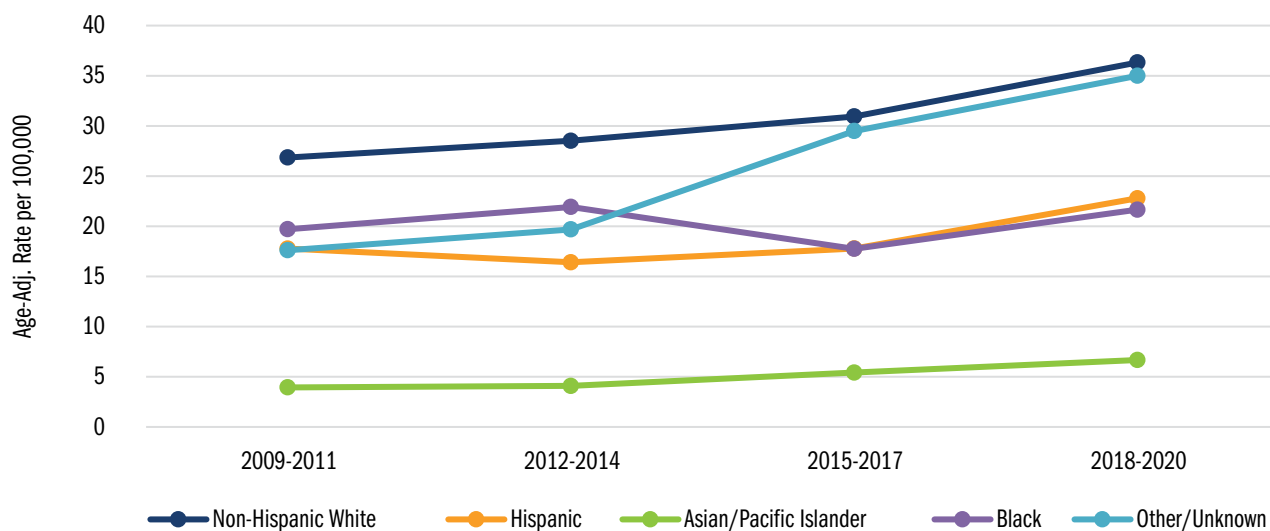


For the years 2016 to 2020, because this data became newly available, the multiple types of drugs and alcohol involved in the deaths were investigated. The numbers in Figure 3 represent the number of deaths caused by drugs and alcohol where the drug was present at the time of death (although the drug may not be the direct cause of death). One incident can be counted multiple times for this figure if more than one drug was noted at the time of death.

For each year, alcohol was noted most frequently among all the deaths with an underlying cause of drugs and alcohol. There was also a jump of 15% in alcohol-related deaths from 2019 to 2020. Among non-alcohol substances, opiates were the most frequently cited drug involved in a death for each year. Furthermore opiate-involved deaths increased by a large margin, from 274 deaths in 2019 to 501 deaths in 2020 (an increase of 45%). Stimulants and sedatives were the substances most commonly involved in drug and alcohol deaths after alcohol and opiates. From 2016 to 2017, sedatives were more common, but from 2018 to 2020, the number of deaths involving stimulants surpassed the number involving sedatives.

The number of deaths involving stimulants and the number involving sedatives increased sharply in 2020 as well, by 47% and 32%, respectively. In fact, all drug types had an increase from 2019 to 2020, except for the drugs listed under “other.” Drug deaths involving cannabis increased by the greatest percent, 54%, although the numbers of these deaths were relatively few compared to deaths with other substances involved.

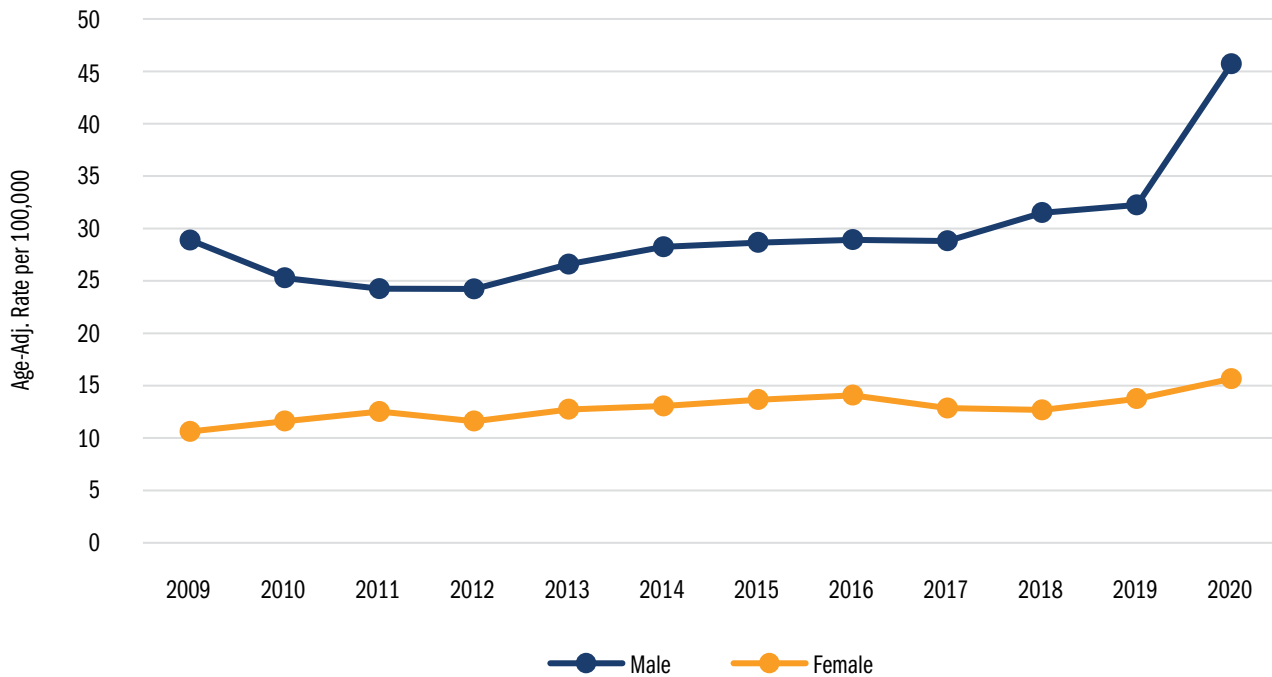
FIGURE 4: DRUG & ALCOHOL MORTALITY BY RACE/ETHNICITY



The mortality rate for each race/ethnicity² increased from 2009 to 2020 (Fig. 4). Non-Hispanic whites had the highest mortality rates among all groups in the period of measure. Hispanic, black and those grouped under “other/unknown” race were interchanging places as the second, third and fourth highest rates. Most notably, those in “other/unknown” race increased their rate dramatically in this time period, with the largest difference in rate. Asian/Pacific Islanders, while consistently having the lowest mortality rate, had the largest percent increase in rate.

² Race (white, black, Asian & Pacific Islander, other) and ethnicity (Hispanic/Non-Hispanic) are combined in this report per the conventions from Centers for Disease Control and California Department of Public Health.

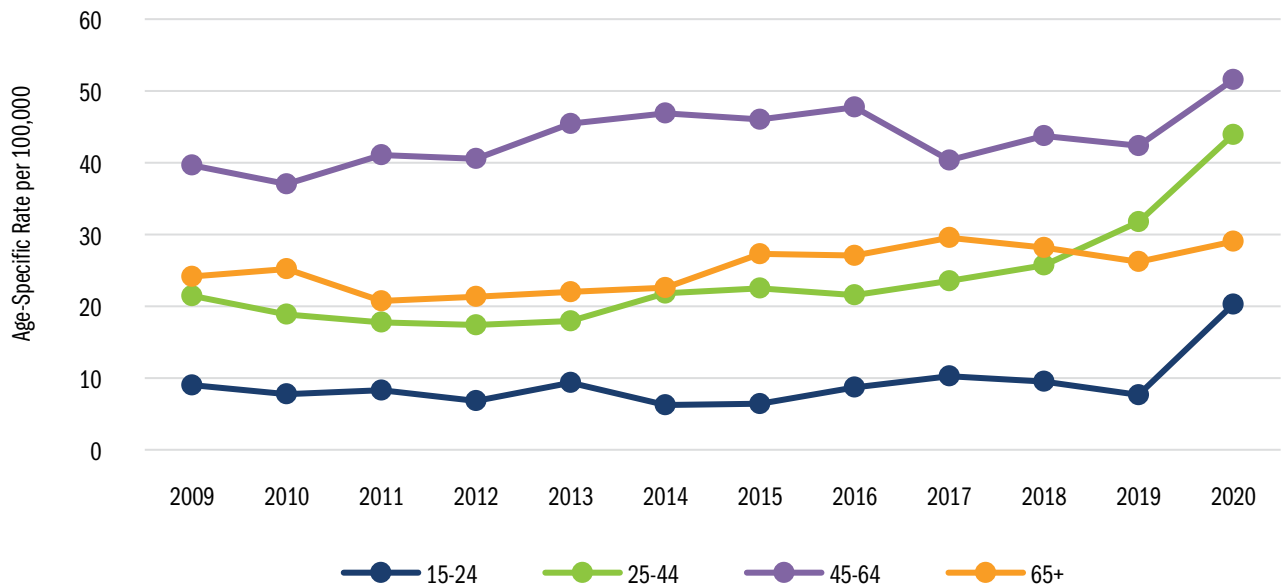
FIGURE 5: DEATHS BY DRUG AND ALCOHOL BY GENDER, 2009-2020



During the pandemic year of 2020, the rate of death due to drugs and alcohol increased for both males and females (Fig. 5). The increase was steeper among males, with a 42% increase in rate from 2019 to 2020, compared to only an 11% increase among females. The mortality rate among males was at least twice as high as the mortality rate of females for each year of measure, with the exception of 2011, which was only 1.9 times as high as the rate among females. Up to 2019, the trend in drug and alcohol-related deaths diverged by gender. In the years immediately prior to the pandemic, the mortality rate among males was clearly already rising, while among females the trend was less obvious. Overall, the mortality rate among females did not increase more than 5 deaths per 100,000 between 2009 and 2019. Among males, the mortality rate declined from 2009 to 2012, then increased each year after (with the exception of 2017), with a sharp jump in the mortality rate in 2020.



FIGURE 6: DRUG AND ALCOHOL MORTALITY, AGE GROUPS



Those ages 45 to 64 years had the highest rates of mortality for every year among all the age groups, and 15- to 24-year-olds consistently had the lowest mortality rate³. The age groups of those 25 to 44 years and those 65 years and older interchanged places as the age group with the second or third highest mortality (Fig. 6).

For each age group, the mortality rate increased in the pandemic year of 2020. Particularly, the 15- to 24-year-olds increased by 165% from 2019 to 2020. The remaining age groups, by comparison, increased between 10% and 40% that year. This increase in the pandemic year is notable for ages 15-24 years because this age group was not experiencing a consistent and overall rise in mortality in the years prior to 2020. Among the 15-24 year-old age group, the rate of death due to drugs and alcohol was decreasing from 2017 to 2019, and the mortality rate in 2019 was lower than the rate in 2009.

Residents 25 to 44 years old had the second largest increase in mortality rate from 2009 to 2020. This age group is also the only age group that had an increase in mortality each year from 2013 to 2020 (with the exception of year 2016).⁴

³ Those less than 15 years were not included due to the small number of deaths among this age group, which was fewer than 10 for the period between 2009 and 2020.

⁴ Supplemental tables for demographic data, including the counts, rates and age-adjusted rates are found in the Appendix.

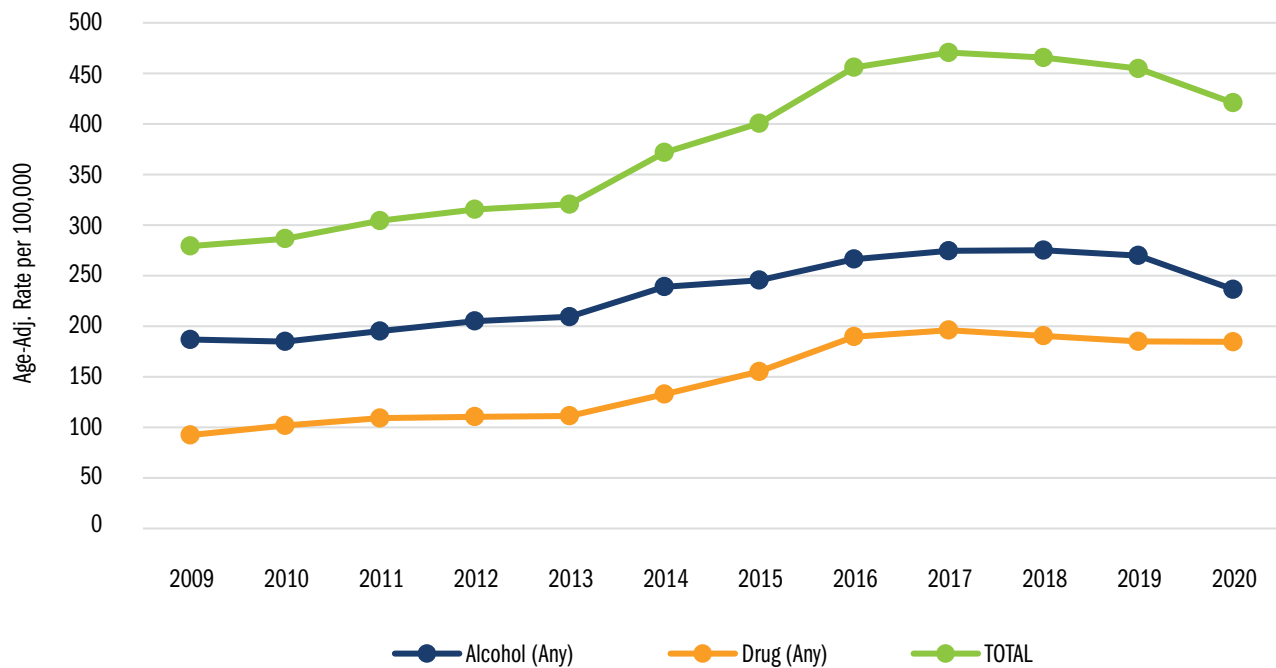
TABLE 1: DRUG AND ALCOHOL-RELATED DEATHS

Drug or Alcohol, Principal Cause of Death	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number												
Alcohol (Any)	271	259	267	265	291	316	333	325	346	351	369	383
Drug (Any)	336	311	320	320	359	375	386	417	375	413	413	648
TOTAL	607	570	587	585	650	691	719	742	721	764	782	1,031
Rate												
Alcohol (Any)	9.0	8.6	8.7	8.6	9.4	10.1	10.6	10.3	10.9	11.0	11.5	12.0
Drug (Any)	11.2	10.3	10.5	10.4	11.5	12.0	12.2	13.2	11.8	12.9	12.9	20.3
TOTAL	20.2	18.9	19.2	19.0	20.9	22.1	22.8	23.4	22.6	23.9	24.5	32.3
Age-Adjusted Rate												
Alcohol (Any)	8.7	8.3	8.2	7.8	8.5	9.0	9.4	9.0	9.5	9.4	10.3	10.3
Drug (Any)	10.9	9.9	10.1	10.0	11.0	11.5	11.7	12.4	11.4	12.6	12.7	20.3
TOTAL	19.6	18.2	18.2	17.8	19.5	20.5	21.1	21.4	20.8	22.0	23.0	30.7



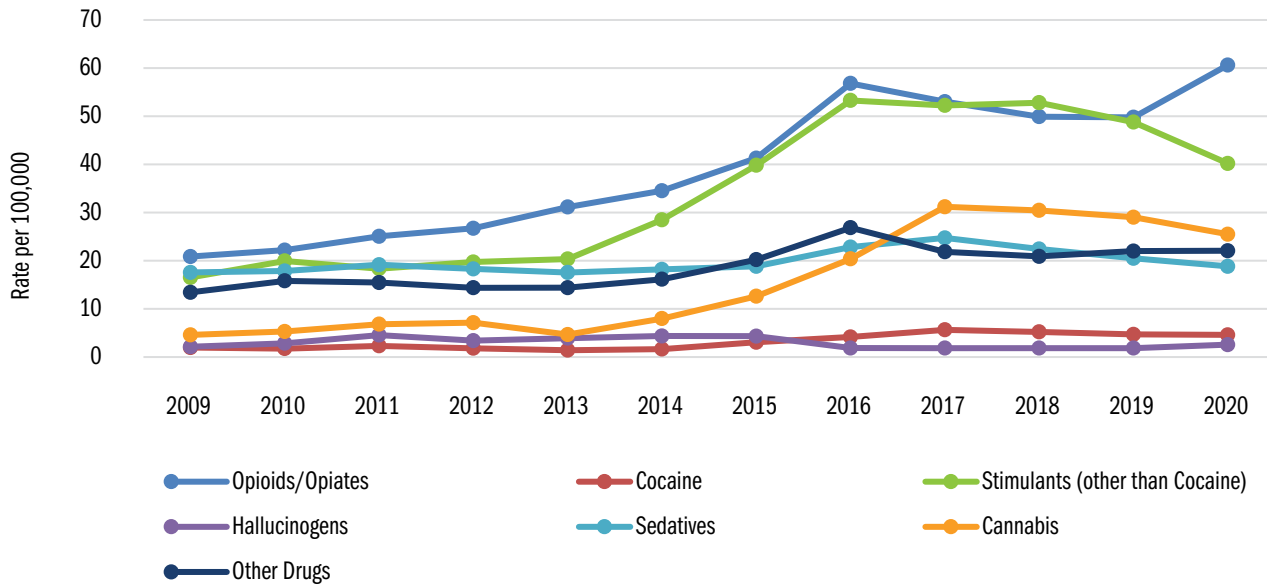
Emergency Department Visits

FIGURE 7: ED VISITS FOR ALCOHOL AND DRUGS



The rate of Emergency Department visits due to drug and alcohol-related diagnoses had increased overall since 2009 by 44% (Fig. 7; Table 2). However, the visit rate had actually been decreasing since reaching its peak in 2017, with an even sharper decrease from 2019 to 2020. Specifically, from 2017 to 2019, the visit rate decreased by 5%, and from 2019 to 2020 the visit rate decreased by 8%. When looking at the visit rates of drug-related diagnoses versus alcohol, both were decreasing since 2017 or 2018, respectively, but drug-related visit rates decreased more sharply from 2019 to 2020 (12%), compared to alcohol (0.2%). Unlike with mortality where drug deaths occurred at higher rates, the visit rates for alcohol-related visits were higher than the rates for drug-related visits.

FIGURE 8: ED VISITS FOR DRUGS BY TYPE



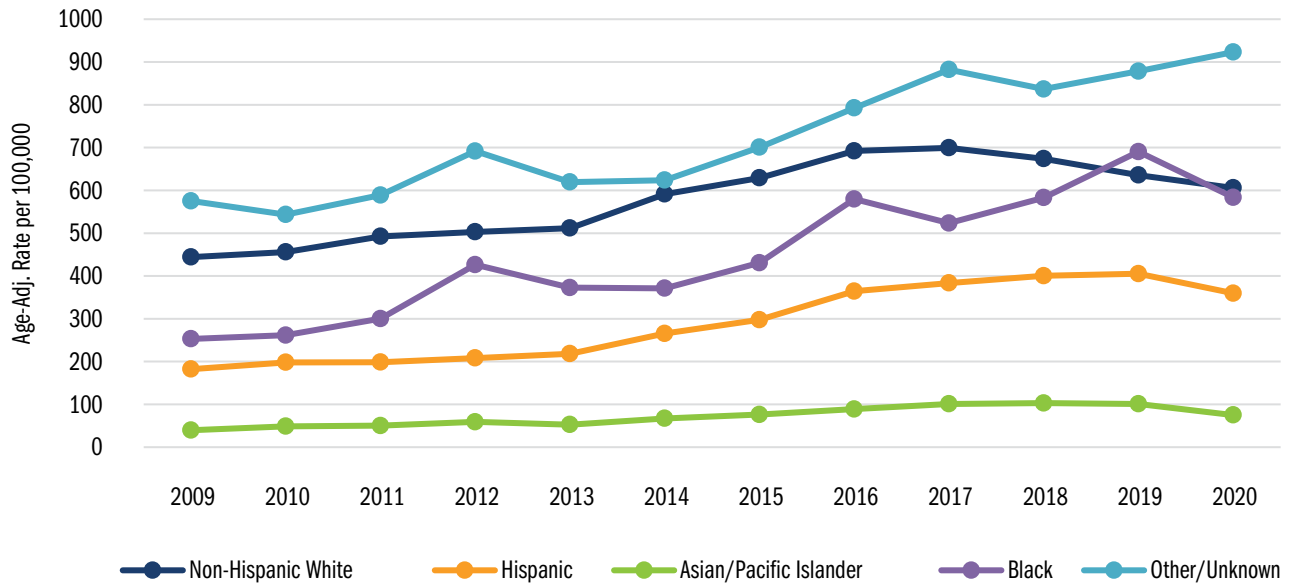
When looking at the type of drug involved in the Emergency Department visits, opioids were almost always the most frequently cited drug as the cause for the Emergency Department visits. The exception was 2018 when the rate of ED visits for stimulant use surpassed that of opioids (Fig. 8). Stimulants were the second most cited drug as the cause for visit among the drug-related ED visits since 2012. Emergency Department visits due to cocaine and hallucinogens occurred at the lowest rates for the entire period, with cocaine-related ED visits occurring the least frequently until 2015, when cocaine rates started to increase higher than the rate of hallucinogens.

The rate of opioid-related visits increased sharply from 2019 to 2020 by 22%. This was the only type of drug-related visit that increased in 2020, other than those related to hallucinogens, which only increased from 1.8 to 2.6 visits per 100,000. Prior to 2020, opioid-related emergency department visits were decreasing from its peak in 2016. In fact, the visit rate for all the remaining drug types were decreasing or relatively unchanged in the 3 to 4 years prior to 2020.

Special Note on Cannabis-related ED Visits

Cannabis-related ED visits were steadily increasing from 2013 until 2017, after which the visits decreased for the following 3 years. Recreational use of marijuana was legalized in California at the end of 2016. Therefore, after one year of increased visits since legalization, ED visits started a downward trend. A similar rate of increase and subsequent leveling-off were seen in about the same interval for stimulants and opioids.

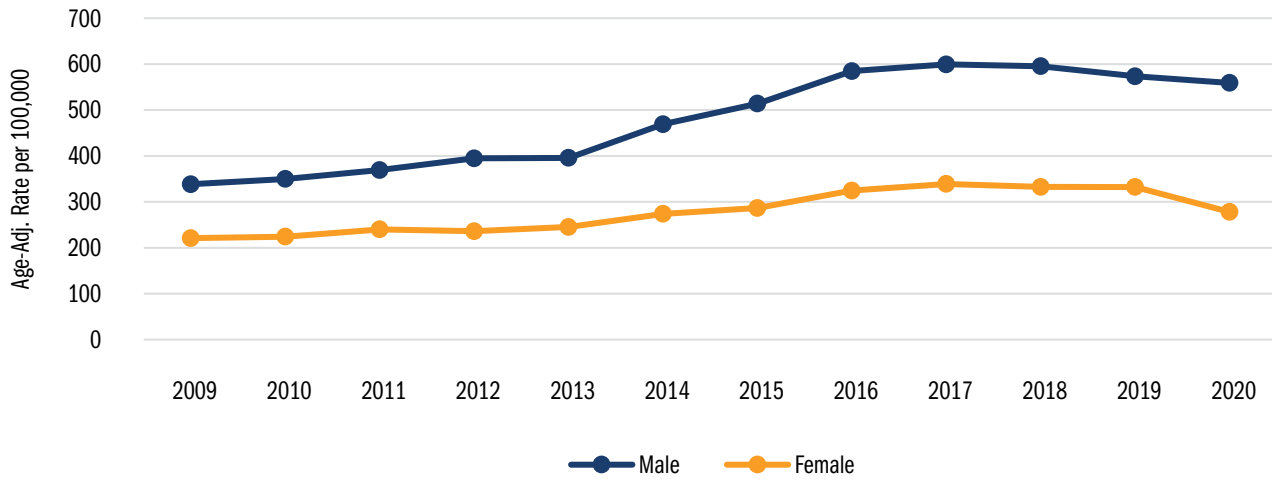
FIGURE 9: ED VISITS FOR ALCOHOL AND DRUGS BY RACE/ETHNICITY, 2009-2020



Residents identified under “other/unknown” race were the group with consistently highest rates of visits to the ED compared to non-Hispanic white, black, Hispanic, or Asian/Pacific Islander residents (Fig. 9). Those identified under “other/unknown” race were in the only group that increased their rate of visits to the ED from 2019 to 2020. All race/ethnic groups had an overall percent increase in rate of visits to the ED in 2020 compared to 2009, however, non-Hispanic white residents had been on a downward trend since 2017, and the trend among Asian/Pacific Islanders was decreasing (although to a smaller extent compared to whites) since 2018. Black residents visit rate to the ED also had a sharp upward trend, although slightly less stable, which actually surpassed the ED visit rate among whites in 2019.

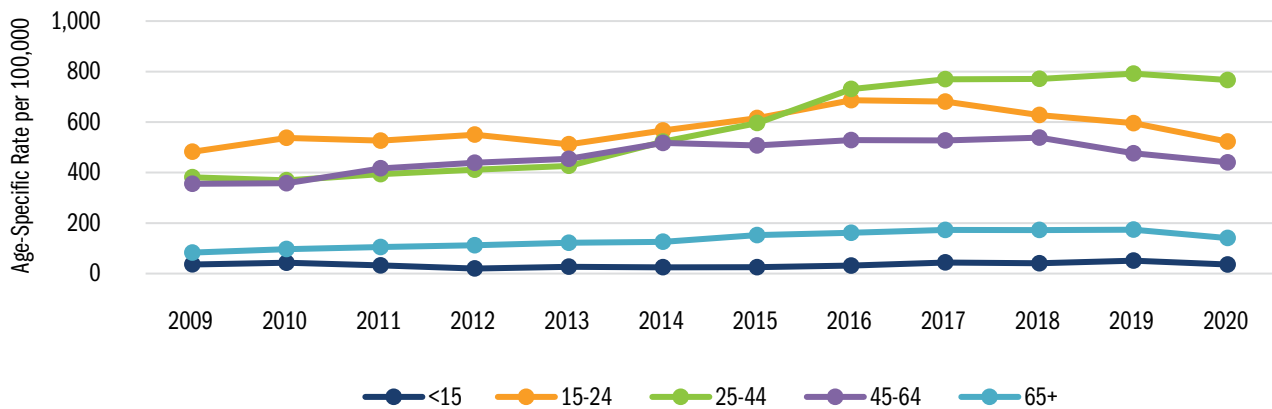
Prior to that year, the visit rate among black residents always fell below the visit rates of “other/unknown” race and non-Hispanic whites. With the exception of 2019, the order of highest ED visit rate to lowest among the race/ethnic groups identified was consistently Other, Non-Hispanic white, black, Hispanic, then Asian/Pacific Islander.

FIGURE 10: ED VISITS FOR ALCOHOL AND DRUGS BY GENDER, 2009-2020



Much like the overall trend for drug and alcohol-related ED visits, both male and female visit rates trended upwards until 2017, then decreased to 2020 (Fig. 10). Males consistently had a higher rate of drug and alcohol-related ED visits compared to females, although the difference in rates diverged more by 2020 compared to 2009 (a 53% difference between the genders in 2009 compared to a 101% difference in 2020).

FIGURE 11: VISIT RATE FOR DRUG & ALCOHOL MORTALITY BY AGE GROUP



While all age groups had a net increase in ED visits from 2009 (with the exception of those less than 15 years), most rates for each age group had leveled off or even began to decrease in the past few years (Fig. 11). For example, those between the ages of 25 and 44 increased their ED visit rate by 101%, although the trend leveled by 2017.⁵

⁵ Supplemental tables for demographic data, including the counts, rates and age-adjusted rates are found in the Appendix.

TABLE 2: ED VISITS FOR DRUG AND ALCOHOL DIAGNOSES

Drug or Alcohol Principal Diag- nosis or External Cause of Injury & Poisoning	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number												
Alcohol (Any)	5,755	5,737	6,150	6,552	6,741	7,726	7,927	8,615	8,868	8,906	8,632	7,545
Drug (Any)	2,807	3,121	3,401	3,482	3,523	4,167	4,887	5,903	6,077	5,867	5,647	5,567
TOTAL	8,562	8,858	9,551	10,034	10,264	11,893	12,814	14,518	14,945	14,773	14,279	13,112
Rate												
Alcohol (Any)	191.9	190.2	201.5	212.3	216.7	246.6	251.3	271.8	278.1	278.7	270.2	236.5
Drug (Any)	93.6	103.5	111.4	112.8	113.2	133.0	154.9	186.2	190.6	183.6	176.7	174.5
TOTAL	285.51	293.62	312.91	325.09	329.94	379.65	406.23	457.99	468.67	462.31	446.89	410.93
Age-Adjusted Rate												
Alcohol (Any)	186.84	184.77	195.15	204.99	209.27	239.01	245.45	266.23	274.54	275.10	269.82	236.32
Drug (Any)	92.37	101.75	109.13	110.46	111.30	132.69	155.13	189.60	196.05	190.45	184.91	184.50
TOTAL	279.20	286.53	304.27	315.45	320.57	371.69	400.58	455.84	470.59	465.55	454.73	420.82

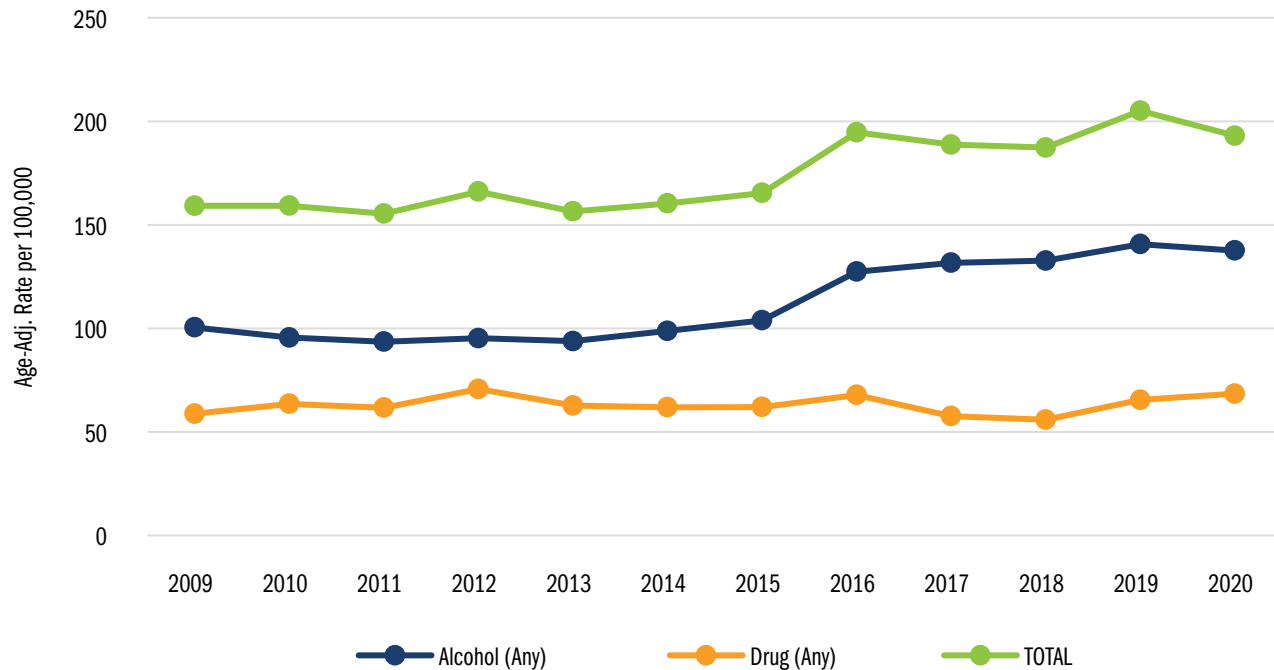
Disposition of ED Visits

In the past five years of analysis (2016 to 2020), the majority of people seen in the ED were discharged home (87%). Another 5% left against medical advice. Another 3% were discharged to a psychiatric hospital. Just under 2% were transferred to a skilled nursing facility or other rehabilitation facility, and another 1.6% were transferred to an outside hospital. Just over 1% of ED visits were transferred to the custody of court/law enforcement.

It is important to note that the figures discussed in this section do not include those that entered initially through the emergency department and were transferred as an inpatient within the same hospital. In fact, of all those entering the ED for drug and alcohol-related causes in the five-year period from 2016 to 2020, 22% were transferred to the inpatient unit.

Hospitalizations

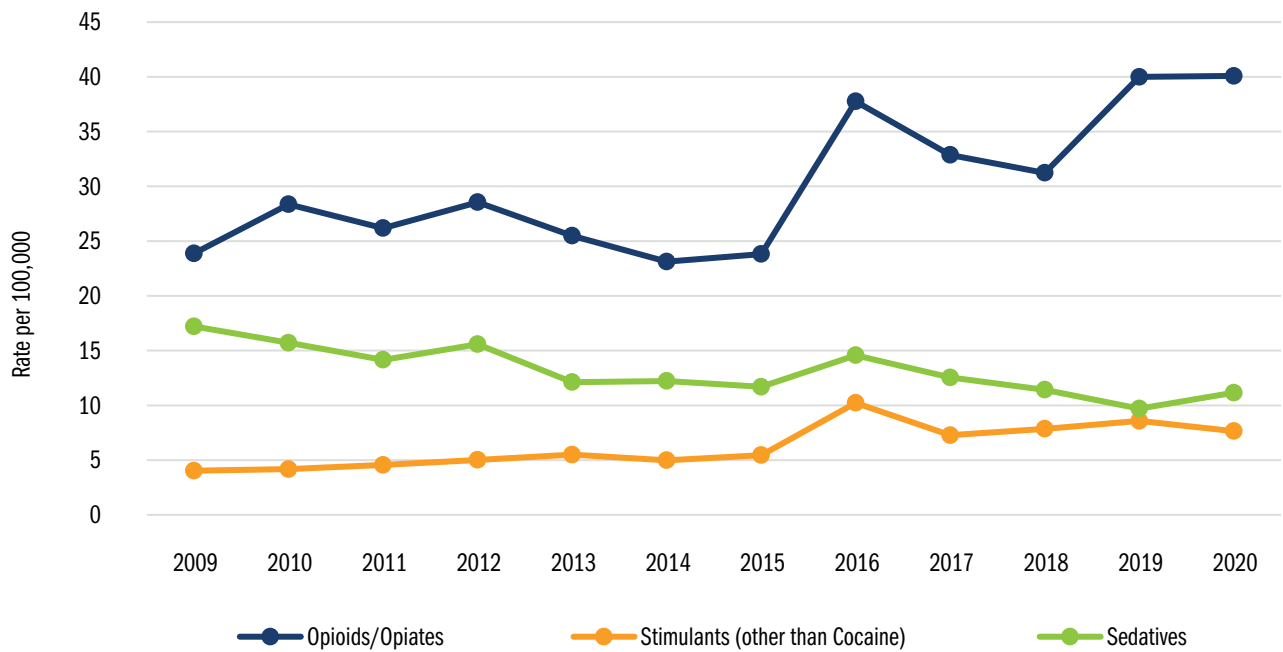
FIGURE 12: HOSPITALIZATIONS FOR ALCOHOL AND DRUGS, 2009-2020



Overall, the rate of hospitalizations due to drug and alcohol increased in the period between 2009 and 2020 (Fig. 12; Table 1). The rate of hospitalizations was relatively level between 2009 and 2015, ranging between 155 and 165 hospitalizations per 100,000. The hospitalization rate increased in 2016, and remained somewhat level after that year until 2020. Alcohol-related hospitalizations follow a similar trend of having a mostly flat trend line up to 2015, increasing notably in 2016, then only minimally increasing in rate in the following years up to 2020. By 2020, there was a small decrease in the rate of alcohol-related hospitalizations. Alcohol-related hospitalizations also always occurred at a higher rate compared to drug-related hospitalizations, similar to the trend with the visit rates to the ED for drug versus alcohol-related causes.

Drug related hospitalizations, conversely, had a range between 56 and 70 for the twelve-year period between 2009 and 2020. In fact, the highest rate in that period for drug-related hospitalizations were in 2012, at 70.7 per 100,000. The highest rate overall for the total of drug and alcohol hospitalizations and alcohol-only hospitalizations occurred in 2019.

FIGURE 13: HOSPITALIZATIONS FOR DRUGS BY TYPE, 2009-2020



When looking at hospitalizations by type of drug, opioid-related hospitalizations were consistently occurring at the highest rates, followed by hospitalizations involving sedatives, then stimulants (Fig. 13). During the period between 2009 and 2020, opioid-related hospitalizations increased overall, with a sharp rise from 2018 to 2019 that maintained at that level in 2020. The rate of hospitalizations involving stimulants also increased from 2009 to 2020, although with a slight decrease from 2019 to 2020. Sedatives, however, were on a downward trend during this period. Other substances were excluded as their counts were too low to allow for a reliable rate comparison.

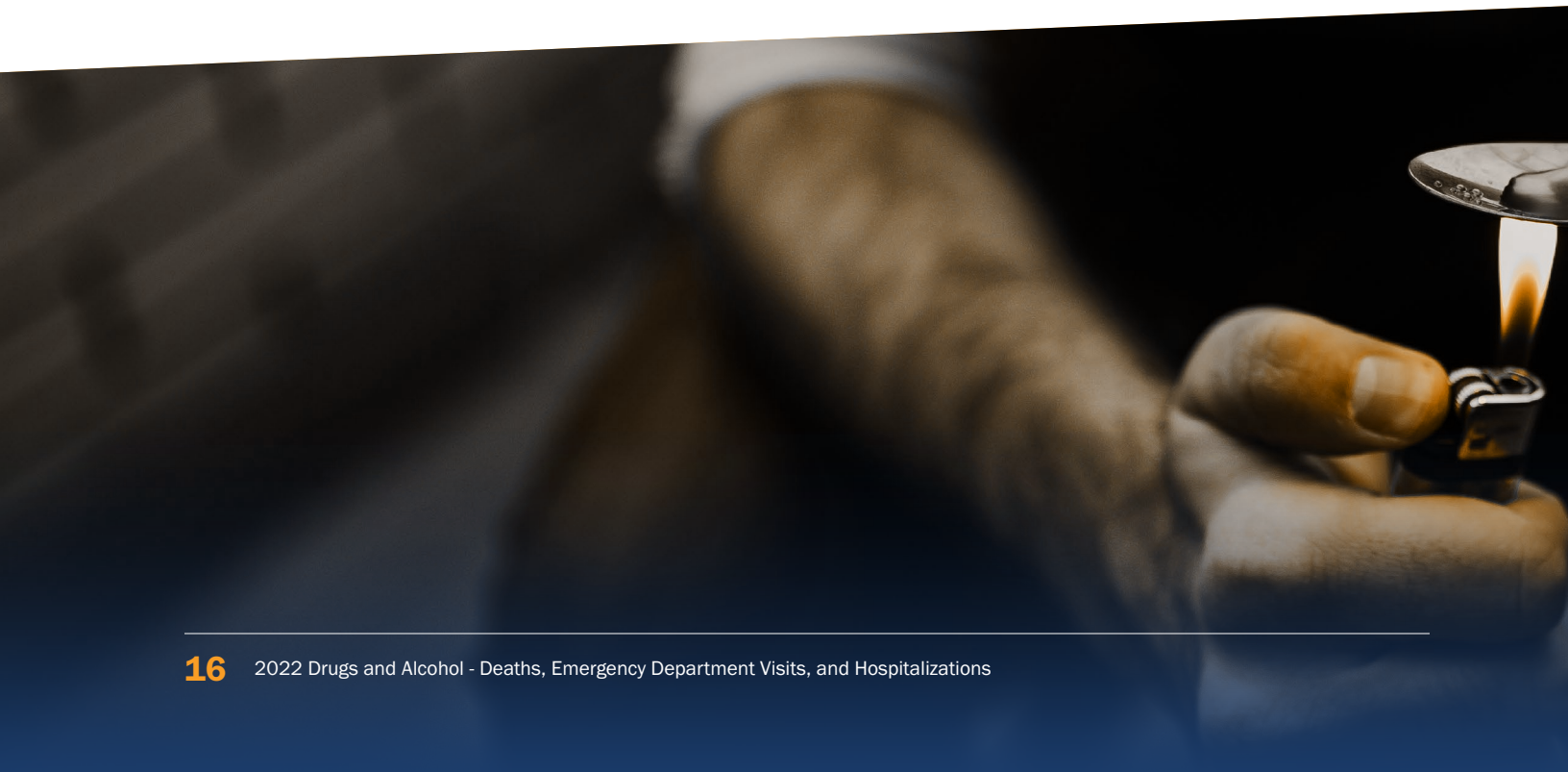
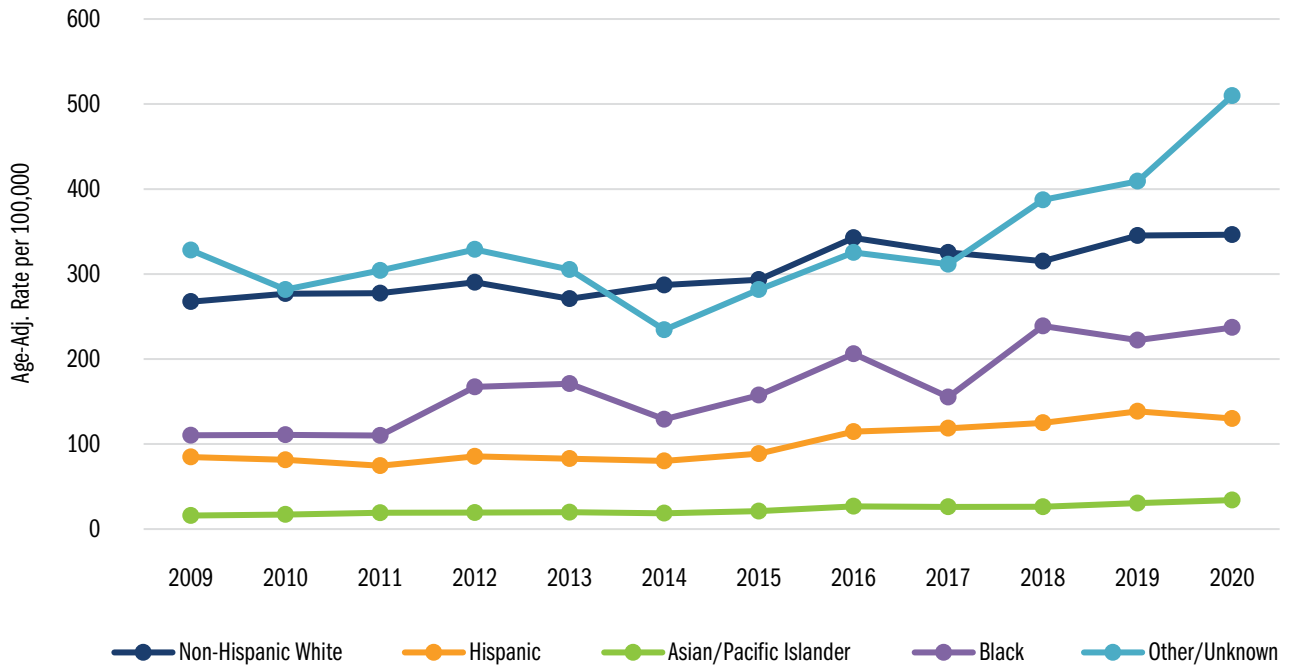


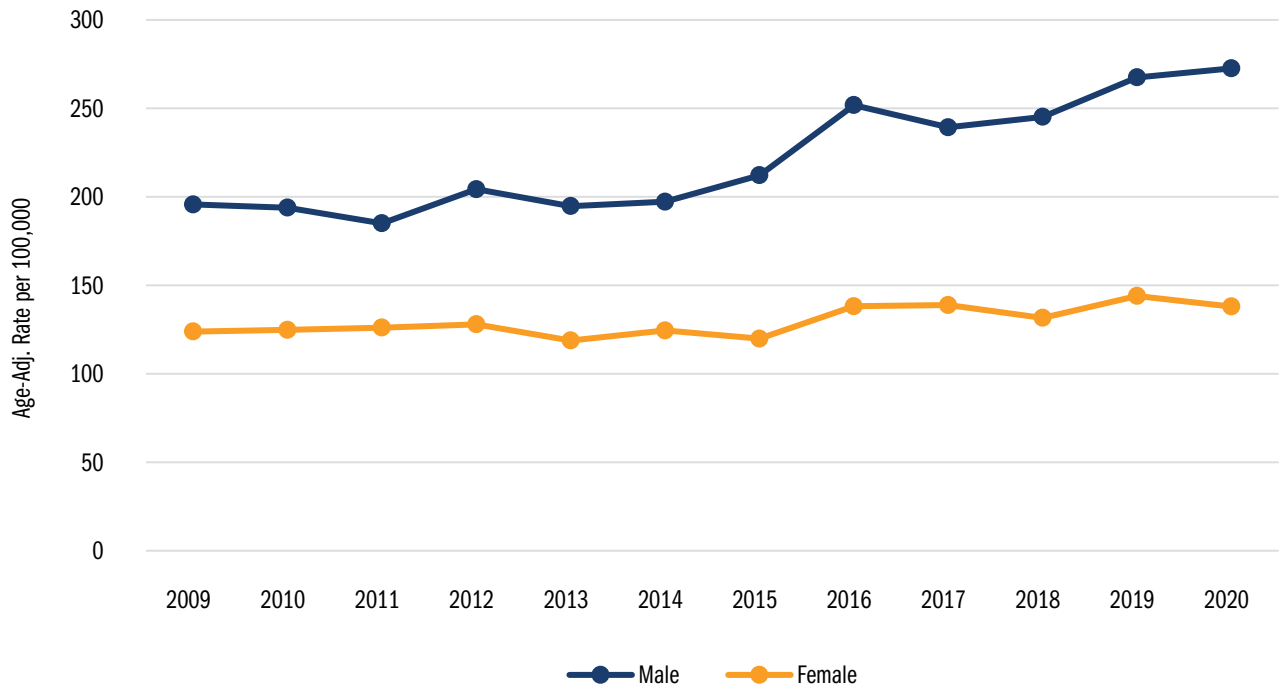
FIGURE 14: HOSPITALIZATION RATES FOR ALCOHOL AND DRUGS BY RACE, 2009-2020



Non-Hispanic white residents and residents identified as “other/unknown” race had the highest rates of hospitalizations (Fig. 14). The hospitalization rate of “other/unknown” race increased sharply, in particular from 2017 to 2020, markedly surpassing the rate of hospitalizations for non-Hispanic whites. All race/ethnic groups increased overall from 2009 to 2020, although the rate of hospitalization among Hispanics decreased slightly from 2019 to 2020.



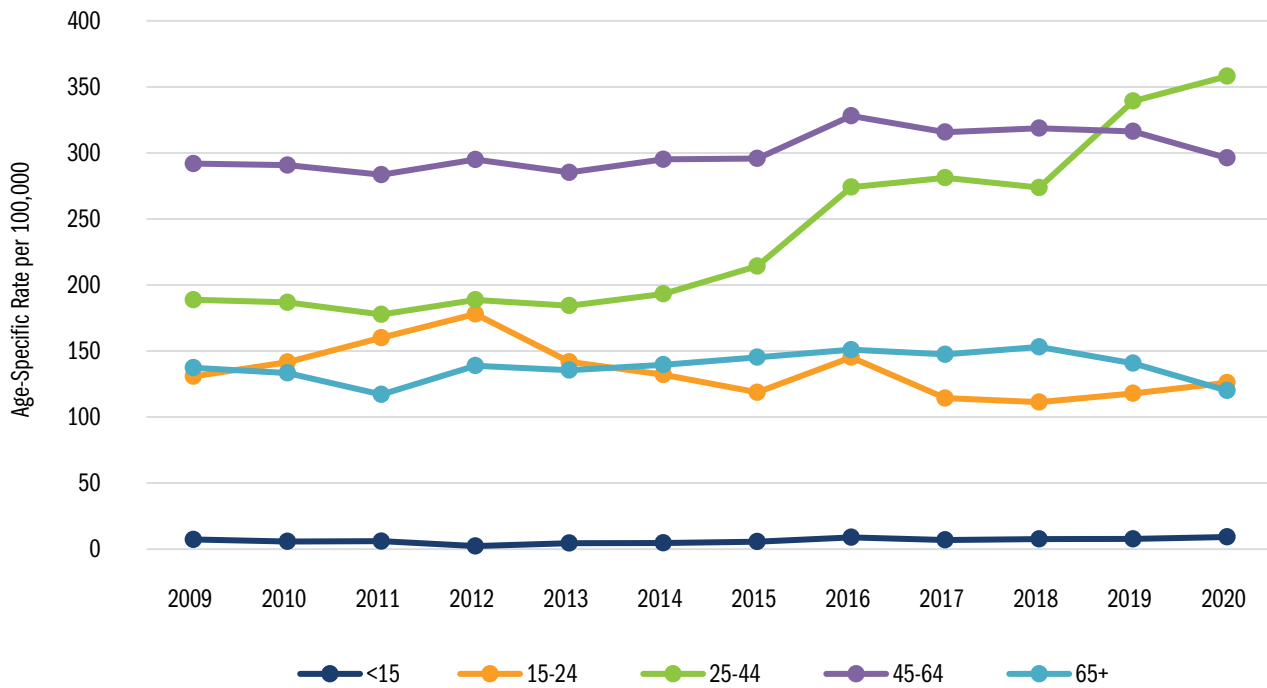
FIGURE 15: HOSPITALIZATION FOR ALCOHOL AND DRUGS BY GENDER



Hospitalizations among males were higher compared to females (Fig. 15). While the rate of hospitalization among females was relatively flat, hospitalizations among males increased by 28% from 2009 to 2020 .



FIGURE 16: HOSPITALIZATIONS FOR ALCOHOL AND DRUGS BY AGE GROUP, 2009-2020



The age group of people 45 to 64 years had the highest rate of hospitalizations until 2019, but the hospitalization trend was mostly flat in this age group, and ultimately decreased their rate of hospitalization overall (Fig. 16). However, the rate of hospitalizations among 25- to 44-year-olds increased the most compared to all age groups (by 46%), particularly in the period after 2013. This age group had the second highest rate of hospitalization for the period from 2009 to 2018, and surpassed the hospitalization rate of those ages 45 to 64 years by 2019 and into 2020. The age group of those less than 15 years also had a 20% increase in the rate of hospitalizations from 2009 to 2020. Fifteen- to 24-year-olds decreased their hospitalization rate overall.⁶

⁶ Supplemental tables for demographic data, including the counts, rates and age-adjusted rates are found in the Appendix.

TABLE 3: HOSPITALIZATION ADMISSIONS FOR DRUG AND ALCOHOL DIAGNOSES

Drug or Alcohol Principal Diagnosis or External Cause of Injury & Poisoning	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number												
Alcohol (Any)	3,117	2,987	2,978	3,079	3,056	3,244	3,450	4,234	4,390	4,448	4,647	4,517
Drug (Any)	1,801	1,971	1,941	2,255	2,023	2,011	1,998	2,176	1,840	1,784	2,055	2,084
TOTAL	4,918	4,958	4,919	5,334	5,079	5,255	5,448	6,410	6,230	6,232	6,702	6,601
Rate												
Alcohol (Any)	103.9	99.0	97.6	99.8	98.2	103.6	109.4	133.6	137.7	139.2	145.4	141.6
Drug (Any)	60.1	65.3	63.6	73.1	65.0	64.2	63.3	68.6	57.7	55.8	64.3	65.3
TOTAL	164.0	164.3	161.2	172.8	163.3	167.7	172.7	202.2	195.4	195.0	209.8	206.9
Age-Adjusted Rate												
Alcohol (Any)	100.47	95.59	93.54	95.24	93.79	98.76	103.85	127.4	131.7	132.7	140.7	137.6
Drug (Any)	58.74	63.52	61.65	70.69	62.73	61.91	61.99	67.8	57.6	55.9	65.5	68.4
TOTAL	159.21	159.25	155.40	166.06	156.53	160.38	165.40	194.7	188.8	187.3	205.1	193.0

Geographic Trends

The following maps depict the rate of death, ED visits, and hospitalizations by Orange County ZIP Code. Case information has been aggregated in 3-year intervals to address small counts in certain ZIP Codes, lending more stability to the rates. Some ZIPs still had small counts after aggregation⁷. In those cases, the rate was suppressed, and they were excluded from the color range representation on the maps. These areas are instead represented by hatching (diagonal lines)⁸. The color ranges in the maps are divided into quartiles, meaning the ZIP Codes with the rates in the highest 25% are the darkest shades, and the ZIP Codes with the rates in the lowest 25% have the lightest shading.

Deaths

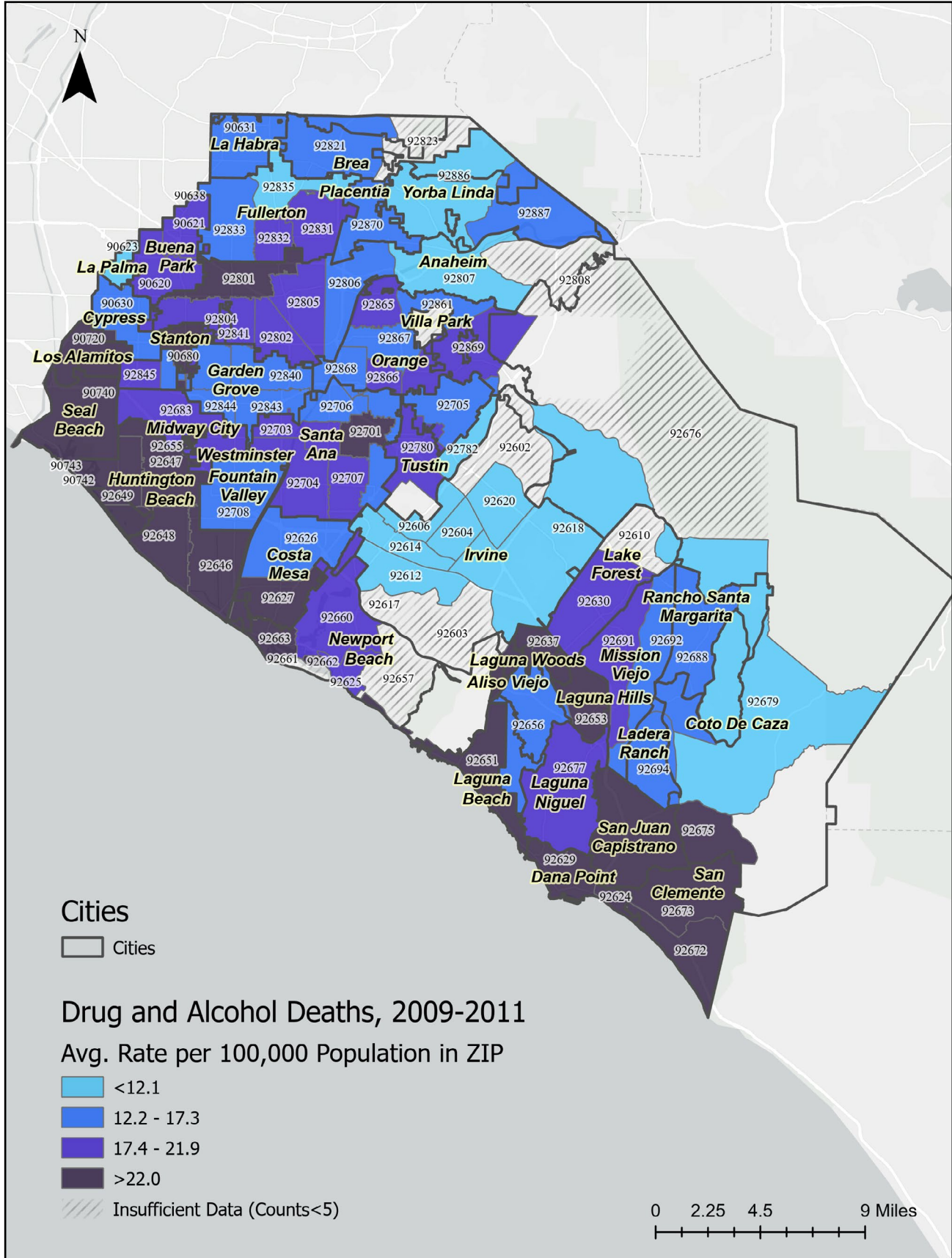
During 2009 to 2011, the highest rates of drug and alcohol-related deaths were along the ZIPs on Orange County's coast, specifically in the cities of Newport Beach, Laguna Beach, Huntington Beach, Dana Point, San Clemente, and Seal Beach (map 1).

During 2018 to 2020, the highest rates of drug and alcohol-related deaths were still predominantly among the coastlines, particularly in ZIP Codes in Huntington Beach, Newport Beach, Costa Mesa, and Dana Point (map 2). However, ZIPs in San Clemente and Seal Beach no longer were among the highest. Instead, central parts of the county including the northern ZIP Codes of Garden Grove, Midway City, east Anaheim, and Fullerton had some of the highest rates of mortality.

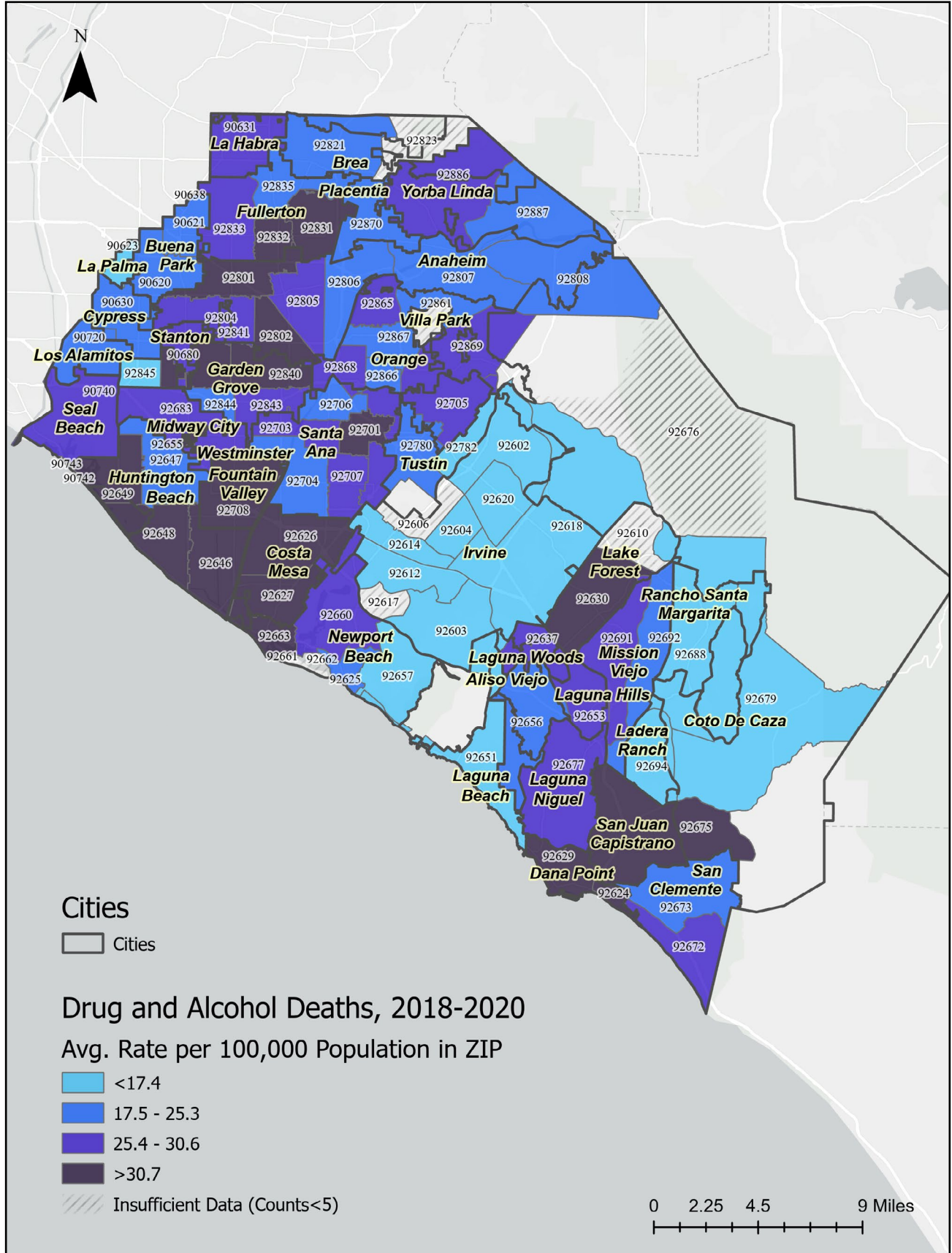
⁷ Small counts in this situation are defined as counts fewer than 5 for the mortality data, and fewer than 25 for the ED and hospitalization data.

⁸ Supplemental tables for the rates by geography are found in the Appendix.

MAP 1



MAP 2



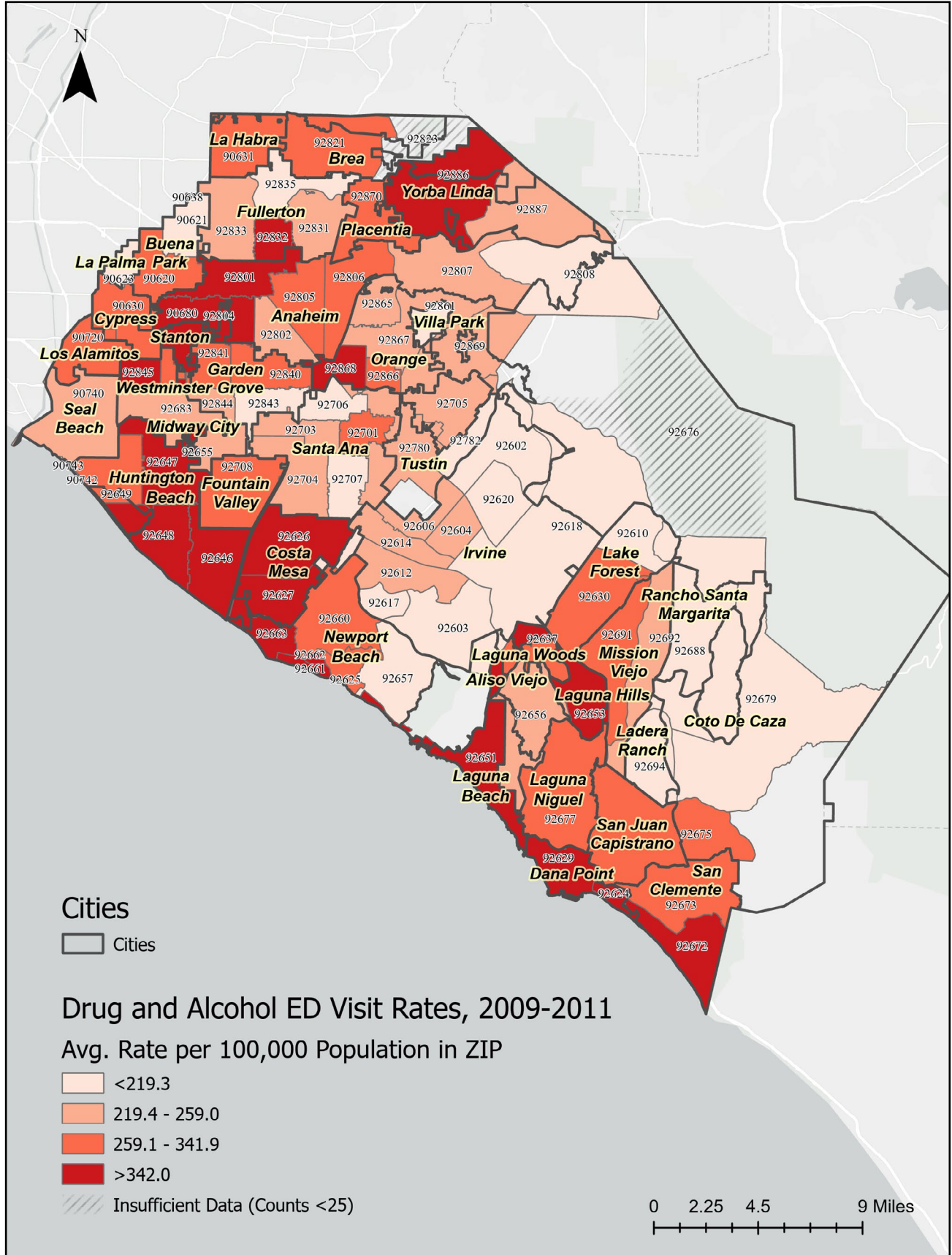
ED Visits

Not surprisingly, the highest ED visit rates were also along the ZIPs at Orange County's coastline, in some of the same cities as the ZIPs with the highest mortality rates, including Costa Mesa, Dana Point, San Clemente, Newport Beach and Huntington Beach (map 3). Inland ZIPs in west Anaheim, Stanton, Fullerton, Orange, Yorba Linda, and even southern ZIPs in Laguna Hills and San Juan Capistrano also had higher ED visit rates.

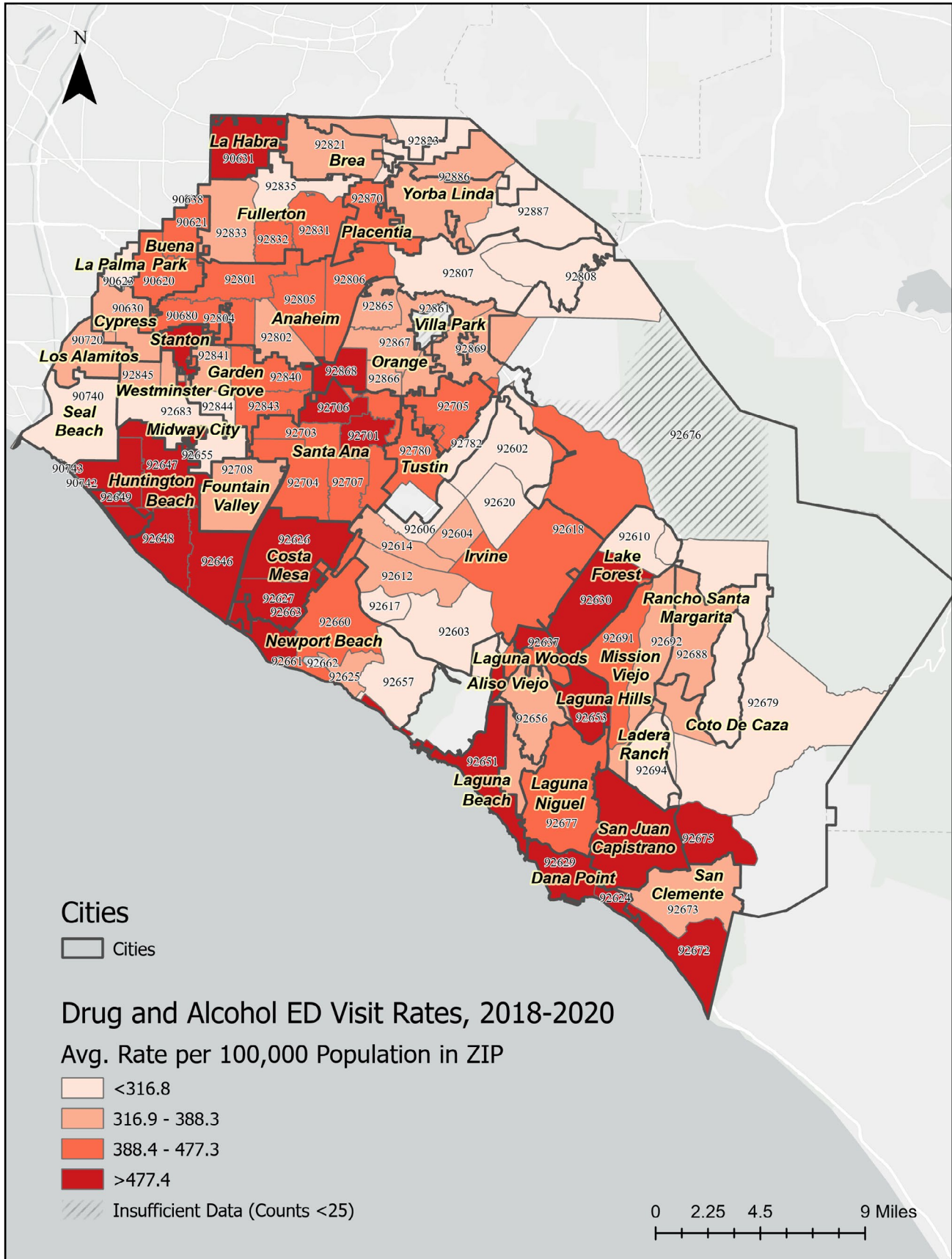
By 2018 to 2020, inland areas of central Orange County in Anaheim and Fullerton no longer had the highest ED visit rates (map 4). Instead, ZIPs in northern Santa Ana had some of the highest ED visit rates. Many of the same coastal ZIPs maintained the highest ED visit rates compared to 2009 to 2011, as well as a few ZIPs in the central Orange County cities of Stanton and Orange.



MAP 3



MAP 4



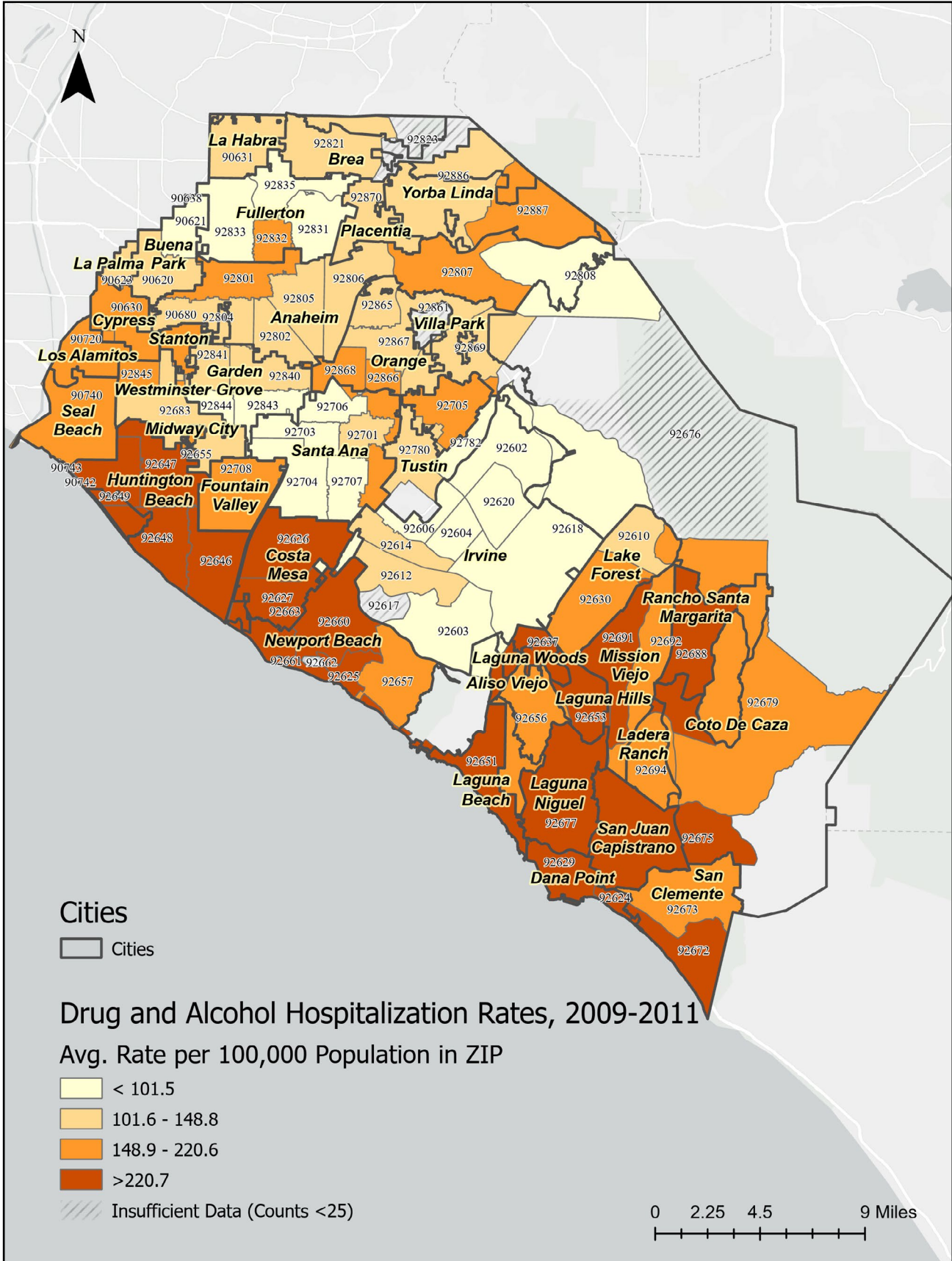
Hospitalizations

Hospitalization rates were still highest along the coast, like with mortality and ED visit rates. Interestingly, in 2009 to 2011, ZIP Codes in Rancho Santa Margarita and Mission Viejo also had higher hospitalization rates, as well as other southern ZIP Codes including Laguna Hills, Laguna Niguel, and San Juan Capistrano (map 5). There were no ZIPs in the central/northern part of Orange County that were in the highest quartile for the rate of hospitalization.

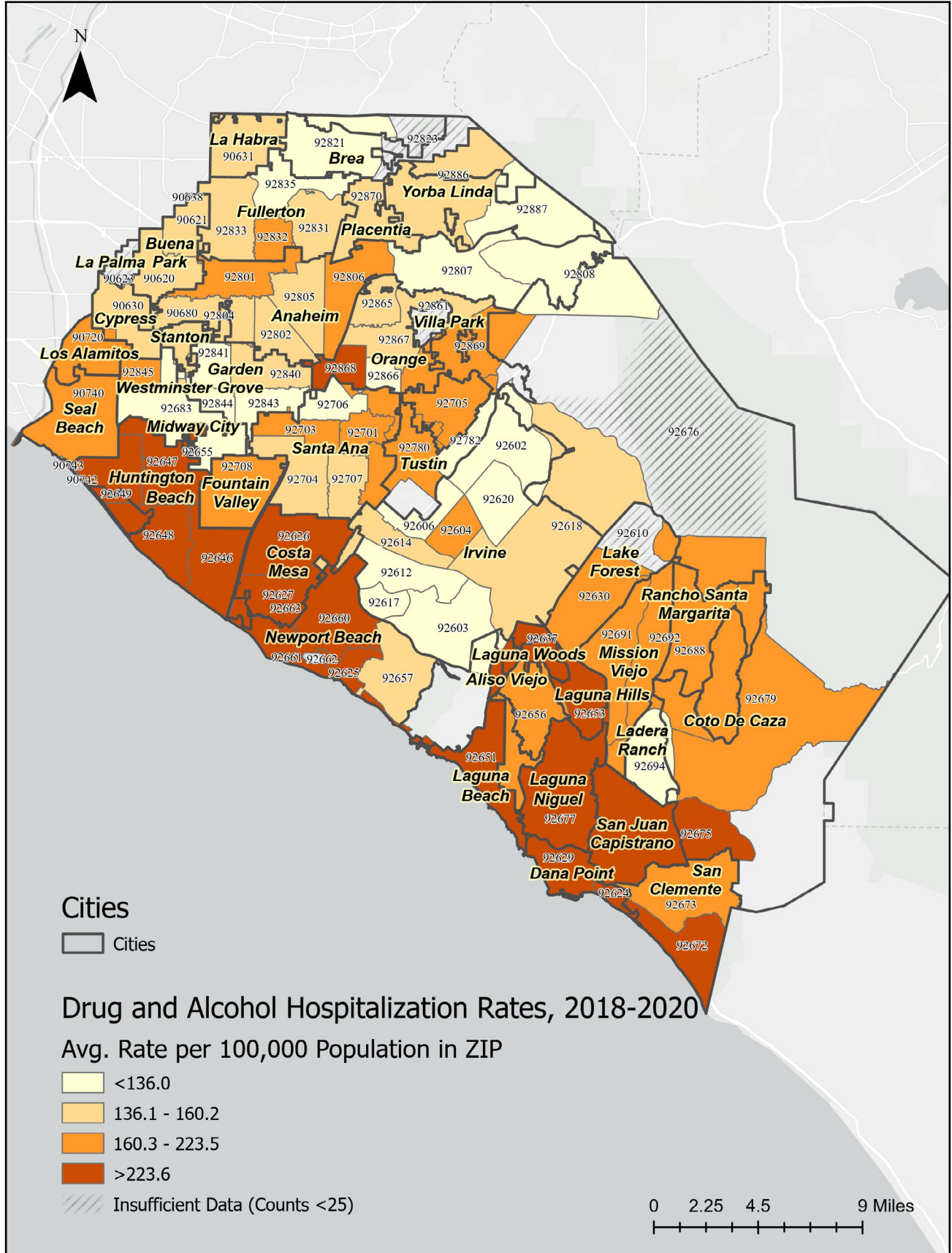
By 2018 to 2020, the hospitalization rates were still highest along the coastal ZIPs, and lower in the central and northern ZIP Codes, with the exception of a part of the city of Orange (map 6).



MAP 5



MAP 6



Insights

The pandemic year was clearly exceptional for the drug and alcohol mortality rate among Orange County residents. In 2020, the mortality rate jumped by 34% compared to the year prior. ED visit rates and hospitalization rates due to drugs and alcohol did not see a similar increase, but actually decreased their visit rate from 2019 to 2020. At this point, however, it is not obvious if the decrease in rate seen in our hospitals is an influence of the pandemic year, or instead part of a larger pattern. Additionally, the percent of persons who die in the ED or hospital from drugs or alcohol was relatively constant in the years prior and including 2020, which indicates that while the mortality rates are increasing, these deaths are occurring without the intervention of medical establishments.

While the data cannot fully explain why there was increased mortality and fewer ED visits and hospitalizations in 2020, the presence of the COVID-19 pandemic is an obvious variable. The pandemic may have influenced alcohol and drug behaviors, such as an increased use of these substances among residents.

Another conjecture is that people either avoided seeking care in hospitals due to concerns of exposure to COVID-19 in the hospital, or perhaps could not easily access care due to crowding and shortage of health care resources during the pandemic. Further research is needed to investigate if these trends continued into 2021, as the pandemic continued. At the time of investigation for this report, data for the year 2021 is still unavailable or not final. It will also be worthwhile to investigate whether mortality rates continue to be elevated post-pandemic or if the impact is limited.



References

- California Department of Public Health. (2017). EpiCenter: Overview of ICD 9 and 10 codes. Retrieved from <https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/SACB/Pages/EpiCenter/OverviewofICD9and10codes.aspx>
- California Department of Public Health. (2022). California Community Burden of Disease. Retrieved February 2022, from <https://skylab.cdph.ca.gov/communityBurden/>
- Centers for Disease Control and Prevention, National Center for Health Statistics. (2021). Underlying Cause of Death 1999-2020 on CDC WONDER Online Database. Retrieved March 2022, from <http://wonder.cdc.gov/ucd-icd10.html>
- Friedman, J., & Akre, S. (2021). "COVID-19 and the Drug Overdose Crisis: Uncovering the Deadliest Months in the United States, January–July 2020. *American Journal of Public Health*, 111(7), 1284-1291. doi:<https://doi.org/10.2105/AJPH.2021.306256>
- Hedegaard, H., Miniño, A., & Warner, M. (2018). Drug overdose deaths in the United States, 1999–2017. NCHS Data Brief, no 329. Hyattsville, MD: National Center for Health Statistics. Retrieved from <https://www.cdc.gov/nchs/data/databriefs/db329-h.pdf>
- Murphy, S., Xu, J., Kochanek, K., & E, A. (2018). Mortality in the United States, 2017. NCHS Data Brief, no 328. Hyattsville, MD: National Center for Health Statistics.
- Orange County Health Care Agency and Orange County Sheriff-Coroner Department. (2014). Drug & Alcohol Overdose Hospitalization & Death in Orange County. Santa Ana, CA. Retrieved from <https://www.ochealthinfo.com/page/drug-alcohol-overdose-hospitalization-death-orange-county>
- Orange County Health Care Agency and Orange County Sheriff-Coroner Department. (2017). Drug & Alcohol Morbidity and Mortality in Orange County. Santa Ana, CA. Retrieved from <https://www.ochealthinfo.com/page/drug-alcohol-overdose-hospitalization-death-orange-county>
- Pan American Health Organization. (2021a). The burden of drug use disorders in the Region of the Americas, 2000-2019. Retrieved February 2022, from Noncommunicable Diseases and Mental Health Data Portal:<https://www.paho.org/en/noncommunicable-diseases-and-mental-health/noncommunicable-diseases-and-mental-health-data-34#:~:text=In%202019%2C%20drug%20use%20disorders%20were%20responsible%20for%3A,613.8%20DALYs%20per%20100%2C000%20population>
- Pan American Health Organization. (2021b). The burden of selected alcohol-related diseases in the Region of the Americas, 2000-2019. Retrieved February 2022, from <https://www.paho.org/en/noncommunicable-diseases-and-mental-health/noncommunicable-diseases-and-mental-health-data-36>
- Woolf, S., & Schoemaker, H. (2019). Life Expectancy and Mortality Rates in the United States, 1959 - 2017. *JAMA*, 322(20), 1996-2016. doi:10.1001/jama.2019.16932

World Health Organization. (2022). Indicator Metadata Registry List: Disability-adjusted life years (DALYs). Retrieved from Global Health Observatory: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158>

Xu, J., Murphy, S., Kochanek, K., & Arias, E. (2016). Mortality in the United States, 2015. NCHS Data Brief, no 267. Hyattsville, MD: National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/data/data_briefs/db267.pdf



MORTALITY TABLES

Drug & Alcohol Deaths	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Counts												
Male	437	382	382	389	433	469	476	489	493	539	541	765
Female	170	188	205	196	217	222	243	253	228	225	241	266
15-24	39	34	37	31	43	29	30	41	48	44	35	92
25-44	184	161	151	147	150	180	183	173	188	205	252	346
45-64	301	285	323	324	369	387	387	407	348	378	365	442
65+	83	89	76	82	88	94	118	121	137	135	130	149
Rate												
Male	29.4	25.6	25.3	25.4	28.0	30.1	30.4	31.0	31.1	33.9	34.0	48.1
Female	11.2	12.3	13.3	12.6	13.9	14.1	15.3	15.9	14.2	14.0	15.0	16.6
15-24	9.0	7.8	8.3	6.8	9.3	6.2	6.4	8.7	10.3	9.5	7.6	20.3
25-44	21.4	18.9	17.8	17.4	17.9	21.8	22.5	21.6	23.5	25.7	31.7	43.9
45-64	39.6	37.0	41.1	40.5	45.4	46.9	46.0	47.7	40.3	43.7	42.3	51.6
65+	24.1	25.2	20.7	21.3	22.0	22.6	27.3	27.1	29.5	28.2	26.2	29.0
Age-Adjusted Rate												
Male	28.9	25.3	24.2	24.2	26.6	28.2	28.7	28.9	28.8	31.5	32.2	45.7
Female	10.6	11.6	12.5	11.6	12.7	13.1	13.7	14.1	12.9	12.7	13.7	15.7

Drug & Alcohol Deaths	2009-2011	2012-2014	2015-2017	2018-2020
Counts				
Non-Hispanic White	1,244	1,358	1,477	1,606
Hispanic	392	422	515	735
Asian/Pacific Islander	69	75	102	126
Black	28	36	32	34
Other/Unknown	31	35	56	76
Rate				
Non-Hispanic White	30.8	33.6	36.6	40.2
Hispanic	12.8	13.1	15.5	21.6
Asian/Pacific Islander	4.3	4.4	5.8	7.1
Black	20.7	25.6	22.2	23.3
Other/Unknown	13.9	14.5	21.9	28.2
Age-Adjusted Rate				
Non-Hispanic White	26.8	28.5	30.9	36.3
Hispanic	17.8	16.4	17.8	22.8
Asian/Pacific Islander	3.9	4.1	5.4	6.7
Black	19.7	21.9	17.8	21.7
Other/Unknown	17.6	19.7	29.5	35.0

ED VISITS TABLES

Drug & Alcohol ED Visits	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Counts												
Male	5,213	5,420	5,823	6,290	6,367	7,545	8,238	9,392	9,579	9,535	9,092	8,796
Female	3,349	3,438	3,728	3,744	3,897	4,348	4,571	5,126	5,366	5,238	5,187	4,315
<15	218	258	195	120	162	149	151	187	262	241	299	207
15-24	2,087	2,353	2,348	2,502	2,355	2,634	2,885	3,237	3,188	2,905	2,727	2,373
25-44	3,272	3,151	3,347	3,476	3,568	4,316	4,848	5,867	6,149	6,148	6,286	6,037
45-64	2,699	2,754	3,276	3,506	3,691	4,270	4,267	4,505	4,545	4,653	4,105	3,773
65+	286	342	385	430	488	524	659	722	801	826	862	722
Non-Hispanic White	5,981	6,007	6,594	6,760	6,917	7,895	8,243	8,887	8,933	8,578	7,967	7,411
Hispanic	1,883	2,080	2,112	2,237	2,414	2,976	3,392	4,218	4,501	4,654	4,728	4,263
Asian/Pacific Islander	208	269	282	337	300	378	433	507	563	581	562	411
Black	122	132	149	216	191	192	225	300	265	292	340	286
Other/Unknown	368	370	414	484	442	452	517	606	683	668	682	741
Rate												
Male	350.8	363.0	385.0	410.9	412.3	484.8	525.3	595.5	603.5	599.3	571.4	553.6
Female	221.4	225.6	242.1	240.6	248.8	275.8	288.2	321.8	335.0	326.5	323.4	269.4
<15	36.0	42.8	32.3	19.9	26.9	24.8	25.2	31.4	44.0	40.7	51.1	35.8
15-24	482.4	537.2	526.3	549.9	512.0	566.8	615.8	686.5	681.2	627.8	595.4	522.6
25-44	381.3	369.2	393.5	411.2	426.5	522.7	596.0	730.9	769.4	770.9	791.9	766.3
45-64	355.5	357.8	416.6	438.8	454.5	517.3	507.4	528.3	526.9	538.3	476.3	440.1
65+	83.2	96.8	105.0	111.9	122.0	125.9	152.4	161.5	172.7	172.3	173.7	140.7
Non-Hispanic White	438.8	450.1	491.9	502.3	513.7	586.3	612.1	661.0	664.8	641.3	597.8	558.9
Hispanic	186.7	204.6	203.8	211.9	225.3	274.1	308.6	380.0	401.3	412.4	417.4	375.5
Asian/Pacific Islander	40.8	49.3	51.0	60.2	53.0	66.2	75.0	87.1	95.7	98.1	95.1	69.7
Black	273.3	294.8	327.1	466.1	407.6	405.3	472.0	625.4	548.8	602.5	698.0	584.5
Other/Unknown	510.2	494.7	540.4	615.8	550.9	552.3	618.5	710.8	784.3	753.9	759.2	814.9
Age-Adjusted Rate												
Male	338.4	350.0	369.3	394.8	395.7	469.2	514.0	584.8	599.5	595.5	573.6	559.0
Female	221.0	224.1	240.0	236.1	245.3	273.8	286.5	324.7	338.9	332.6	332.3	278.1
Non-Hispanic White	444.1	456.1	492.5	503.1	511.8	591.3	629.1	692.2	699.4	673.8	635.6	605.8
Hispanic	182.3	198.0	198.6	208.1	218.3	265.5	297.6	364.3	383.6	400.4	405.3	359.6
Asian/Pacific Islander	39.6	48.8	50.3	59.0	52.7	67.2	76.2	88.9	100.9	103.0	101.1	75.0
Black	252.9	261.6	300.3	426.4	372.8	371.2	430.8	579.8	523.5	583.0	690.5	583.6
Other/Unknown	575.3	543.3	588.9	691.8	619.4	623.9	700.8	792.5	882.1	836.7	878.4	923.2

HOSPITALIZATIONS

Drug & Alcohol Hospitalizations	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Counts												
Male	2,984	2,988	2,915	3,254	3,125	3,195	3,449	4,105	3,914	4,021	4,349	4,375
Female	1,933	1,970	2,004	2,080	1,954	2,060	1,999	2,305	2,316	2,211	2,353	2,226
<15	44	35	36	14	27	28	34	53	41	45	45	53
15-24	566	620	714	810	652	614	556	685	535	515	540	572
25-44	1,620	1,594	1,511	1,595	1,542	1,596	1,743	2,200	2,247	2,183	2,693	2,821
45-64	2,216	2,238	2,229	2,357	2,316	2,436	2,487	2,797	2,723	2,755	2,726	2,539
65+	472	471	429	534	542	581	628	675	684	734	698	616
Non-Hispanic White	3,913	3,944	3,926	4,144	3,895	4,136	4,161	4,762	4,506	4,350	4,599	4,469
Hispanic	697	690	650	789	788	797	888	1,165	1,262	1,331	1,510	1,447
Asian/Pacific Islander	84	96	109	114	119	109	127	163	159	161	193	198
Black	52	58	59	82	90	66	83	107	86	119	109	116
Other/Unknown	172	170	175	205	187	147	189	213	217	271	291	371
Rate												
Male	200.8	200.1	192.7	212.6	202.4	205.3	219.9	260.3	246.6	252.7	273.3	275.3
Female	127.8	129.3	130.1	133.7	124.7	130.7	126.0	144.7	144.6	137.8	146.7	139.0
<15	7.3	5.8	6.0	2.3	4.5	4.7	5.7	8.9	6.9	7.6	7.7	9.2
15-24	130.8	141.6	160.1	178.0	141.8	132.1	118.7	145.3	114.3	111.3	117.9	126.0
25-44	188.8	186.8	177.6	188.7	184.3	193.3	214.3	274.1	281.2	273.7	339.2	358.1
45-64	291.8	290.8	283.5	295.0	285.2	295.1	295.7	328.0	315.7	318.7	316.3	296.2
65+	137.3	133.3	117.1	138.9	135.5	139.6	145.2	151.0	147.5	153.1	140.7	120.0
Non-Hispanic White	287.1	295.5	292.9	307.9	289.3	307.1	309.0	354.2	335.4	325.2	345.1	337.0
Hispanic	69.1	67.9	62.7	74.7	73.6	73.4	80.8	104.9	112.5	117.9	133.3	127.5
Asian/Pacific Islander	16.5	17.6	19.7	20.4	21.0	19.1	22.0	28.0	27.0	27.2	32.6	33.6
Black	116.5	129.5	129.5	177.0	192.1	139.3	174.1	223.1	178.1	245.6	223.8	237.1
Other/Unknown	238.5	227.3	228.4	260.8	233.1	179.6	226.1	249.8	249.2	305.9	323.9	408.0
Age-Adjusted Rate												
Male	195.7	193.9	185.0	204.3	194.8	197.2	212.2	251.8	239.3	245.2	267.5	272.6
Female	123.9	124.8	126.1	127.9	118.8	124.5	119.8	138.2	138.9	131.6	144.0	138.0
Non-Hispanic White	267.5	276.9	277.4	290.3	270.9	287.1	293.4	342.6	325.4	315.1	345.3	346.3
Hispanic	84.7	81.4	74.5	85.5	82.8	80.1	88.7	114.6	118.5	124.9	138.5	130.0
Asian/Pacific Islander	15.9	17.2	19.1	19.4	19.8	18.6	21.1	26.8	26.1	26.2	30.5	34.1
Black	110.3	110.8	110.1	167.2	171.0	129.1	157.5	206.1	155.3	238.9	222.2	237.1
Other/Unknown	328.0	281.8	304.2	328.9	305.3	234.4	281.8	325.4	311.5	387.2	409.2	509.8

2009-2011 MAPS BY ZIP⁹

ZIP	2010 Population	Deaths		ED Visits		Hospitalizations	
		Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
90620	45,113	28	20.7	419	309.6	190	140.4
90621	35,153	20	19.0	227	215.2	107	101.5
90623	15,554	5	10.7	59	126.4	60	128.6
90630	47,993	21	14.6	400	277.8	231	160.4
90631	67,619	35	17.3	560	276.1	230	113.4
90680	29,945	26	28.9	364	405.2	140	155.8
90720	21,751	15	23.0	172	263.6	140	214.5
90740	23,729	18	25.3	170	238.8	127	178.4
90742	831	*	*	*	*	*	*
90743	456	*	*	*	*	*	*
92602	22,871	*	*	85	123.9	36	52.5
92603	20,184	*	*	69	114.0	36	59.5
92604	26,853	5	6.2	177	219.7	66	81.9
92606	21,495	7	10.9	167	259.0	48	74.4
92610	11,248	*	*	60	177.8	37	109.6
92612	27,522	10	12.1	197	238.6	89	107.8
92614	24,748	8	10.8	183	246.5	99	133.3
92617	14,044	*	*	42	99.7	*	*
92618	16,366	5	10.2	102	207.7	36	73.3
92620	38,486	14	12.1	177	153.3	107	92.7
92624	7,248	7	32.2	132	607.1	97	446.1
92625	12,478	7	18.7	128	341.9	103	275.2
92626	49,341	24	16.2	596	402.6	353	238.5
92627	61,510	63	34.1	1189	644.3	488	264.5
92629	25,756	28	36.2	387	500.9	327	423.2
92630	59,182	35	19.7	524	295.1	306	172.3
92637	16,012	12	25.0	152	316.4	131	272.7
92646	55,224	63	38.0	714	431.0	486	293.4
92647	57,245	49	28.5	887	516.5	403	234.7
92648	45,317	36	26.5	652	479.6	356	261.9
92649	32,463	29	29.8	325	333.7	246	252.6
92651	23,881	30	41.9	298	416.0	283	395.0

⁹ * Denotes suppression based on either mortality count <5, or ED Visits/Hospitalizations <25.

2009-2011 MAPS BY ZIP (CONTINUED)

2009-2011 MAPS BY ZIP (CONTINUED)							
Deaths				ED Visits		Hospitalizations	
ZIP	2010 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
92653	29,291	20	22.8	334	380.1	203	231.0
92655	8,337	9	36.0	87	347.8	42	167.9
92656	49,046	19	12.9	334	227.0	270	183.5
92657	9,741	*	*	62	212.2	53	181.4
92660	34,797	22	21.1	342	327.6	237	227.0
92661	3,744	*	*	44	391.7	35	311.6
92662	2,756	6	72.6	37	447.5	*	*
92663	21,649	24	37.0	362	557.4	184	283.3
92672	34,464	35	33.9	611	591.0	378	365.6
92673	29,309	24	27.3	257	292.3	194	220.6
92675	34,731	28	26.9	332	318.6	280	268.7
92676	1,945	*	*	*	*	*	*
92677	63,297	41	21.6	496	261.2	520	273.8
92679	32,611	9	9.2	187	191.1	215	219.8
92683	89,747	51	18.9	597	221.7	306	113.7
92688	43,792	20	15.2	284	216.2	309	235.2
92691	47,582	30	21.0	407	285.1	368	257.8
92692	47,222	24	16.9	318	224.5	296	208.9
92694	21,944	8	12.2	103	156.5	104	158.0
92701	53,908	37	22.9	524	324.0	221	136.7
92703	65,445	35	17.8	476	242.4	189	96.3
92704	88,123	50	18.9	596	225.4	198	74.9
92705	44,706	21	15.7	340	253.5	214	159.6
92706	36,457	15	13.7	236	215.8	72	65.8
92707	59,492	37	20.7	390	218.5	123	68.9
92708	56,004	25	14.9	472	280.9	308	183.3
92780	57,741	38	21.9	414	239.0	191	110.3
92782	23,032	5	7.2	109	157.8	55	79.6
92801	62,068	51	27.4	675	362.5	294	157.9
92802	42,709	23	18.0	319	249.0	135	105.4
92804	85,914	56	21.7	901	349.6	337	130.8
92805	70,401	45	21.3	581	275.1	219	103.7
92806	37,173	19	17.0	292	261.8	147	131.8

2009-2011 MAPS BY ZIP (CONTINUED)

ZIP	Deaths		ED Visits		Hospitalizations		
	2010 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
92807	36,171	12	11.1	262	241.4	182	167.7
92808	20,039	*	*	96	159.7	56	93.2
92821	35,533	17	15.9	294	275.8	142	133.2
92823	3,613	*	*	*	*	*	*
92831	34,204	19	18.5	242	235.8	87	84.8
92832	24,752	15	20.2	273	367.6	115	154.9
92833	51,767	20	12.9	371	238.9	143	92.1
92835	24,010	8	11.1	119	165.2	72	100.0
92840	54,083	23	14.2	458	282.3	178	109.7
92841	32,845	17	17.3	265	268.9	102	103.5
92843	45,214	17	12.5	294	216.7	119	87.7
92844	24,307	10	13.7	165	226.3	45	61.7
92845	16,333	10	20.4	176	359.2	108	220.4
92861	5,781	*	*	30	173.0	*	*
92865	19,704	11	18.6	140	236.8	74	125.2
92866	14,885	9	20.2	132	295.6	77	172.4
92867	44,515	21	15.7	294	220.2	148	110.8
92868	25,404	12	15.7	262	343.8	125	164.0
92869	37,184	23	20.6	277	248.3	166	148.8
92870	52,033	20	12.8	410	262.7	203	130.0
92886	46,564	15	10.7	511	365.8	186	133.2
92887	20,006	8	13.3	154	256.6	94	156.6

2018-2020 MAPS BY ZIP¹⁰

2018-2020 MAPS BY ZIP ¹⁰							
Deaths				ED Visits		Hospitalizations	
ZIP	2019						
	Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
90620	46,133	34	24.6	572	413.3	197	142.3
90621	37,006	26	23.4	468	421.6	158	142.3
90623	16,429	5	10.1	89	180.6	*	*
90630	49,835	33	22.1	482	322.4	222	148.5
90631	70,355	54	25.6	1058	501.3	332	157.3
90680	31,900	28	29.3	471	492.2	147	153.6
90720	22,660	17	25.0	264	388.3	125	183.9
90740	25,301	22	29.0	206	271.4	147	193.7
90742	1,117	*	*	*	*	*	*
90743	430	*	*	*	*	*	*
92602	29,792	6	6.7	122	136.5	53	59.3
92603	22,096	7	10.6	112	169.0	74	111.6
92604	27,837	13	15.6	276	330.5	143	171.2
92606	23,561	*	*	191	270.2	96	135.8
92610	11,173	*	*	65	193.9	*	*
92612	32,639	14	14.3	312	318.6	131	133.8
92614	26,442	12	15.1	279	351.7	117	147.5
92617	16,429	*	*	111	225.2	25	50.7
92618	32,902	8	8.1	399	404.2	139	140.8
92620	49,159	15	10.2	326	221.1	134	90.9
92624	7,148	15	69.9	161	750.8	91	424.4
92625	12,689	7	18.4	128	336.2	88	231.2
92626	52,387	58	36.9	958	609.6	389	247.5
92627	65,426	91	46.4	1555	792.2	677	344.9
92629	27,090	34	41.8	582	716.1	295	363.0
92630	64,450	60	31.0	961	497.0	379	196.0
92637	17,195	14	27.1	227	440.1	122	236.5
92646	57,123	67	39.1	932	543.9	538	313.9
92647	60,876	46	25.2	916	501.6	465	254.6
92648	48,013	45	31.2	879	610.3	414	287.4
92649	34,135	37	36.1	571	557.6	288	281.2
92651	25,579	13	16.9	591	770.2	263	342.7

¹⁰ * Denotes suppression based on either mortality count <5, or ED Visits/Hospitalizations <25.

2018-2020 MAPS BY ZIP (CONTINUED)

ZIP	Deaths			ED Visits		Hospitalizations	
	2019 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
92653	29,340	23	26.1	452	513.5	203	230.6
92655	8,758	18	68.5	130	494.8	63	239.8
92656	52,945	32	20.1	558	351.3	355	223.5
92657	12,105	5	13.8	71	195.5	54	148.7
92660	35,965	33	30.6	515	477.3	342	317.0
92661	4,036	*	*	54	446.0	33	272.5
92662	2,952	*	*	*	*	*	*
92663	22,722	28	41.1	740	1085.6	248	363.8
92672	42,387	38	29.9	669	526.1	361	283.9
92673	33,321	25	25.0	323	323.1	184	184.1
92675	38,642	45	38.8	650	560.7	320	276.0
92676	2,030	*	*	*	*	*	*
92677	66,767	58	29.0	881	439.8	487	243.1
92679	33,391	14	14.0	258	257.6	181	180.7
92683	93,644	76	27.1	890	316.8	362	128.9
92688	45,850	24	17.4	516	375.1	265	192.7
92691	49,084	42	28.5	597	405.4	315	213.9
92692	48,492	32	22.0	483	332.0	297	204.2
92694	31,332	12	12.8	223	237.2	108	114.9
92701	55,463	67	40.3	1033	620.8	291	174.9
92703	69,080	58	28.0	895	431.9	333	160.7
92704	89,838	56	20.8	1188	440.8	408	151.4
92705	47,093	40	28.3	580	410.5	261	184.7
92706	37,645	20	17.7	613	542.8	141	124.9
92707	63,137	52	27.5	892	470.9	266	140.4
92708	57,934	60	34.5	621	357.3	330	189.9
92780	57,166	39	22.7	815	475.2	311	181.3
92782	29,020	12	13.8	197	226.3	118	135.5
92801	63,999	63	32.8	912	475.0	399	207.8
92802	44,698	43	32.1	511	381.1	193	143.9
92804	92,684	73	26.3	1206	433.7	390	140.3
92805	76,907	67	29.0	1021	442.5	346	150.0
92806	42,179	32	25.3	562	444.1	242	191.2

2018-2020 MAPS BY ZIP (CONTINUED)

		Deaths		ED Visits		Hospitalizations	
ZIP	2019 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
92807	37,439	24	21.4	354	315.2	140	124.6
92808	21,316	12	18.8	151	236.1	87	136.0
92821	40,159	27	22.4	424	351.9	160	132.8
92823	4,704	*	*	41	290.5	*	*
92831	35,911	35	32.5	449	416.8	151	140.2
92832	26,461	41	51.6	334	420.7	151	190.2
92833	55,876	43	25.7	607	362.1	243	145.0
92835	26,254	16	20.3	225	285.7	100	127.0
92840	55,810	53	31.7	656	391.8	237	141.6
92841	34,074	32	31.3	380	371.7	134	131.1
92843	48,682	43	29.4	635	434.8	190	130.1
92844	26,237	14	17.8	245	311.3	106	134.7
92845	16,718	7	14.0	170	339.0	96	191.4
92861	5,905	*	*	*	*	*	*
92865	21,084	16	25.3	228	360.5	94	148.6
92866	15,466	9	19.4	172	370.7	51	109.9
92867	46,425	31	22.3	531	381.3	212	152.2
92868	26,775	24	29.9	585	728.3	204	254.0
92869	38,577	30	25.9	423	365.5	214	184.9
92870	54,292	40	24.6	742	455.6	261	160.2
92886	49,917	38	25.4	495	330.5	221	147.6
92887	21,356	13	20.3	187	291.9	72	112.4

2009-2011 MAPS BY ORANGE COUNTY CITY¹¹

City	Deaths			ED Visits		Hospitalizations	
	2010 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
Aliso Viejo	47,411	20	14.1	334	234.8	271	190.5
Anaheim	336,208	214	21.2	3,197	317.0	1,404	139.2
Brea	39,259	19	16.1	329	279.3	156	132.5
Buena Park	80,477	50	20.7	648	268.4	298	123.4
Costa Mesa	110,008	87	26.4	1,822	552.1	857	259.7
Cypress	47,750	21	14.7	400	279.2	231	161.3
Dana Point	33,403	36	35.9	519	517.9	424	423.1
Fountain Valley	55,274	27	16.3	472	284.6	310	186.9
Fullerton	135,108	63	15.5	1,025	252.9	423	104.4
Garden Grove	170,672	81	15.8	1,370	267.6	561	109.6
Huntington Beach	190,136	178	31.2	2,595	454.9	1,504	263.7
Irvine	212,117	52	8.2	1,215	190.9	537	84.4
La Habra	60,235	35	19.4	564	312.1	232	128.4
La Palma	15,561	5	10.7	59	126.4	60	128.5
Laguna Beach	22,760	30	43.9	304	445.2	288	421.8
Laguna Hills	30,396	21	23.0	344	377.2	207	227.0
Laguna Niguel	63,005	40	21.2	503	266.1	527	278.8
Laguna Woods	16,242	15	30.8	152	311.9	131	268.9
Lake Forest	77,200	39	16.8	593	256.0	345	149.0
Los Alamitos	11,454	15	43.7	172	500.6	140	407.4
Mission Viejo	93,394	54	19.3	738	263.4	669	238.8
Newport Beach	85,093	65	25.5	1,030	403.5	666	260.9
Orange	136,233	77	18.8	1,145	280.2	602	147.3
Placentia	50,515	20	13.2	415	273.8	204	134.6
Rancho Santa Margarita	47,853	20	13.9	284	197.8	309	215.2
San Clemente	63,562	60	31.5	962	504.5	580	304.2
San Juan Capistrano	34,594	27	26.0	334	321.8	288	277.5
Santa Ana	325,036	198	20.3	2,292	235.1	831	85.2
Seal Beach	23,864	18	25.1	173	241.6	128	178.8
Stanton	38,166	26	22.7	364	317.9	140	122.3
Tustin	75,400	44	19.5	544	240.5	257	113.6
Villa Park	5,817	*	*	30	171.9	*	*
Westminster	89,694	52	19.3	613	227.8	312	115.9
Yorba Linda	64,118	23	12.0	671	348.8	286	148.7
Orange County (Total)	3,008,855	1,764	19.5	26,971	298.8	14,795	163.9

Red fill denotes cities with rates higher than Orange County average

¹¹ * Denotes suppression based on either mortality count <5, or ED Visits/Hospitalizations <25.

2018-2020 MAPS BY ORANGE COUNTY CITY¹²

City	Deaths			ED Visits		Hospitalizations	
	2019 Population	Counts	Avg. Rate	Counts	Avg. Rate	Counts	Avg. Rate
Aliso Viejo	50,206	31	20.6	558	370.5	355	235.7
Anaheim	356,618	320	29.9	4,797	448.4	1,823	170.4
Brea	44,655	30	22.4	566	422.5	188	140.3
Buena Park	82,837	60	24.1	1,047	421.3	361	145.3
Costa Mesa	114,075	148	43.2	2,526	738.1	1,074	313.8
Cypress	48,887	35	23.9	482	328.6	222	151.4
Dana Point	33,564	50	49.7	743	737.9	386	383.3
Fountain Valley	55,718	61	36.5	629	376.3	337	201.6
Fullerton	142,251	135	31.6	1,643	385.0	654	153.3
Garden Grove	174,038	149	28.5	2,113	404.7	768	147.1
Huntington Beach	199,742	195	32.5	3,336	556.7	1,718	286.7
Irvine	274,641	81	9.8	2,157	261.8	928	112.6
La Habra	63,464	54	28.4	1,063	558.3	336	176.5
La Palma	15,704	6	12.7	89	188.9	*	*
Laguna Beach	22,868	14	20.4	608	886.2	273	397.9
Laguna Hills	31,583	23	24.3	473	499.2	214	225.9
Laguna Niguel	65,038	58	29.7	893	457.7	498	255.2
Laguna Woods	16,314	16	32.7	227	463.8	122	249.3
Lake Forest	84,543	59	23.3	1,031	406.5	403	158.9
Los Alamitos	11,622	16	45.9	264	757.2	125	358.5
Mission Viejo	95,728	75	26.1	1,099	382.7	616	214.5
Newport Beach	86,419	81	31.2	1,570	605.6	809	312.0
Orange	140,368	111	26.4	1,983	470.9	796	189.0
Placentia	51,871	40	25.7	754	484.5	264	169.7
Rancho Santa Margarita	48,987	24	16.3	516	351.1	265	180.3
San Clemente	64,558	66	34.1	1,000	516.3	558	288.1
San Juan Capistrano	36,124	44	40.6	659	608.1	322	297.1
Santa Ana	334,231	293	29.2	4,786	477.3	1,485	148.1
Seal Beach	24,798	24	32.3	207	278.2	156	209.7
Stanton	39,194	28	23.8	471	400.6	147	125.0
Tustin	80,701	52	21.5	1,028	424.6	441	182.2
Villa Park	5,852	*	*	*	*	*	*
Westminster	92,289	77	27.8	897	324.0	368	132.9
Yorba Linda	68,304	52	25.4	686	334.8	297	144.9
Orange County (Total)	3,185,378	2,577	27.0	42,164	441.2	19,535	204.4

Red fill denotes cities with rates higher than Orange County average

¹² * Denotes suppression based on either mortality count <5, or ED Visits/Hospitalizations <25.

Note on Population Sources:

Rates, except for those appearing in the City and ZIP tables, are from the California Department of Finance Population Projections, P-3 file. For years 2010 through 2020, the file was from the estimates for 2010-2060, the July 2021 update. For the year 2009, the file was from the estimates for 2000-2050, updated March 19, 2013.

The rates for the Cities tables for 2010 and 2019 are from the California Department of Finance E-4 Population Estimates for Cities, Counties and the State. The 2010 estimate is from the 2000-2010 version 1.3 (revised November 2012). The 2019 estimate is from the 2010-2020 version (May 2021).



Drugs and Alcohol – Deaths, Emergency Department Visits, and Hospitalizations Orange County Health Care Agency

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Drugs and Alcohol – Deaths, Emergency Department Visits, and Hospitalizations: Trends from 2009 to 2020. Orange County Health Care Agency. Santa Ana, CA, June, 2022.

This report is available online at: <https://ohealthinfo.com/page/drug-alcohol-overdose-hospitalization-death-orange-county>

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