

Suicide Summary Report, 2015–2020

Arizona Violent Death Reporting System

January 1, 2015 – December 31, 2020

September, 2022

Arizona Violent Death Reporting System: Suicide Summary Report 2015–2020



By the

Center for Violence Prevention & Community Safety

Arizona State University



Suggested citation: Arizona Violent Death Reporting System, Arizona State University, Center for Violence Prevention and Community Safety. Suicide Summary Report, 2015–2020. September 2022.

About the Center for Violence Prevention and Community Safety

To become more committed to the Arizona community and to society as a whole, Arizona State University is setting a new standard for research universities through the model of the New American University. As a New American University, ASU is measured not by whom we exclude but by whom we include and by our pursuit of research that considers the public good; we assume major responsibility for the economic, social, and cultural vitality of our community. Social embeddedness is core to the development of ASU as the New American University.

Social embeddedness is a university-wide, interactive, and mutually supportive partnership with the communities of Arizona. Toward the goal of social embeddedness, Arizona State University established the Center for Violence Prevention and Community Safety in July 2005 to respond to the growing need of Arizona's communities to improve the public's safety and well-being. The Center for Violence Prevention and Community Safety is a research unit within the Watts Family College of Public Service and Community Solutions at Arizona State University.

The Center's mission is to generate, share, and apply quality research and knowledge to create "best practice" standards. The center specifically evaluates policies and programs, analyzes, and evaluates patterns and causes of violence, develops strategies, and programs, develops a clearinghouse of research reports and "best practice" models, educates, trains and provides technical assistance, and facilitates the development and construction of databases. For more information about the Center for Violence Prevention and Community Safety, please contact us using the information provided below.

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Acknowledgements

The National Violent Death Reporting System (NVDRS) is sponsored by the National Center for Injury Prevention and Control of the Centers for Disease Control and Prevention (CDC), which funds participating states through a bona fide agent. Arizona's site (AZ-VDRS) is operated by the Center for Violence Prevention and Community Safety (CVPCS) at Arizona State University (ASU). This report was supported in part by CDC Cooperative Agreement #5 NU17CE924957-03-00. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC. The research files for this report were created on June 2, 2022. Data may continue to be entered and altered in AZ-VDRS after this date.

We thank and acknowledge the cooperation and support of the Arizona Department of Health Services (ADHS) Bureau of Vital Records and the many local law enforcement agencies and medical examiner's offices throughout the state of Arizona that have provided information to the AZ-VDRS. Without our partners, the AZ-VDRS would not be possible. The agencies that provided data for this report are as follows:

ADHS, Bureau of Vital Records	Avondale PD	Paradise Valley PD
Arizona Dept. of Public Safety	Buckeye PD	Payson PD
Apache County ME's Office	Bullhead City PD	Peoria PD
Coconino County ME's Office	Casa Grande PD	Phoenix PD
Gila Messenger Mortuary	Chandler PD	Pinetop-Lakeside PD
Maricopa County ME's Office	Chino Valley PD	Prescott PD
Mohave County ME's Office	Clarkdale PD	Prescott Valley PD
Navajo County ME's Office	Coolidge PD	Safford PD
New Mexico Office of the ME	Cottonwood PD	Sahuarita PD
Pima County ME's Office	Douglas PD	San Luis PD
Pinal County ME's Office	El Mirage PD	Scottsdale PD
Yavapai County ME's Office	Eloy PD	Sedona PD
Yuma County ME's Office	Flagstaff PD	Show Low PD
Cochise County Sheriff Office	Florence PD	Sierra Vista PD
Coconino County Sheriff Office	Gilbert PD	Snowflake-Taylor PD
Gila County Sheriff Office	Glendale PD	Somerton PD
Mohave County Sheriff Office	Globe PD	South Tucson PD
Navajo County Sheriff Office	Goodyear PD	St. Johns PD
Pima County Sheriff Office	Holbrook PD	Superior PD
Pinal County Sheriff Office	Kingman PD	Surprise PD
Santa Cruz County Sheriff Office	Lake Havasu City PD	Tempe PD
Yavapai County Sheriff Office	Marana PD	Tolleson PD
Yuma County Sheriff Office	Maricopa PD	Tucson PD
Apache Junction PD	Mesa PD	UArizona PD
ASU PD	Miami PD	Wickenburg PD
	NAU PD	Williams PD
	Nogales PD	Winslow PD
	Oro Valley PD	Yuma PD
	Page PD	

INTRODUCTION

The National Violent Death Reporting System (NVDRS) is a state-based surveillance tool to improve our understanding of violent deaths and is sponsored by the Centers for Disease Control and Prevention (CDC). Given the magnitude of the suicide problem in the United States, improved data collection and research efforts are critical to finding and implementing better intervention and prevention efforts. All 50 states, Puerto Rico, and the District of Columbia participate in the NVDRS.

Arizona began its partnership in the surveillance system by collecting 2015 violent death data. Through data integration and abstraction from death certificates, medical examiner reports, and law enforcement reports, the Arizona Violent Death Reporting System (AZ-VDRS), as an NVDRS site, seeks to contribute to efforts to reduce suicides in Arizona. Understanding the scope and nature of the suicide problem at the state and local levels will help inform local and state authorities, policymakers, and other stakeholders to assist in determining resource allocation and finding more effective and efficient strategies to respond to suicide. This report presents findings from the AZ-VDRS and describes suicide patterns and trends in Arizona over six years, from 2015 to 2020.

DATA AND METHODS

Data presented in this report are derived from the AZ-VDRS dataset from January 1, 2015, through December 31, 2020. The violent death data are collected from three sources—death certificates, medical examiner reports, and law enforcement reports—and are used to populate an aggregated, anonymous database. The AZ-VDRS includes data on victim/suspect demographics and specific circumstances related to the incident, including but not limited to mental health problems, recent problems with a job, finances, or relationships, and physical health problems. These original data sources are de-identified, abstracted, and aggregated into a CDC-managed database.

Data collection and abstraction in Arizona begin with the death certificate. The Arizona Department of Health Services and its Division of Vital Records provide the AZ-VDRS with a comprehensive death certificate file containing year-to-date deaths defined by ICD-10 codes encompassing all suicides, homicides, legal intervention deaths, unintentional firearm deaths, and deaths of undetermined intent every month. Requests are then made to the responsible medical examiner for investigation and toxicology reports and the relevant law enforcement jurisdiction for all incident and investigation reports for the respective decedent.

This report primarily uses data gathered on all occurrent suicide decedents in the AZ-VDRS database with a date of death from January 1, 2015, through December 31, 2020. The initial data file included 11,860 decedents, from which homicides (n=2,359; 19.9%), undetermined or unintentional deaths (n=1,077; 9.1%), and legal intervention or other deaths (n=295; 2.5%) were removed (see Exhibit 1 below). The remainder left 8,129 (68.5%) suicides. Exhibit 2 shows the breakdown of all suicide incidents, including the n=8,129 suicides. We further excluded 462 cases (5.7% of suicides) as there were insufficient individual data elements to code circumstance data for the respective decedent (discussed below), leaving 7,667 (94.3%) suicides for most analyses. Some analyses are presented using rates, which, for this report, were calculated using incidence counts per 100,000 population based on population estimates provided by the U.S. Census Bureau¹.

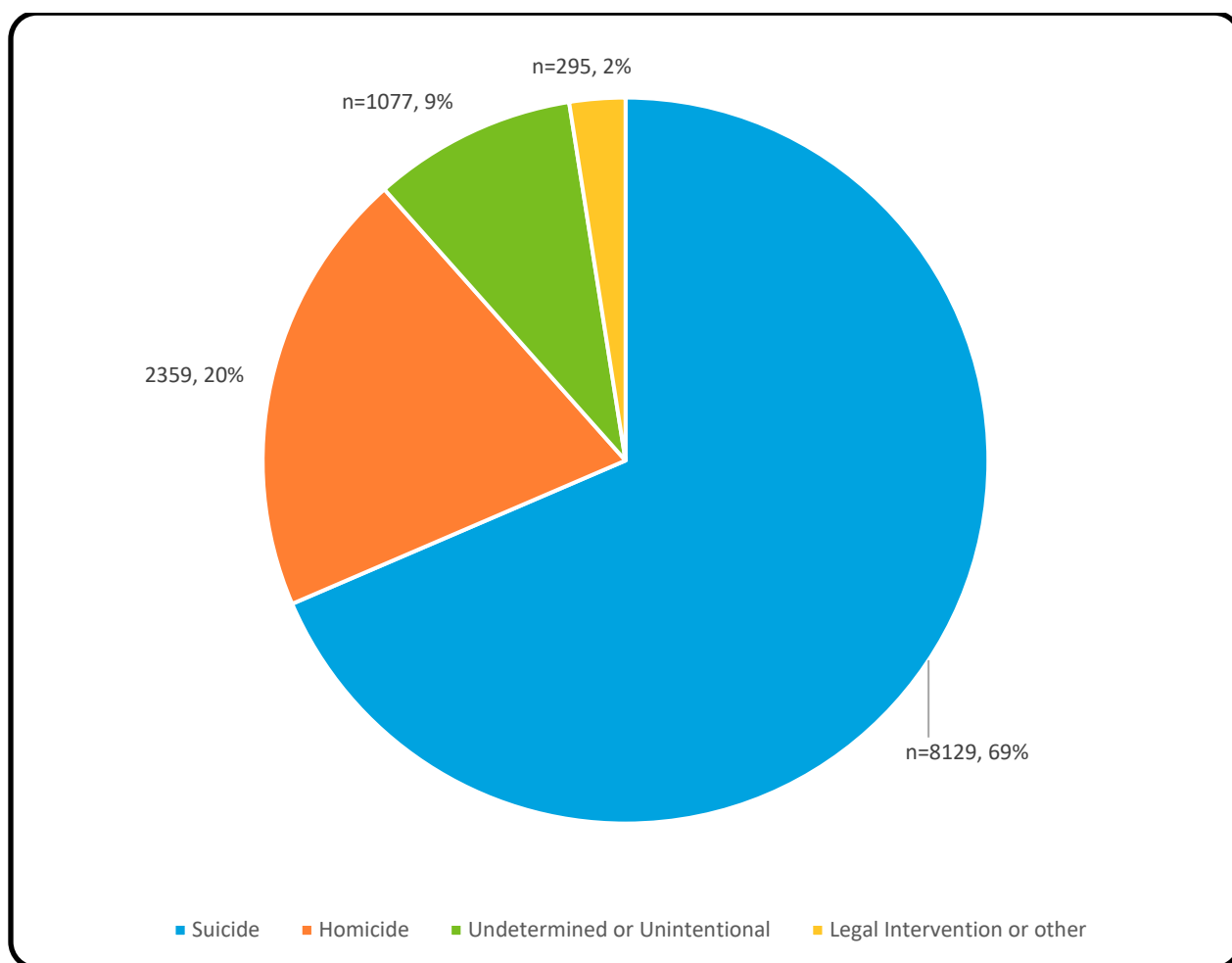
¹ <https://www.census.gov/data.html>

FINDINGS

Suicides in Arizona

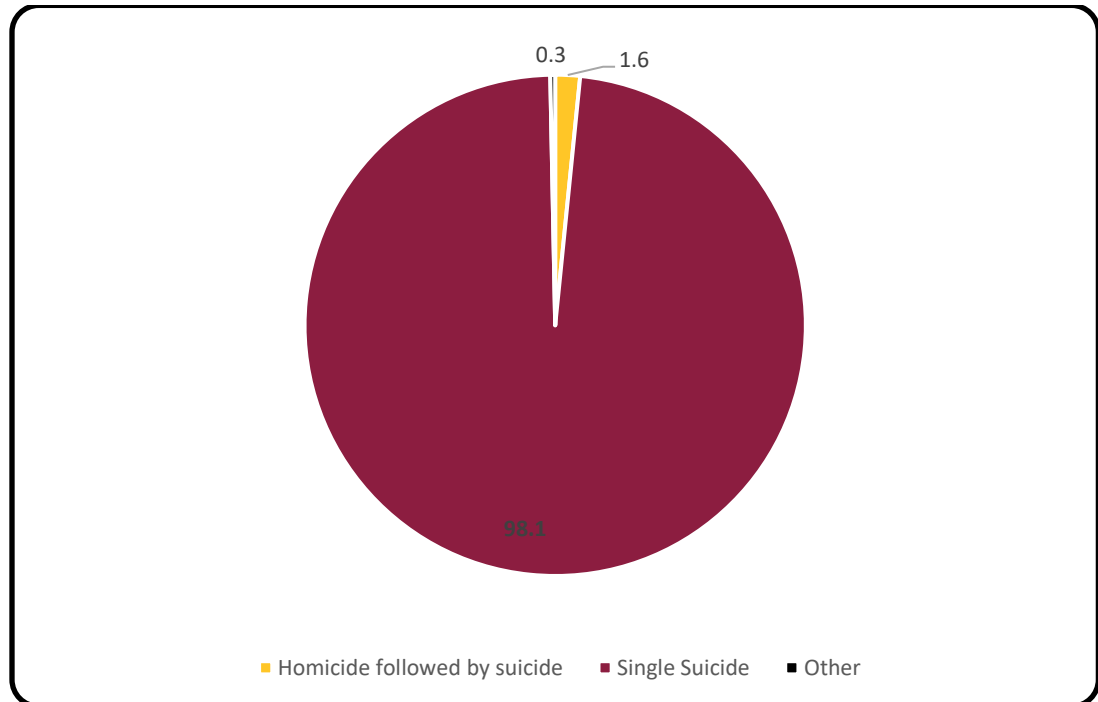
From 2015 through 2020, Arizona had a total of 11,860 violent deaths. For this report, we analyzed only cases defined as suicide regarding the manner of death. Among all violent deaths, 68.5% (n=8,129) were suicides, for a statewide crude annual average rate of 19.7 suicides per 100,000 population (not shown) over the 2015–2020 span. The distribution of all violent deaths in Arizona from 2015 to 2020 includes homicides (19.9%; n=2,359), undetermined and unintentional deaths (9.1%; n=1,077), and legal intervention or other deaths (2.5%; n=295; see Exhibit 1). The exhibit below uses the total number of suicides from 2015–2020 (n=8,129), thus including the n=462 (5.7%) suicides that were excluded for most of our analyses due to a lack of sufficient individual-level decedent information.

Exhibit 1: Violent deaths in Arizona by manner, 2015–2020 (n=11,860)



In total, 7,651 incidents involved at least one suicide. Of these, 7,505 (98.1%) involved a single suicide, 122 (1.6%) were suicides preceded by one or more homicides, and 24 (0.3%) “other” incidents, which involved either multiple suicides or a suicide in conjunction with an undetermined or unintentional related violent death in the same incident (see Exhibit 2).

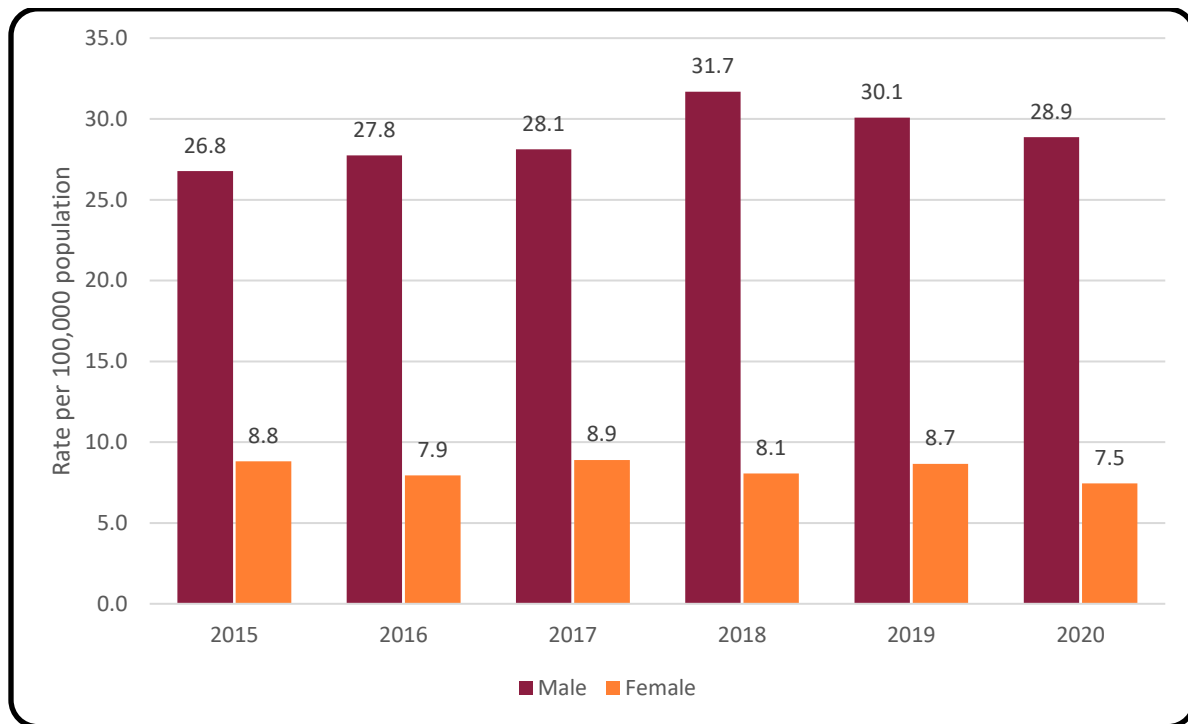
Exhibit 2: Suicide incidents in Arizona, 2015–2020 (n=7,651)



Basic Demographics of Suicide Victims in Arizona, 2015–2020

We present the sex, race/ethnicity, and age of suicide victims in Exhibits 3 through 9 below. For this set of analyses, we used only victims for whom we had complete data (n=7,667), as described in the methods and data section above. This analysis showed an overall six-year average suicide rate of 18.5 deaths per 100,000 population.

We first examined the differences between male and female victims. Males generally represented more than three-fourths of suicide decedents (77.5%; n=5,940, not shown). Males completed suicide at more than three times the rate females did each year from 2015–2020 (low of 26.8 to a high of 31.7 suicides per 100,000 population for males and 7.5 to 8.9 for females). The highest suicide rate was 19.8 suicides per 100,000 population in 2018, the year with the most considerable difference between male and female rates (31.7 vs. 8.1; see Exhibits 3 and 5).

Exhibit 3: Suicide rate by sex and year, 2015–2020 (n=7,667)

White, non-Hispanic/Latinx Arizonans had the highest suicide rate of at least 24.1 per 100,000 population, compared to American Indians at a minimum of 27.4 per 100,000 population. Black victims had a suicide rate between 8.9 (in 2015) and 17.0 (in 2018) per 100,000 population. American Indian or Alaskan Native victims had rates from a low of 10.2 per 100,000 population in 2015 to a high of 19.7 in 2020. Hispanic/Latinx victims ranged from a low rate of 9.3 in 2015 to a high of 14.7 in 2020. Finally, victims of all other racial identifications (e.g., Asian or Pacific Islander, multiracial) ranged from 1.4 in 2020 to 4.2 in 2015 (see Exhibits 4 and 5).

A detailed table showing the number, percent, and rate per 100,000 population for sex, age group, and race/ethnicity by year from 2015–2020 (as well as the six-year total) is included in the appendix at the end of this report.

Exhibit 4: Suicide rate by race/ethnicity and year, 2015–2020 (n=7,667)

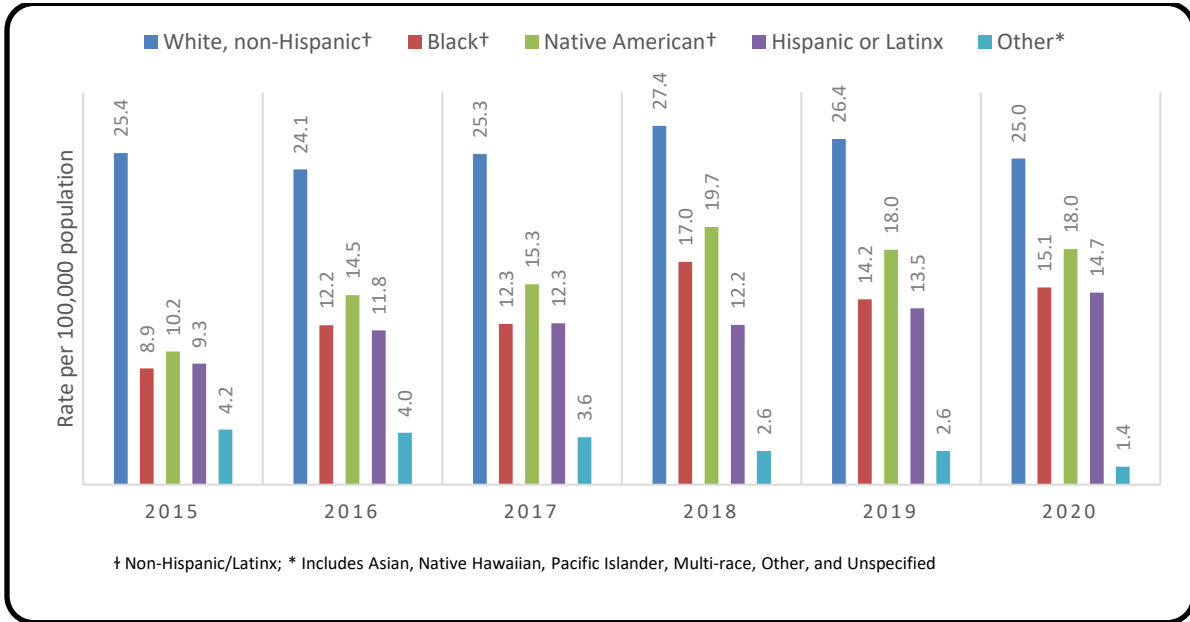
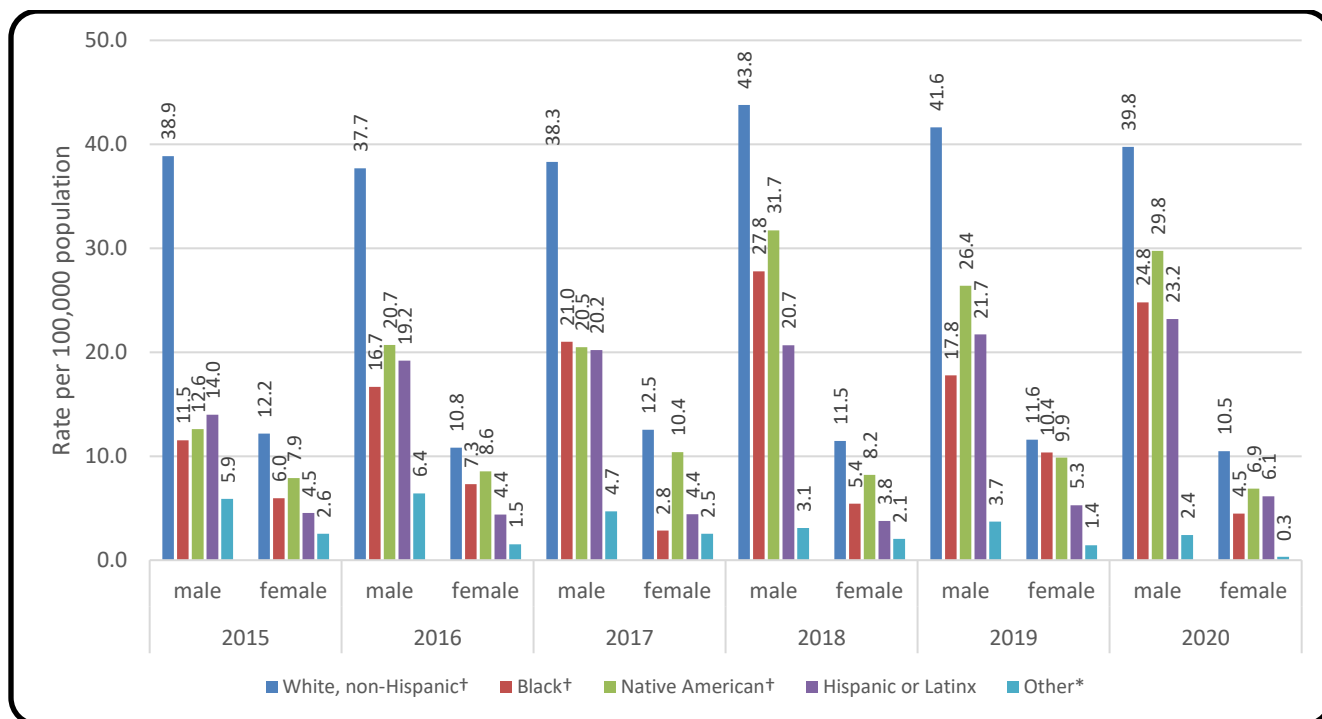


Exhibit 5 examines the interaction of sex and race/ethnicity, showing the substantial variation over the six years by sex and race. However, males, specifically white, non-Hispanic/Latino males, were consistently the most likely to exhibit the highest rate of suicide per 100,000 population. White, non-Hispanic/Latino males had an average suicide rate of 40.0 per 100,000 population, followed by a rate of 23.8 among American Indian males, 20.1 among Black males, and 19.8 among Hispanic/Latino males. In comparison, there were just 4.2 suicides per 100,000 population among males of other racial categories. Rates among females were significantly lower (about one-third or less that of their male counterparts). White, non-Hispanic/Latina victims had the highest rate among females at 11.5 per 100,000 population, followed by American Indian females (8.6), Black females (6.1), Hispanic/Latina females (4.7), and finally, females of other racial categories (1.7).

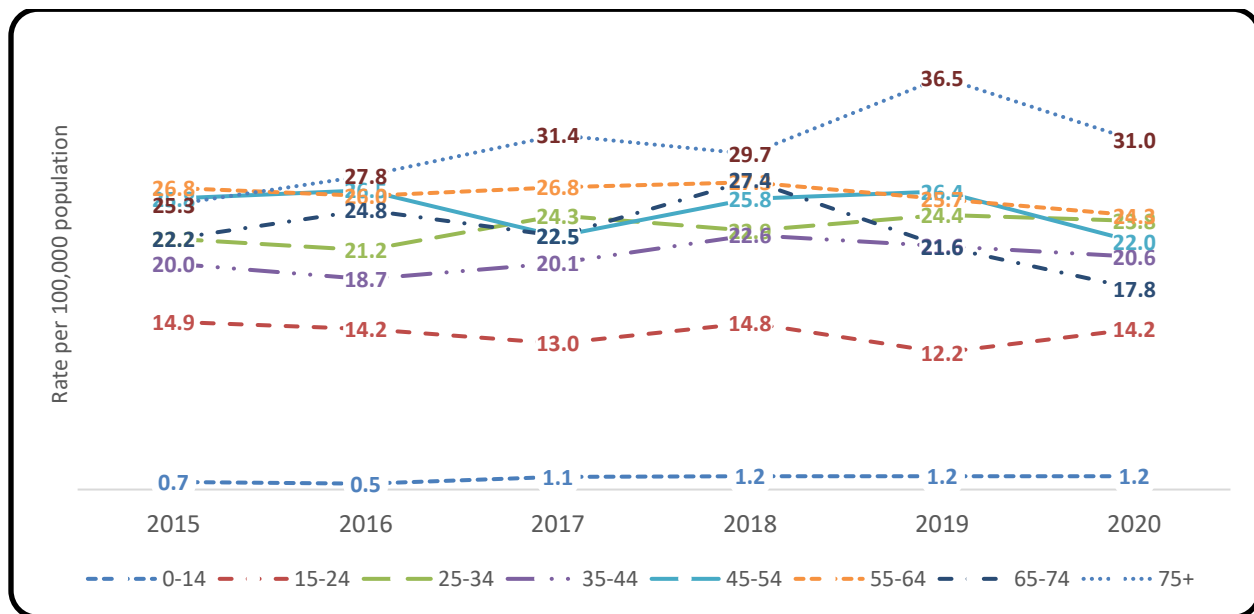
Exhibit 5: Suicide rate by race/ethnicity and sex, 2015–2020 (n=7,667)



Analyses of suicide decedents aged ten years and older are presented in Exhibit 6. Examining the suicide rates of the different age groups year by year shows a noticeable increase among those aged 75 or above from 2018 to 2019, followed by a decline in 2020. Conversely, there was a significant decline in suicide rates among those aged 15–24 in 2019, when this group’s rate dropped to its lowest point during the six years at 12.2 deaths per 100,000 population.

The exhibit shows that age is closely related to suicide rates. Specifically, suicide rates increased until ages 25–34, then slightly decreased for ages 35–44, and then increased again through age 64; there was a slight decline in the suicide rate for ages 65–74. Rates were highest among those aged 75 and above, with an average six-year rate of 30.5 per 100,000 population (not shown).

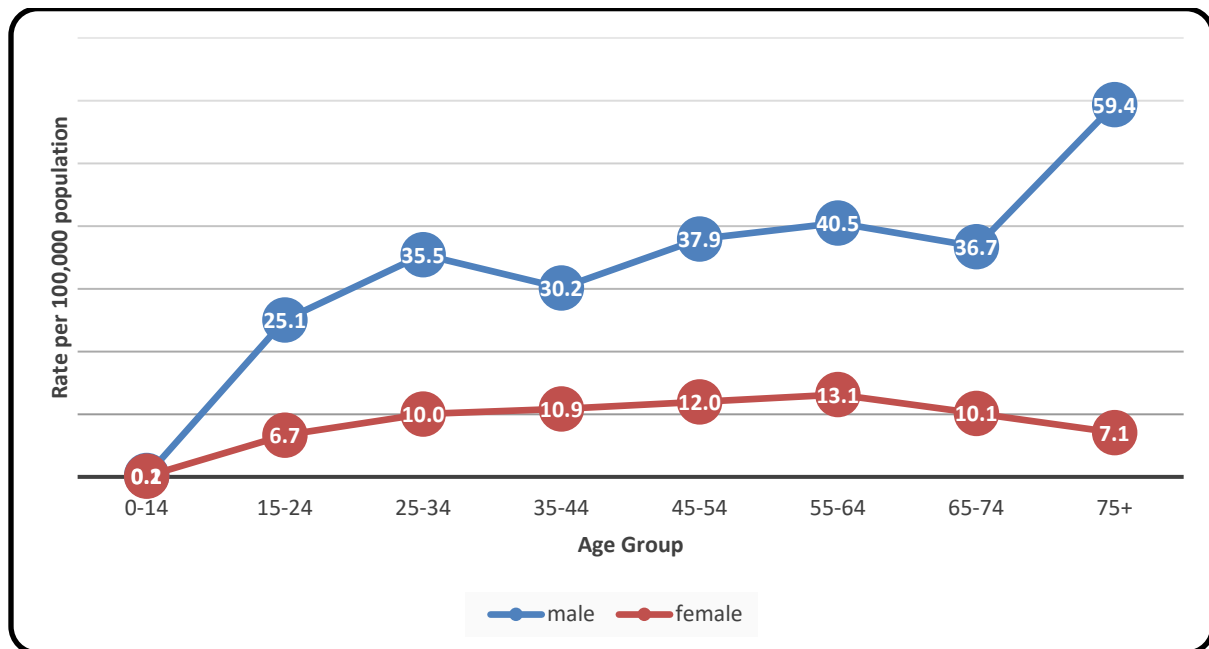
Exhibit 6: Suicide rate by age group and year, 2015–2020 (n=7,667)



We present suicide rates by age and sex in Exhibit 7. Up through the age of 14, there is little difference between male and female suicide rates. Among 15–24-year-olds in Arizona, males died by suicide at almost four times the rate of females (25.1 males per 100,000 population compared with 6.7 females). Suicide rates for both males and females increased through age 34. For ages 35–44, the male suicide rate declined (30.2), while the female rate remained relatively stable, changing from 10.0 for those aged 24–34 to 10.9 for those aged 35–44. Rates increased again for both groups through age 64 before declining for those aged 65–74. Notably, the suicide rate for females aged 75 or older declined, while males saw a sharp increase from 36.7 among those aged 65–74 to 59.4 suicides per 100,000 population among those aged 75 or older. This was the most profound difference between males and females based on age.

The age range during which women were the most likely to die by suicide was ages 55–64, with a rate of 13.1 per 100,000 population. However, males of the same age still had substantially higher rates of suicide, with 40.5 per 100,000 population dying by suicide.

Exhibit 7: Six-year average suicide rate by age group and sex, 2015–2020 (n=7,667)



Extended Adult Demographics

Our analyses of extended demographics included marital status, educational attainment, birthplace, and veteran status. We restricted our analysis to adults (i.e., those 18 years and older) for a sample size of n=7,422. This sample is used only for Exhibit 8, as these extended demographics are inherently biased toward adulthood. The analysis does not present results based on population rates, as detailed estimates necessary to compute these rates were unavailable.

Exhibit 8 below shows each of the extended demographic characteristics by year and the six-year total. In Exhibit 8, we further examined educational attainment. About 35% of suicide victims had only a high school degree or GED equivalent, and 49.9% had at least some college credit (i.e., some college credit but no degree, associate's, bachelor's, master's, or doctorate). About 15.38% of suicide victims had less than a high school education.

About one-quarter of suicide victims were married and living with their spouse (28.4%; n=2,109), and more than a third had never been married (38.2%; n=2,832). The year-by-year analysis shows a notable increase in suicide among widowed victims in 2020 compared to prior years (8.2% versus the six-year average of 6.9%).

More than one-fourth of suicides from 2015–2020 were among those born in Arizona (27.6%; n=2,049). The highest proportion of Arizona-born suicide victims was in 2020 at 32.0% (n=402), with the second-highest at 28.4% (n=377) in 2019 and a six-year average of 27.6%. One-fifth of Arizona's suicide decedents from 2015–2020 were reported to be veterans (20.2%, n=1,502).

Exhibit 8: Extended demographic characteristics of adult (age 18+) suicide victims, 2015–2020 (n=7,422)

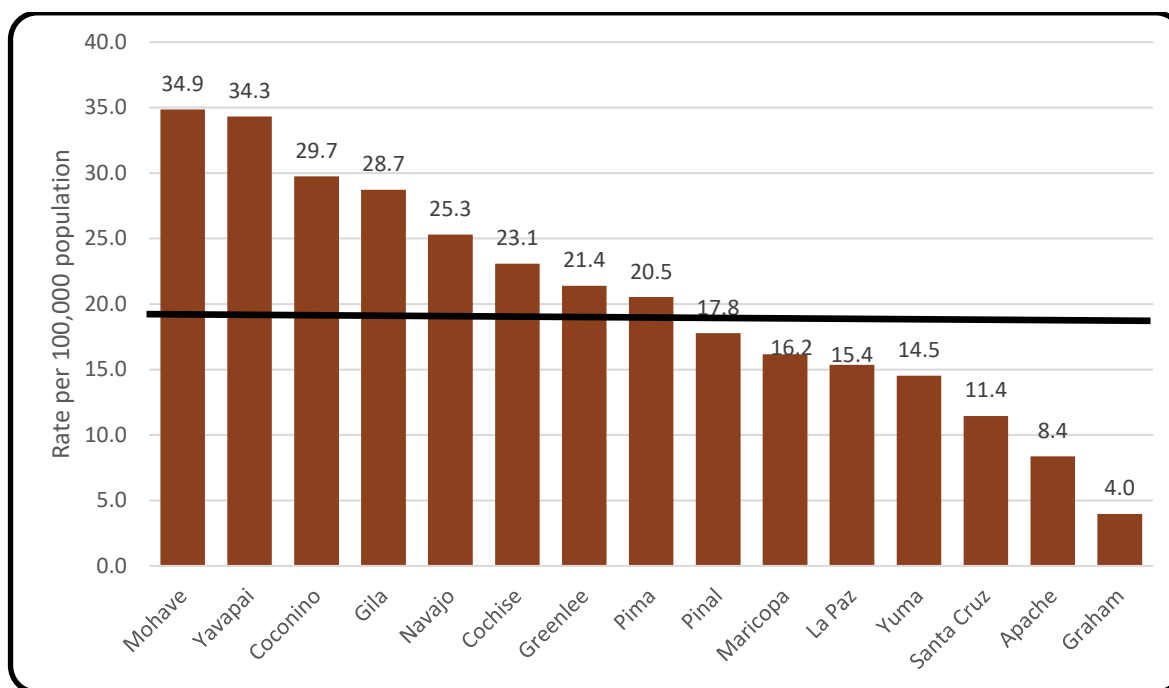
	2015 (n=1,139)		2016 (n=1,167)		2017 (n=1,210)		2018 (n=1,322)		2019 (n=1,327)		2020 (n=1,257)		Total (n=7,422)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Marital Status														
Single (never married)	421	37.0	400	34.3	465	38.4	536	40.5	504	38.0	506	40.3	2832	38.2
Married/civil union/domestic partnership	329	28.9	357	30.6	331	27.4	358	27.1	385	29.0	349	27.8	2109	28.4
Married, but separated	56	4.9	37	3.2	72	6.0	65	4.9	37	2.8	42	3.3	309	4.2
Divorced	294	25.8	310	26.6	283	23.4	315	23.8	317	23.9	274	21.8	1793	24.2
Widowed	65	5.7	77	6.6	86	7.1	92	7.0	89	6.7	103	8.2	512	6.9
Unknown/missing	13	1.1	16	1.4	20	1.7	10	0.8	29	2.2	24	1.9	112	1.5
Education														
< 8th grade	36	3.2	44	3.8	39	3.2	43	3.3	55	4.1	46	3.7	263	3.5
9th–12th grade	137	12.0	132	11.3	163	13.5	157	11.9	136	10.2	146	11.6	871	11.7
High school or GED	399	35.0	411	35.2	424	35.0	455	34.4	455	34.3	460	36.6	2604	35.1
Some college credit	240	21.1	245	21.0	258	21.3	318	24.1	293	22.1	285	22.7	1639	22.1
Associate's or bachelor's degree	259	22.7	251	21.5	245	20.2	274	20.7	283	21.3	235	18.7	1547	20.8
Advanced degree	79	6.9	87	7.5	84	6.9	94	7.1	89	6.7	90	7.2	523	7.0
Unknown	28	2.5	27	2.3	44	3.6	35	2.6	50	3.8	36	2.9	220	3.0
Birthplace														
Arizona	272	23.9	287	24.6	337	27.9	374	28.3	377	28.4	402	32.0	2049	27.6
Other states	791	69.4	787	67.4	780	64.5	883	66.8	860	64.8	774	61.6	4875	65.7
Other countries	81	7.1	105	9.0	106	8.8	82	6.2	76	5.7	104	8.3	554	7.5
Unknown/missing	34	3.0	18	1.5	34	2.8	37	2.8	48	3.6	18	1.4	189	2.5
Veteran status														
Non-veteran	925	81.2	912	78.1	971	80.2	1113	84.2	1082	81.5	1036	82.4	6039	81.4
Veteran	234	20.5	273	23.4	241	19.9	245	18.5	263	19.8	246	19.6	1502	20.2
Unknown/missing	19	1.7	12	1.0	45	3.7	18	1.4	16	1.2	16	1.3	126	1.7

Location of Suicides

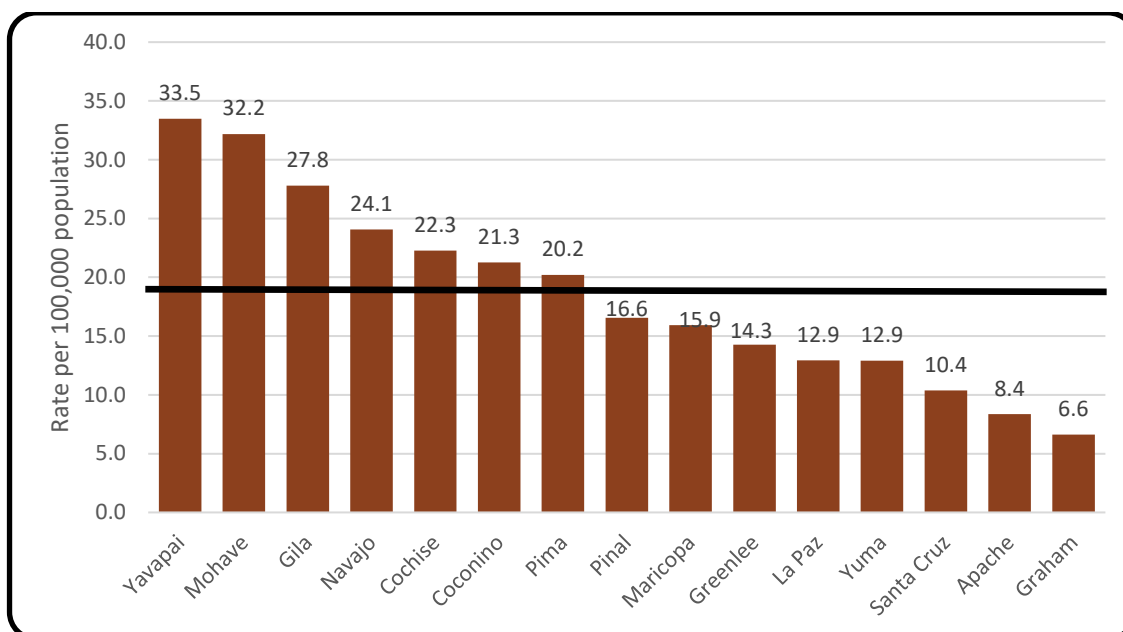
We studied suicides by location, examining injury and residence county, and the type of place where the death occurred. We begin by presenting suicide rates per 100,000 population by the county where the fatal injury occurred. The analysis showed a statewide average six-year rate of 18.5 per 100,000 population, which includes 29 (0.4%) decedents for which the injury county was unknown. This rate differs from the statewide six-year average presented at the beginning of this report because the first section uses an n=8,129, representing all Arizona occurrent suicides from 2015 through 2020, while here, we present the rate using n=7,667 decedents to allow for better comparison for the analyses in the following section.

As Exhibit 9 shows, Mohave County had the highest suicide rate over the six years at 34.9 deaths per 100,000 population, closely followed by Yavapai County at 34.3. This was nearly double the statewide average of 18.5. Coconino (29.7), Gila (28.7), and Navajo (25.3) Counties also had substantially higher suicide rates compared to the Arizona average (18.5). Graham County had the lowest suicide rate at 4.0 deaths per 100,000 population. Santa Cruz (11.4) and Apache (8.4) counties were also significantly lower than the statewide average.

Exhibit 9: Suicide rates by county of injury, 2015–2020 (n=7,667)



Suicide rates by residence county were similar to the rates by injury county. We found 292 (3.8%) decedents whose residence was either outside Arizona or unknown. As previously noted, the overall statewide average, which included all n=7,667 decedents, was 18.5 deaths per 100,000 population. Santa Cruz (10.4), Apache (8.4), and Graham (6.6) Counties again had the lowest rates of suicide and were substantially lower than the statewide six-year average. Yavapai (33.5) and Mohave (32.2) Counties had the highest suicide rates of all counties, as in the case of injury county. Gila (27.8) and Navajo (24.1) Counties had substantially higher rates of suicide than the statewide average, as they did for injury county. Coconino County saw the most notable difference in suicide rate per 100,000 population when comparing injury county (29.7) and residence county (21.3; see Exhibit 10).

Exhibit 10: Suicide rates by county of residence, 2015–2020 (n=7,667)

The type of location where the fatal injury occurred is collected and coded through the AZ-VDRS program. However, injury location may differ from the actual location of death, which is sometimes unknown to officials or may not have been sufficiently described in report narratives. Additionally, location type codes are extensive, and many are uncommon or rare but may not sufficiently encompass all possible places.

Exhibit 11 shows that the overwhelming majority of injury locations were private residences, with more than 7 in 10 suicides occurring in a house or apartment (73.0%; n=5,599). Most occurred at the victim's home (95.0%; n=5,321). Motor vehicles were also a relatively common location of injury (6.1%; n=466) for suicide. Combining places such as streets/roads, natural areas, parking lots, and parks revealed that 11.5% (n=873) of suicide victims were injured in outdoor or public spaces. Hotels/motels and jails seldom served as injury locations for suicide in this dataset.

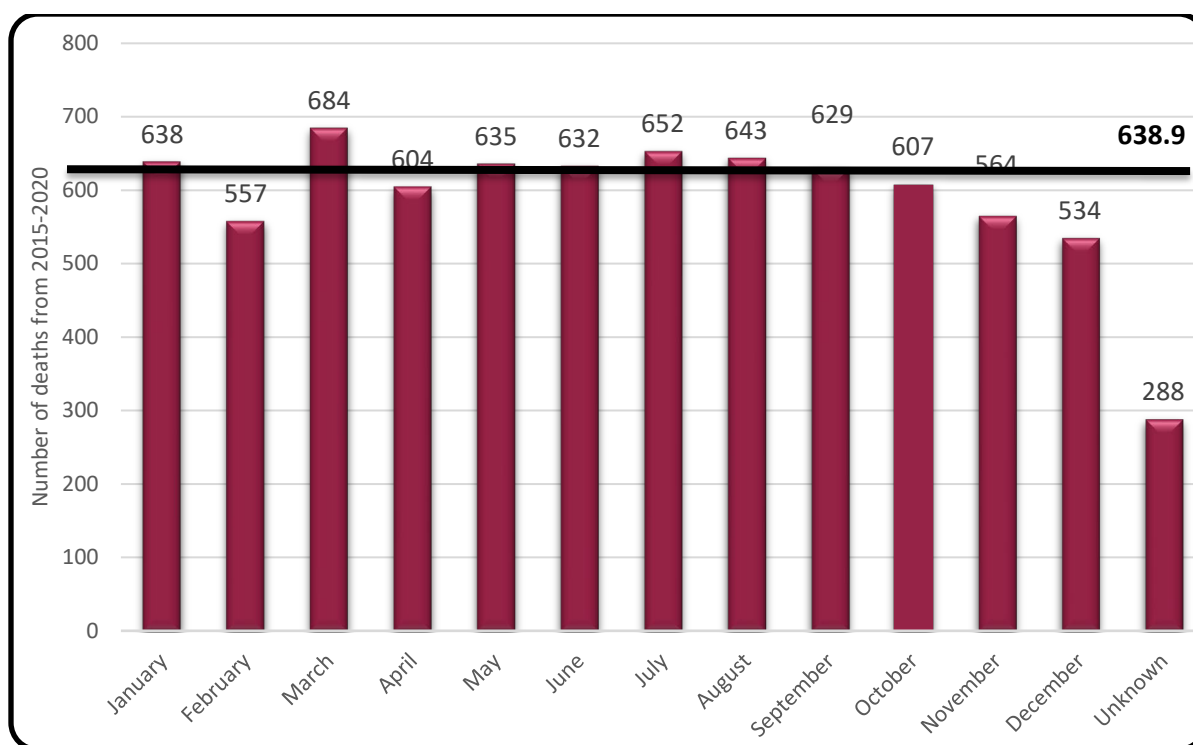
Exhibit 11: Type of location of injury per suicide victim, 2015–2020 (n=7,667)

Location	n	%
House, apartment	5599	73.0
At victim's home	5321	95.0
Not at victim's home	252	4.5
Unknown home	26	0.5
Street/road, highway, alley	261	3.4
Parking lot or parking garage	150	2.0
Park, playground, other public use area	90	1.2
Natural outdoor area	372	4.9
Commercial establishment (bar, store, service station, bank, office building, etc.)	276	3.6
Jail, prison, group home, shelter, other supervised residential facility	136	1.8
Motor vehicle (excluding buses and other public transportation)	466	6.1
Other (e.g., construction site, abandoned building, sports facility, school, public transportation, church, hospital)	292	3.8
Unknown	25	0.3
Total	7667	100.0

Month of Suicides

Exhibit 12 displays the number of suicides attributed to the month of death. The exhibit shows the total number of suicides over the six years. The six-year statewide average number of suicides per month was $n=638.9$. December ($n=534$), February ($n=557$), and November ($n=564$) had the fewest suicides over the six years. March had the most suicides ($n=684$; 8.9%). All other months had between 604 and 657 suicides.

Exhibit 12: Suicides in Arizona by month of pronounced death, 2015–2020 ($n=7,667$)



Method of Death

We examined the primary mechanism resulting in the suicide victim's method of death. Over the six years from 2015–2020, 58.9% ($n=4,515$) of all suicide decedents used firearms. Hanging, strangulation, or suffocation constituted the second most common method of death, with more than one-fifth (22.8%; $n=1,748$) of all suicide victims. Poisoning was also a relatively common method of suicide (12.9%; $n=991$). All other causes accounted for the remaining 5.4% ($n=414$; see Exhibit 13).

Exhibit 13: Method of death, 2015-2020 ($n=7,667$)

Method	n	%
Firearm	4515	58.9
Hanging, strangulation, suffocation	1748	22.8
Poisoning	991	12.9
Sharp instrument	124	1.6
Fall	116	1.5
Motor vehicle or other transport †	89	1.2
Drowning	35	0.5
Other or Unknown ††	49	0.6

† Includes buses, motorcycles, trains, planes, and boats.

†† Other methods include blunt instruments, fire/burns, explosives, electrocution, flare gun, and other or unknown causes of death.

Circumstances of Suicide Victims

The AZ-VDRS collects information regarding the circumstances and conditions surrounding all violent death events, with some specific variations for different manners of death (e.g., history of suicide-related events collected for suicides but not homicides). Exhibit 14 presents our findings on the frequency of circumstances experienced by decedents across five major dimensions: mental health, substance abuse and other addictions, interpersonal problems, life stressors, and prior suicide events.

Nearly two-thirds of suicide victims (63.7%; n=4,885) had at least one indicator of some form of mental health problem (e.g., current mental health diagnosis, current depressed mood, and current or past mental health or substance abuse treatment). It should be noted that only about one-third (34.8%; n=2,667) of suicide victims were identified as having a current depressed mood. About one-third (32.1%; n=2,458) of victims had at least one substance abuse or other addiction problem, with 18.8% (n=1,445) noted as having an alcohol problem and 18.8% (n=1,439) as having some other substance abuse problem.

More than four in 10 victims (41.0%; n=3,146) had some type of interpersonal problem circumstance that contributed to their suicide. More than one-quarter (27.0%; n=2,069) of victims reported having intimate partner problems at the time of their suicide.

Forty-six percent (n=3,527) of victims had at least one life stressor circumstance that contributed to their suicide. The single most common life stressor circumstance was a physical health problem, with nearly one-fourth (23.8%; n=1,826) of suicide victims having a physical health problem as a contributing circumstance in their death.

Six in 10 (59.6%; n=4,572) victims had at least one precipitating circumstance prior to the suicide. Less than one-fourth (23.1%; n=1,769) had a history of suicide attempts, and three in 10 (29.5%; n=2,259) had disclosed suicidal intentions to someone shortly before their suicide.

**Exhibit 14: Circumstance characteristics of suicide victims in Arizona by year, 2015–2020
(n=7,667)**

Circumstances	Total (n=7,667)	
	# of Victims	%
<i>Mental health</i>		
Current diagnosed mental health problem	3576	46.6
Current depressed mood	2667	34.8
Current mental health/substance abuse treatment	1747	22.8
Ever treated for mental health or substance abuse problem	2388	31.1
Any mental health problem	4885	63.7
<i>Substance abuse and other addiction</i>		
Alcohol problem	1445	18.8
Substance abuse problem	1439	18.8
Other addiction (e.g., gambling, sexual)	53	0.7
Any substance abuse problem	2458	32.1
<i>Interpersonal</i>		
Family relationship problem	675	8.8
Intimate partner problem	2069	27.0
Other relationship problem	153	2.0
Perpetrator of interpersonal violence in past month	189	2.5
Victim of interpersonal violence in past month	32	0.4
Suicide of friend/family in past 5 years	151	2.0
Other death of friend/family	505	6.6
Any interpersonal problem	3146	41.0
<i>Life stressors</i>		
Physical health problem	1826	23.8
Job problem	714	9.3
Recent criminal-related legal problem	556	7.3
Other legal problems	257	3.4
Financial problem	715	9.3
School problem	103	1.3
Eviction or loss of home	275	3.6
Any life stressor	3527	46.0
<i>Suicide event</i>		
History of suicide attempts	1769	23.1
Disclosed intent to complete suicide	2259	29.5
History of suicidal thoughts	3862	50.4
Any indication of suicide	4572	59.6

Toxicology of Suicide Victims

The AZ-VDRS collects information on toxicology results conducted by the medical examiner's office. Of the 7,667 suicide victims from 2015–2020, 5,037 underwent toxicology testing for at least one substance, of which 68.8% (n=3,461) tested positive for at least one drug, as noted in Exhibit 15. The results indicated that of the 4,946 victims tested for alcohol, 36.5 percent (n=1,803) tested positive at the time of death. Additionally, of the 4,914 victims who were tested for amphetamines, 11.7 percent (n=576) tested positive. Of the 1,704 victims tested for antidepressants, 35.2 percent (n=599) tested positive, and of the 4,796 tested for cocaine, 3.5 percent (n=166) tested positive. About one in five (20.6%; n=526) of the 2,552 victims tested for marijuana tested positive, and almost as many (18.7%; n=924) of the 4,930 victims tested for opiates tested positive. Finally, 1,471 victims were tested for using other substances at death (e.g., antipsychotics, carbon monoxide, barbiturates, and benzodiazepines), and 79.9 percent (n=1,175) tested positive.

Exhibit 15: Toxicology results of suicide victims, 2015-2020 (N=5,037)

Substance	Total victims tested	# testing positive	% testing positive among tested
Any †	5037	3451	68.5
Alcohol	4946	1803	36.5
Amphetamine	4914	576	11.7
Antidepressant	1704	599	35.2
Cocaine	4796	166	3.5
Marijuana	2552	526	20.6
Opiates	4930	924	18.7
Other substances ††	1471	1175	79.9

† "Any" applies only to those substances listed in this table, including the other substances category, but is not exhaustive of all possible intoxicants/poisons.

†† Other substances include antipsychotics, carbon monoxide, barbiturates, and benzodiazepines.

Conclusion and Summary

Suicide is one of the most tragic forms of violence to strike a community. This report aimed to provide a general description of the scope and nature of the suicide problem in Arizona. This report relied on data provided through death certificates, law enforcement, and medical examiner reports collected on deaths from January 1, 2015, through December 31, 2020. Below are some of our significant findings:

- There were 8,129 suicide victims in Arizona over the study period, for a statewide suicide rate of 19.7 per 100,000 population.
- Yavapai (33.5), Mohave (32.2), Gila (27.8), and Navajo (24.1) County residents were at the greatest risk for suicide, as determined by the rate of suicides per 100,000 population.
- The majority of suicides in Arizona took place in a house or apartment (73.0%).
- Almost three in five suicides in Arizona from 2015–2020 used a firearm (58.9%).
- About 64 percent (n=4,885) of victims had at least one indication of a mental health problem.
- About one in three (32.1%; n=2,458) victims had at least one substance abuse or other addiction problem.
- More than two in five (41.0%; n=3,527) victims had at least one interpersonal problem.
- Additionally, 46.0% (n=3,527) of victims had at least one life stressor.
- About three in five (59.6%; n=4,572) victims had at least one indication of suicidality prior to their suicide.
- About 36 percent of tested victims were positive for alcohol at the time of death, 35.2 percent tested positive for antidepressants, 20.6 percent for marijuana, 18.7 percent for opiates, and 11.7 percent for amphetamines.

Appendix A:

Table A1: Number, percent, and rate of suicide victims for sex, age group, and race/ethnicity by year, 2015–2020 (n=7,667)																						
		2015 (n=1,178)			2016 (n=1,197)			2017 (n=1,257)			2018 (n=1,376)			2019 (n=1,361)			2020 (n=1,298)			Total (n=7,667)		
		n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate
<i>Sex</i>																						
Male		883	75.0	26.8	928	77.5	27.8	952	75.7	28.1	1094	79.5	31.7	1054	77.4	30.1	1029	79.3	28.9	5940	77.5	28.9
Female		295	25.0	8.8	269	22.5	7.9	305	24.3	8.9	282	20.5	8.1	307	22.6	8.7	269	20.7	7.5	1727	22.5	8.4
Total		1178	100.0	17.7	1197	100.0	17.8	1257	100.0	18.5	1376	100.0	19.8	1361	100.0	19.3	1298	100.0	18.1	7667	100.0	18.5
<i>Age</i>																						
0–14		9	0.8	0.7	7	0.6	0.5	15	1.2	1.1	16	1.2	1.2	16	1.2	1.2	16	1.2	1.2	79	1.0	1.0
15–24		139	11.8	14.9	134	11.2	14.2	154	12.3	13.0	177	12.9	14.8	146	10.7	12.2	172	13.3	14.2	922	12.0	13.8
25–34		197	16.7	22.2	191	16.0	21.2	223	17.7	24.3	217	15.8	22.9	234	17.2	24.4	236	18.2	23.8	1298	16.9	23.2
35–44		167	14.2	20.0	156	13.0	18.7	169	13.4	20.1	193	14.0	22.6	187	13.7	21.6	182	14.0	20.6	1054	13.7	20.6
45–54		217	18.4	25.8	223	18.6	26.5	189	15.0	22.5	218	15.8	25.8	224	16.5	26.4	187	14.4	22.0	1258	16.4	24.8
55–64		209	17.7	26.8	207	17.3	26.0	217	17.3	26.8	226	16.4	27.3	218	16.0	25.7	210	16.2	24.3	1287	16.8	26.1
65–74		131	11.1	22.2	154	12.9	24.8	145	11.5	22.5	185	13.4	27.4	151	11.1	21.6	130	10.0	17.8	896	11.7	22.6
75+		109	9.3	25.3	125	10.4	27.8	145	11.5	31.4	144	10.5	29.7	185	13.6	36.5	165	12.7	31.0	873	11.4	30.5
Mean (SD)		49.2 (18.32)			50.1 (18.74)			49.6 (19.22)			49.7 (18.98)			50.3 (19.66)			49.0 (19.76)			49.7 (19.14)		
<i>Race</i>																						
White, non-Hispanic†		952	80.8	25.4	911	76.1	24.1	957	76.1	25.3	1050	76.3	27.4	1020	74.9	26.4	969	74.7	25.0	5859	76.1	25.6
Black†		25	2.1	8.9	35	2.9	12.2	36	2.9	12.3	52	3.8	17.0	45	3.3	14.2	49	3.8	15.1	242	3.1	13.4
Native American†		30	2.5	10.2	43	3.6	14.5	46	3.7	15.3	61	4.4	19.7	57	4.2	18.0	56	4.3	18.0	293	3.8	16.0
Hispanic or Latinx		135	11.5	9.3	172	14.4	11.8	184	14.6	12.3	188	13.7	12.2	214	15.7	13.5	207	15.9	14.7	1100	14.3	12.3
Other*		36	3.1	4.2	36	3.0	4.0	34	2.7	3.6	25	1.8	2.6	25	1.8	2.6	17	1.3	1.4	173	2.2	2.9

† Non-Hispanic/Latinx; * Includes Asian, Native Hawaiian, Pacific Islander, Multi-race, Other, and Unspecified

Table A2: Suicide rates by county of injury and year, 2015-2020 (n=7,667)

County	2015 (n=1,178)			2016 (n=1,197)			2017 (n=1,257)			2018 (n=1,376)			2019 (n=1,361)			2020 (n=1,298)			Total (n=7,667)		
	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate
Apache	≤5	≤0.4	≤6.9	9	0.8	12.4	≤5	≤0.4	≤7.0	≤5	≤0.4	≤7.0	0	0.0	0.0	12	0.9	16.7	≤36	≤0.5	≤8.4
Cochise	25	2.1	19.3	27	2.3	21.1	35	2.8	27.7	20	1.5	15.8	36	2.6	28.6	33	2.5	26.1	176	2.3	23.1
Coconino	43	3.7	31.5	34	2.8	24.6	42	3.3	30.3	44	3.2	31.4	41	3.0	29.0	45	3.5	31.6	249	3.2	29.7
Gila	7	0.6	13.2	11	0.9	20.7	13	1.0	24.5	26	1.9	48.7	14	1.0	26.1	21	1.6	39.0	92	1.2	28.7
Graham	≤5	≤0.4	≤13.4	≤5	≤0.4	≤13.3	≤5	≤0.4	≤13.3	0	0.0	0.0	0	0.0	0.0	≤5	≤0.4	≤13.1	≤20	≤0.3	≤8.8
Greenlee	0	0.0	0.0	≤5	≤0.4	≤54.2	≤5	≤0.4	≤53.4	≤5	≤0.4	≤53.4	≤5	≤0.4	≤52.5	≤5	≤0.4	≤52.8	≤25	≤0.3	≤44.6
La Paz	≤5	≤0.4	≤24.6	≤5	≤0.4	≤24.6	≤5	≤0.4	≤24.4	7	0.5	33.8	≤5	≤0.4	≤24.0	≤5	≤0.4	≤23.8	≤32	≤0.4	≤25.9
Maricopa	643	54.6	16.0	672	56.1	16.4	660	52.5	15.9	719	52.3	16.9	709	52.1	16.4	680	52.4	15.4	4083	53.3	16.2
Mohave	68	5.8	33.4	68	5.7	33.4	72	5.7	35.2	86	6.3	41.7	65	4.8	31.3	72	5.5	34.1	431	5.6	34.9
Navajo	19	1.6	17.6	24	2.0	22.2	31	2.5	28.7	34	2.5	31.3	23	1.7	21.0	34	2.6	30.8	165	2.2	25.3
Pima	203	17.2	20.3	173	14.5	17.2	211	16.8	20.9	209	15.2	20.5	244	17.9	23.8	211	16.3	20.3	1251	16.3	20.5
Pinal	66	5.6	16.9	66	5.5	16.6	70	5.6	17.3	87	6.3	20.7	78	5.7	18.0	76	5.9	17.0	443	5.8	17.8
Santa Cruz	≤5	≤0.4	≤10.6	7	0.6	15.0	≤5	≤0.4	≤10.8	7	0.5	15.0	6	0.4	12.9	≤5	≤0.4	≤10.7	≤35	≤0.5	≤12.5
Yavapai	49	4.2	22.7	67	5.6	30.7	80	6.4	36.2	84	6.1	37.4	104	7.6	45.6	76	5.9	32.7	460	6.0	34.3
Yuma	36	3.1	17.7	29	2.4	14.3	21	1.7	10.3	35	2.5	16.8	35	2.6	16.7	24	1.8	11.3	180	2.3	14.5
Unknown	<5	<0.4	--	≤5	≤0.4	--	7	0.6	--	9	0.7	--	≤5	≤0.4	--	≤5	≤0.4	--	≤36	≤0.5	--
Arizona	1178	100.0	17.7	1197	100.0	17.8	1257	100.0	18.5	1376	100.0	19.8	1361	100.0	19.3	1298	100.0	18.1	7667	100.0	18.5

Table A3: Suicide rates by county of residence and year, 2015-2020 (n=7,667)

County	2015 (n=1,178)			2016 (n=1,197)			2017 (n=1,257)			2018 (n=1,376)			2019 (n=1,361)			2020 (n=1,298)			Total (n=7,667)		
	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate	n	%	rate
Apache	≤5	≤0.4	≤6.9	≤5	≤0.4	≤6.9	7	0.6	9.8	8	0.6	11.2	≤5	≤0.4	≤6.9	11	0.8	15.3	≤41	≤0.5	≤9.5
Cochise	25	2.1	19.3	26	2.2	20.3	35	2.8	27.7	21	1.5	16.6	33	2.4	26.2	30	2.3	23.7	170	2.2	22.3
Coconino	28	2.4	20.5	18	1.5	13.0	34	2.7	24.5	35	2.5	25.0	32	2.4	22.7	31	2.4	21.8	178	2.3	21.3
Gila	8	0.7	15.0	11	0.9	20.7	14	1.1	26.3	25	1.8	46.8	13	1.0	24.3	18	1.4	33.4	89	1.2	27.8
Graham	≤5	≤0.4	≤13.4	6	0.5	16.0	≤5	≤0.4	≤13.3	≤5	≤0.4	≤13.2	0	0.0	0.0	≤5	≤0.4	≤13.1	≤26	≤0.3	≤11.5
Greenlee	0	0.0	0.0	≤5	≤0.4	≤54.2	≤5	≤0.4	≤53.4	≤5	≤0.4	≤52.6	≤5	≤0.4	≤52.5	≤5	≤0.4	≤52.8	≤25	≤0.3	≤44.6
La Paz	≤5	≤0.4	≤24.6	≤5	≤0.4	≤24.6	≤5	≤0.4	≤24.4	≤5	≤0.4	≤24.2	≤5	≤0.4	≤24.0	≤5	≤0.4	≤23.8	≤30	≤0.4	≤24.3
Maricopa	639	54.2	15.9	664	55.5	16.2	641	51.0	15.4	706	51.3	16.6	707	51.9	16.3	668	51.5	15.1	4025	52.5	15.9
Mohave	64	5.4	31.5	62	5.2	30.4	65	5.2	31.8	75	5.5	36.4	66	4.8	31.8	66	5.1	31.3	398	5.2	32.2
Navajo	15	1.3	13.9	24	2.0	22.2	31	2.5	28.7	34	2.5	31.3	22	1.6	20.1	31	2.4	28.1	157	2.0	24.1
Pima	196	16.6	19.6	172	14.4	17.1	208	16.5	20.7	207	15.0	20.3	239	17.6	23.3	210	16.2	20.2	1232	16.1	20.2
Pinal	59	5.0	15.1	62	5.2	15.6	62	4.9	15.3	88	6.4	21.0	74	5.4	17.1	68	5.2	15.2	413	5.4	16.6
Santa Cruz	≤5	≤0.4	≤10.6	≤5	≤0.4	≤10.7	≤5	≤0.4	≤10.8	7	0.5	15.0	≤5	≤0.4	≤10.8	≤5	≤0.4	≤10.7	≤32	≤0.4	≤11.4
Yavapai	52	4.4	24.1	73	6.1	33.4	76	6.0	34.4	76	5.5	33.8	96	7.1	42.1	76	5.9	32.7	449	5.9	33.5
Yuma	33	2.8	16.3	25	2.1	12.3	20	1.6	9.8	33	2.4	15.9	29	2.1	13.8	20	1.5	9.4	160	2.1	12.9
Unknown	46	3.9	--	41	3.4	--	53	4.2	--	53	3.9	--	42	3.1	--	57	4.4	--	292	3.8	--
Arizona	1178	100.0	17.7	1197	100.0	17.8	1257	100.0	18.5	1376	100.0	19.8	1361	100.0	19.3	1298	100.0	18.1	7667	100.0	18.5

Table A4: Suicides in Arizona by month of pronounced death, 2015–2020 (n=7,667)

Month	2015 (n=1,178)		2016 (n=1,197)		2017 (n=1,257)		2018 (n=1,376)		2019 (n=1,361)		2020 (n=1,298)		Total (n=7,667)	
	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%
January	100	8.5	109	9.1	82	6.5	110	8.0	128	9.4	109	8.4	638	8.3
February	93	7.9	91	7.6	94	7.5	95	6.9	92	6.8	92	7.1	557	7.3
March	116	9.8	119	9.9	100	8.0	102	7.4	123	9.0	124	9.6	684	8.9
April	89	7.6	97	8.1	95	7.6	106	7.7	121	8.9	96	7.4	604	7.9
May	105	8.9	87	7.3	124	9.9	104	7.6	119	8.7	96	7.4	635	8.3
June	80	6.8	94	7.9	104	8.3	138	10.0	119	8.7	97	7.5	632	8.2
July	93	7.9	106	8.9	106	8.4	121	8.8	115	8.4	111	8.6	652	8.5
August	113	9.6	78	6.5	108	8.6	118	8.6	104	7.6	122	9.4	643	8.4
September	91	7.7	84	7.0	115	9.1	130	9.4	102	7.5	107	8.2	629	8.2
October	93	7.9	107	8.9	95	7.6	113	8.2	92	6.8	107	8.2	607	7.9
November	86	7.3	88	7.4	101	8.0	97	7.0	105	7.7	87	6.7	564	7.4
December	91	7.7	79	6.6	96	7.6	104	7.6	78	5.7	86	6.6	534	7.0

Note: There were 379 cases (4.7%) that did not have a known date of death sufficient to determine the month of death.

Table A5: Suicide victims by method of death and year, 2015-2020 (N=7,667)

<i>Method of death</i>	2015 (n=1,178)		2016 (n=1,197)		2017 (n=1,257)		2018 (n=1,376)		2019 (n=1,361)		2020 (n=1,298)		Total (n=7,667)	
	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>	<i># of Victims</i>	<i>%</i>
Firearm	650	55.2	726	60.7	762	60.6	788	57.3	778	57.2	811	62.5	4515	58.9
Sharp instrument	20	1.7	16	1.3	19	1.5	19	1.4	28	2.1	22	1.7	124	1.6
Poisoning	193	16.4	158	13.2	157	12.5	179	13.0	173	12.7	131	10.1	991	12.9
Hanging, strangulation, suffocation	270	22.9	257	21.5	265	21.1	343	24.9	330	24.2	283	21.8	1748	22.8
Fall	13	1.1	15	1.3	19	1.5	19	1.4	25	1.8	25	1.9	116	1.5
Drowning	6	0.5	≤5	≤0.4	6	0.5	7	0.5	8	0.6	≤5	≤0.4	≤37	≤0.5
Motor vehicles or other transport †	13	1.1	16	1.3	24	1.9	12	0.9	11	0.8	13	1.0	89	1.2
Other or Unknown ††	13	1.1	6	0.5	5	0.4	9	0.7	8	0.6	8	0.6	49	0.6

† Includes buses, motorcycles, trains, planes, and boats.

†† Other methods include blunt instruments, fire/burns, explosives, electrocution, flare gun, and other or unknown causes of death.

Table A6: Circumstance characteristics of suicide victims in Arizona by year, 2015-2020 (n=7,667)

Circumstances	2015 (n=1,178)		2016 (n=1,197)		2017 (n=1,257)		2018 (n=1,376)		2019 (n=1,361)		2020 (n=1,298)		Total (n=7,667)	
	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%	# of Victims	%
Mental health														
Current diagnosed mental health problem	547	46.4	504	42.1	592	47.1	688	50.0	687	50.5	558	43.0	3576	46.6
Current depressed mood	568	48.2	417	34.8	406	32.3	473	34.4	394	28.9	409	31.5	2667	34.8
Current mental health/substance abuse treatment	231	19.6	238	19.9	289	23.0	398	28.9	311	22.9	280	21.6	1747	22.8
Ever treated for mental health or substance abuse problem	321	27.2	322	26.9	391	31.1	523	38.0	433	31.8	398	30.7	2388	31.1
Any mental health problem	802	68.1	714	59.6	795	63.2	905	65.8	873	64.1	796	61.3	4885	63.7
Substance abuse, and Other addiction														
Alcohol problem	217	18.4	216	18.0	227	18.1	281	20.4	266	19.5	238	18.3	1445	18.8
Substance abuse problem	221	18.8	218	18.2	227	18.1	265	19.3	258	19.0	250	19.3	1439	18.8
Other addiction (e.g., gambling, sexual)	13	1.1	≤5	≤0.4	6	0.5	10	0.7	9	0.7	10	0.8	≤53	≤0.7
Any substance abuse problem	382	32.4	356	29.7	391	31.1	462	33.6	444	32.6	423	32.6	2458	32.1
Interpersonal														
Family relationship problem	116	9.8	92	7.7	127	10.1	147	10.7	82	6.0	111	8.6	675	8.8
Intimate partner problem	293	24.9	279	23.3	342	27.2	417	30.3	383	28.1	355	27.3	2069	27.0
Other relationship problem	29	2.5	19	1.6	22	1.8	36	2.6	17	1.2	30	2.3	153	2.0
Perpetrator of interpersonal violence in past month	29	2.5	26	2.2	38	3.0	48	3.5	16	1.2	32	2.5	189	2.5
Victim of interpersonal violence in past month	7	0.6	7	0.6	≤5	≤0.4	7	0.5	≤5	≤0.4	≤5	≤0.4	≤36	≤0.5
Suicide of friend/family in past 5 years	21	1.8	20	1.7	26	2.1	36	2.6	19	1.4	29	2.2	151	2.0
Other Death of friend/family	69	5.9	58	4.8	80	6.4	123	8.9	79	5.8	96	7.4	505	6.6
Any interpersonal problem	473	40.2	424	35.4	532	42.3	645	46.9	522	38.4	550	42.4	3146	41.0
Life Stressors														
Physical health problem	363	30.8	297	24.8	292	23.2	291	21.1	333	24.5	250	19.3	1826	23.8
Job problem	135	11.5	121	10.1	100	8.0	133	9.7	108	7.9	117	9.0	714	9.3
Recent criminal related legal problem	77	6.5	86	7.2	90	7.2	104	7.6	96	7.1	103	7.9	556	7.3
Other legal problems	29	2.5	24	2.0	26	2.1	72	5.2	76	5.6	30	2.3	257	3.4
Financial problem	135	11.5	107	8.9	104	8.3	141	10.2	128	9.4	100	7.7	715	9.3
School problem	17	1.4	14	1.2	14	1.1	29	2.1	22	1.6	7	0.5	103	1.3
Eviction or loss of home	51	4.3	51	4.3	38	3.0	56	4.1	42	3.1	37	2.9	275	3.6
Any life stressor	620	52.6	564	47.1	547	43.5	641	46.6	634	46.6	521	40.1	3527	46.0
Suicide Event														
History of suicide attempts	276	23.4	259	21.6	310	24.7	333	24.2	320	23.5	271	20.9	1769	23.1
Disclosed intent to complete suicide	380	32.3	346	28.9	386	30.7	416	30.2	369	27.1	362	27.9	2259	29.5
History of suicidal thoughts	486	41.3	536	44.8	696	55.4	758	55.1	707	51.9	679	52.3	3862	50.4
Any indication of suicide	710	60.3	700	58.5	769	61.2	827	60.1	805	59.1	761	58.6	4572	59.6

Table A7: Toxicology results of suicide victims, 2015-2020 (N=5,037)

Substance	2015 (n=1,178)			2016 (n=1,197)			2017 (n=1,257)			2018 (n=1,376)			2019 (n=1,361)			2020 (n=1,298)			Total (n=7,667)		
	# tested	# positive	% positive	# tested	# positive	% positive	# tested	# positive	% positive	# tested	# positive	% positive	# tested	# positive	% positive	# tested	# positive	% positive	# tested	# positive	% positive
Any	733	528	72.0	709	477	67.3	815	564	69.2	937	612	65.3	939	674	71.8	904	606	67.0	5037	3461	68.7
Alcohol	720	279	38.8	699	255	36.5	806	288	35.7	929	332	35.7	905	346	38.2	887	303	34.2	4946	1803	36.5
Amphetamine	712	75	10.5	694	60	8.6	802	102	12.7	927	108	11.7	894	107	12.0	885	124	14.0	4914	576	11.7
Antidepressant	367	127	34.6	382	102	26.7	316	111	35.1	192	111	57.8	246	82	33.3	201	66	32.8	1704	599	35.2
Cocaine	706	15	2.1	677	26	3.8	785	24	3.1	928	41	4.4	883	28	3.2	817	32	3.9	4796	166	3.5
Marijuana	212	35	16.5	169	24	14.2	223	43	19.3	238	47	19.7	821	186	22.7	889	191	21.5	2552	526	20.6
Opiates	720	142	19.7	694	130	18.7	801	169	21.1	929	163	17.5	901	170	18.9	885	150	16.9	4930	924	18.7
Other substances*	271	249	91.9	222	184	82.9	257	218	84.8	251	219	87.3	216	176	81.5	254	129	50.8	1471	1175	79.9

*Other substances include antipsychotics, carbon monoxide, barbiturates, and benzodiazepines.