

Arizona Violent Death Reporting System: Annual Suicide Report 2016



By the
Center for Violence Prevention & Community Safety
Arizona State University



About the Center for Violence Prevention and Community Safety

In order 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 who we include; our pursuit of research that considers the public good; and 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 of 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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Apache County Medical Examiner's Office
Coconino County Medical Examiner's Office
Gila Messinger Mortuary
Maricopa County Medical Examiner's Office
Mohave County Medical Examiner's Office
Navajo County Medical Examiner's Office
New Mexico Office of the Medical Examiner
Pima County Medical Examiner's Office
Pinal County Medical Examiner's Office
Yavapai County Medical Examiner's Office
Yuma County Medical Examiner's Office

Apache Junction Police Department
Avondale Police Department
Buckeye Police Department
Casa Grande Police Department
Chandler Police Department
Chino Valley Police Department
Douglas Police Department
El Mirage Police Department
Flagstaff Police Department
Gilbert Police Department
Glendale Police Department
Kingman Police Department
Lake Havasu City Police Department

Marana Police Department
Maricopa Police Department
Mesa Police Department
Oro Valley Police Department
Paradise Valley Police Department
Peoria Police Department
Phoenix Police Department
Prescott Police Department
Prescott Valley Police Department
Safford Police Department
Sahuarita Police Department
Scottsdale Police Department
Sedona Police Department
Show Low Police Department
Sierra Vista Police Department
St. Johns Police Department
Surprise Police Department
Tempe Police Department
Tucson Police Department

Coconino County Sheriff Office
Maricopa County Sheriff Office
Pima County Sheriff Office
Yuma County Sheriff Office

ADHS, Bureau of Vital Records

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INTRODUCTION

The National Violent Death Reporting System (NVDRS) is a state-based surveillance tool to improve our understanding of violent deaths. 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. Currently, all 50 states, plus Puerto Rico and the District of Columbia participate in the National Violent Death Reporting System (NVDRS). NVDRS is a national state-based surveillance system for violent deaths developed by the Centers for Disease Control and Prevention (CDC).

Arizona began its partnership in the surveillance system with the collection of 2015 violent death data. Through the mechanisms of 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 these efforts of reducing suicides in Arizona. Understanding the scope and nature of the suicide problem at state and local levels in order to inform local and state authorities, policymakers and other stakeholders to assist in determining resource allocation and finding more effective or efficient strategies to respond to suicide. This report presents findings from the AZ-VDRS, which is sponsored by the Centers for Disease Control and Prevention (CDC) and describes suicide patterns and trends in Arizona in calendar year 2016.

DATA AND METHODS

Data presented in this report are from the Arizona Violent Death Reporting System (AZ-VDRS), from January 1, 2016 through December 31, 2016. The violent death data are collected from three sources and are used to populate an aggregated, anonymous database. The three sources include death certificates, medical examiner reports, and law enforcement reports. AZ-VDRS contain data on victim/suspect demographics and specific circumstances about 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 begins 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 manner of suicide, homicide, legal intervention, unintentional firearm injuries, and deaths of undetermined intent, on a monthly basis. Requests are then made to the responsible medical examiner for investigation and toxicology reports, and to the relevant law enforcement jurisdiction for all incident and investigation reports, for each decedent. This report uses data gathered on all occurrent suicide decedents in the AZ-VDRS database with a date of death from January 1, 2016 through December 31, 2016. Most analyses are presented using rates. Rates for this report were calculated using incidence counts per 100,000 population, as estimated by the U.S. Census Bureau, specifically its 2016 American Community Survey 5-Year Estimates¹.

¹ <https://www.census.gov/programs-surveys/acs/>

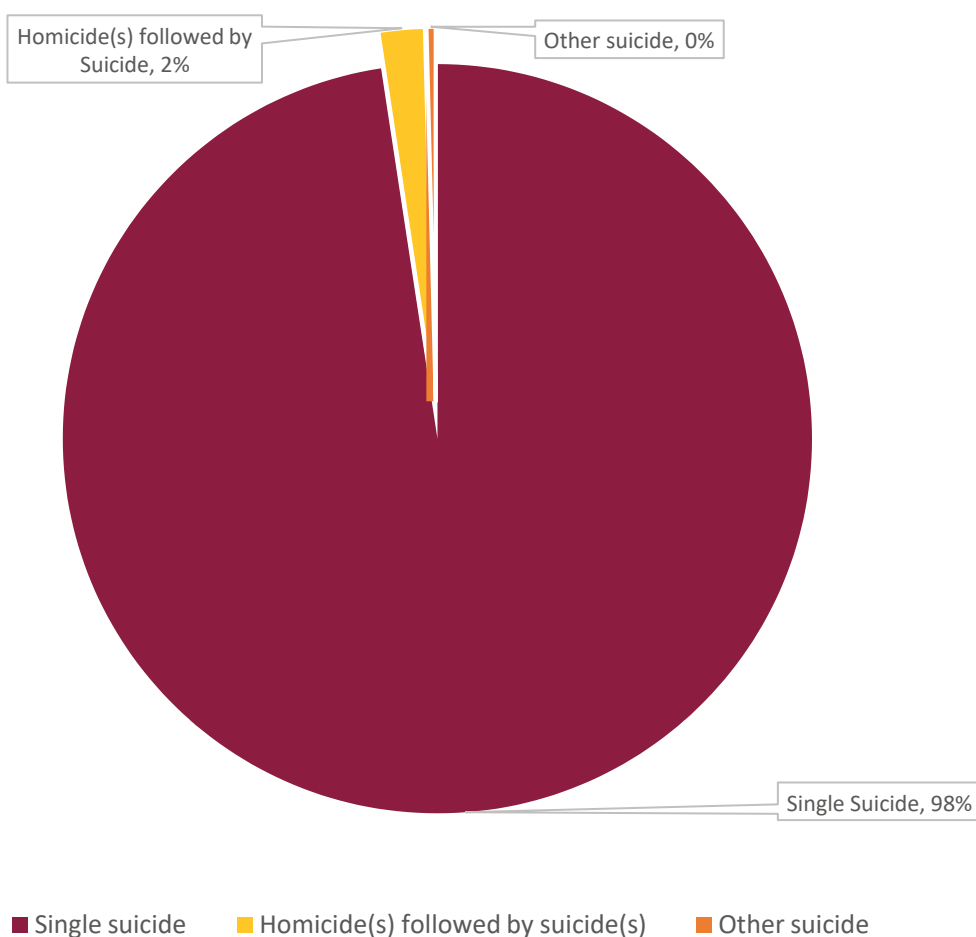
FINDINGS

Suicides in Arizona, 2016

In 2016, there were a total of 1,265 suicide victims in Arizona, for a statewide suicide rate of 18.8 per 100,000 population.

There were 1,235 victims of a single suicide (97.6%), 25 victims of suicide, which were preceded by a homicide, and 5 victims who were involved in another form of suicide (0.4%). Other suicides included 4 victims of multiple suicide and 1 victim of a suicide that could not be determined if it was a single suicide or part of a multiple suicide. See Exhibit 1 for visual representation.

Exhibit 1: Suicide Incidents in Arizona by Type, 2016 (n=1,265)



Basic Demographics of Suicide Victims in Arizona, 2016

We present the sex, race/ethnicity and ages of suicide victims in Exhibits 2 thru 6 below. Males represented more than three-fourths of suicide decedents. Males committed suicide more than three times the rate (29.45 suicides per 100,000 population) of females (8.27 per 100,000).

White, non-Hispanic Arizonans had the highest suicide rate at almost 25 per 100,000, compared to American Indians at 21.4 per 100,000 population. Black's at 12.6 per 100,000 population, and Hispanics at 8.8 per 100,000 population.

Exhibit 2: Rate of Suicide Victims by Sex and Race, 2016

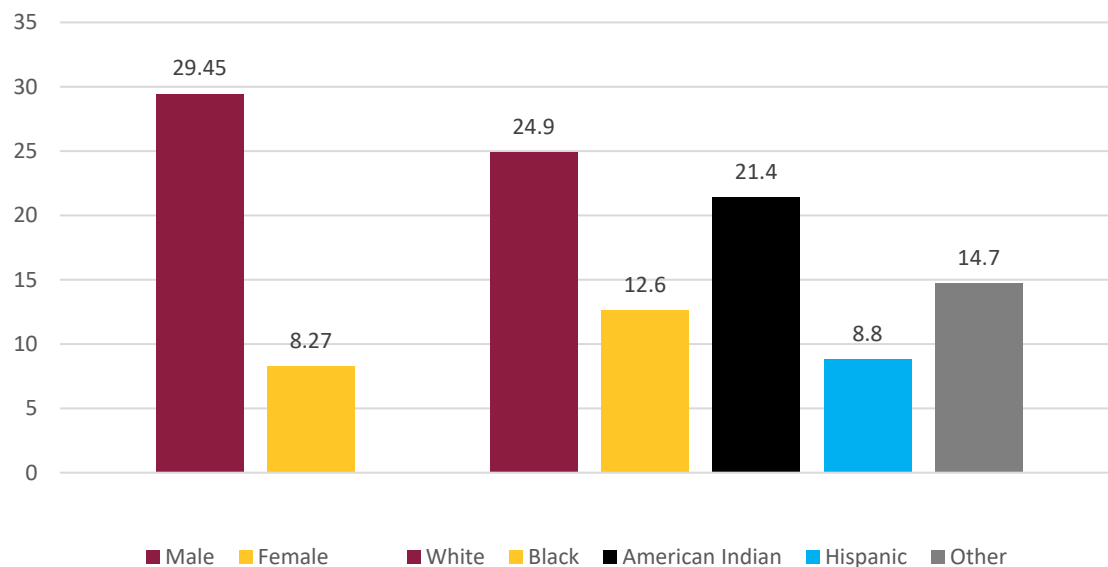


Exhibit 3: Race/Ethnicity by Sex of Suicide Victim, 2016 (N=1,265)

	n	%	Rate
Sex			
Male	985	77.9	29.45
Female	280	22.1	8.27
Race/Ethnicity			
White †	941	74.4	24.9
Black †	34	2.7	12.6
American Indian †	57	4.5	21.4
Hispanic	180	14.2	8.8
Other *	53	4.2	14.7

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

Analyses of the age of suicide decedents from age 10 years old and up is presented in Exhibits 4 and 5. The exhibit shows that age is strongly related to suicide rates. Specifically, suicide rates increased until ages 25 through 34, then slightly decreased during ages 35 through 44, then increased again through age 75 and older. Those 75 and older had the highest rates of suicide, with a suicide rate of 30.05 per 100,000 population.

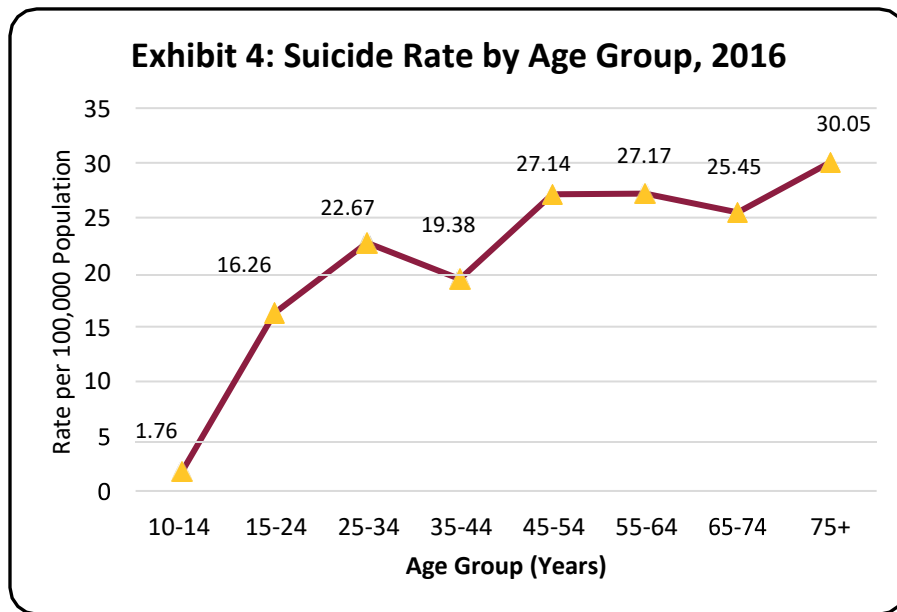
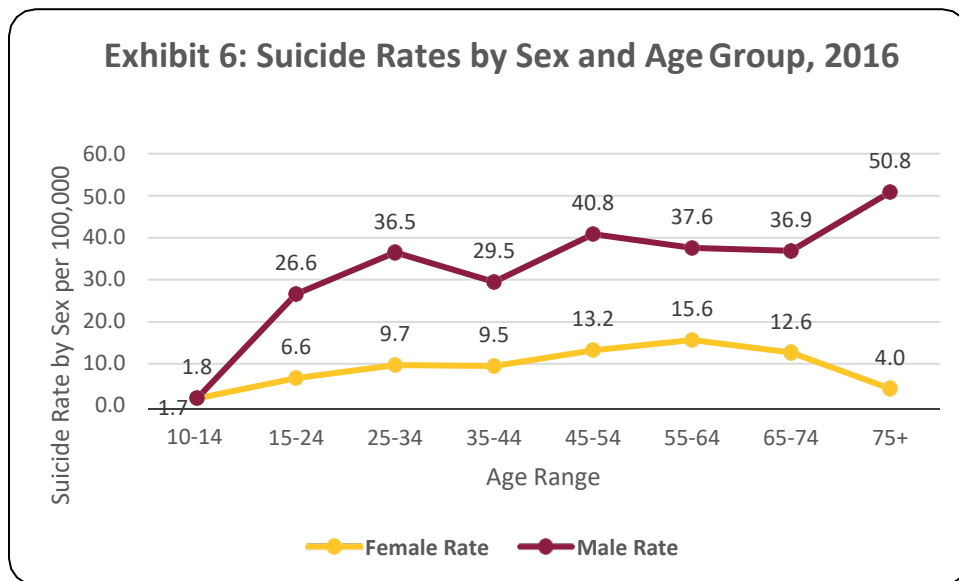


Exhibit 5: Suicide Rate by Age Group, 2016 (n=1,265)

Age Group	n	%	Rate
10-14	8	6.3	1.8
15-24	153	12.1	16.3
25-34	204	16.1	22.7
35-44	162	12.8	19.4
45-54	228	18.0	27.1
55-64	216	17.1	27.2
65-74	158	12.5	25.5
75+	135	10.7	30.1

We present our findings that examine suicide rates by age and sex in exhibit 6. Up through the age of 14 there is little difference between male and female suicide rates. Among 15-24 year-olds and 25 to 34 year olds, males in Arizona committed suicide almost four times the rate of females. We found that men aged 75 and older had the highest suicide rate at 50.8 per 100,000 population, compared to 4.0 per 100,000 population for women the same age.

The age range in which women were the most likely to commit suicide was age 55 to 64, where 15.6 per 100,000 population were the victim of suicide. However, males of the same age still had substantially higher rates of suicide, with 37.6 per 100,000 population committing suicide.



Extended Adult Demographics

In exhibit 7, we further examined educational attainment, current marital status and veteran status of all suicide decedents (n=1,265).² About thirty-four percent of suicide victims had only a high school degree or the GED equivalent, and 48.0% had at least some college credit (i.e. associate, bachelor, master, or doctorate) and about one-tenth of suicide victims had a bachelor's degree. Collectively, 82.4% (n=1,042) of suicide victims had attained a high school degree (or GED) or greater.

Less than a third of suicide victims were married and living with their spouse (29.4%; n=372), and more than a third had never been married (34.8%; n=440). Men who committed suicide were slightly more likely than women to have never been married, 36.8% (n=362) to 27.9% (n=78), respectively. A little more than one-fifth of Arizona suicide decedents in 2016 were reported to be veterans (22.6%, n=286). Comparatively, men who committed suicide were reported as veterans more than a quarter of the time (28.6%, n=276) and less than 1 in 10 women who committed suicide were reported as veterans (3.6%; n=10).

Exhibit 7: Completed Education, Marital Status and Veteran Status among Suicide Victims by Sex, 2016 (N=1,265)

	Males		Females		Total	
	N	%	N	%	N	%
Education Level						
<= 8th grade	39	4.0	8	2.9	47	3.7
9th - 12th grade	115	11.7	32	11.4	147	11.6
High school or GED grad	356	36.1	79	28.2	435	34.4
Some college credit	201	20.4	59	21.1	260	20.6
Associate	77	7.8	35	12.5	112	8.9
Bachelor	105	10.7	43	15.4	148	11.7
Master	44	4.5	10	3.6	54	4.3
Doctorate	23	2.3	10	3.6	33	2.6
Unknown	25	2.5	4	1.4	29	2.3
Marital Status						
Never Married	362	36.8	78	27.9	440	34.8
Married	286	29.0	86	30.7	372	29.4
Divorced	233	23.7	83	29.6	316	25.0
Married, but Separated	26	2.6	9	3.2	35	2.8
Widowed	61	6.2	22	7.9	83	6.6
Unknown	17	1.7	2	0.7	19	1.5
Veteran Status						
Non-Veteran	697	70.8	265	94.6	962	76.1
Veteran	276	28.6	10	3.6	286	22.6
Unknown	12	1.8	5	1.2	17	1.3

² Detailed population estimates were not available to compute population rates.

Method of Death

In 2016, firearms were the most common method of death, and were reported as used in more than half of all suicides (60.0%; n=759). Hanging, strangulation and suffocation were the second leading method, and accounted for about 1 in 4 of all suicides (22.7%; n=287). Poisoning was also a relatively common method of suicide (12.6%; n=159). All other causes accounted for the remaining 4.7% (n=60). See Exhibit 8.

Method	N	%
Firearm	759	60.0
Hanging, strangulation, suffocation	287	22.7
Poisoning	159	12.6
Fall	18	1.4
Sharp Instrument	16	1.3
Drowning	3	0.2
Fire or Burns	3	0.2
Other	20	1.6
Total	1265	100.0

Location of Suicides in Arizona, 2016

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

Exhibit 9 shows that the overwhelming majority of injury locations were a private residence, with more than 7 in 10 suicides occurring in a house or apartment (74.9%; n=947). Motor vehicles were also a relatively common location of injury (4.6%; n=58) for suicide. When we combined streets/roads, natural areas, parking lots and parks we found that 10.7% (n=135) of suicide victims were injured in outdoor, public spaces of some kind. Hotels/Motels and jails seldom serve as injury locations for suicide.

Location	N	%
House or Apartment	947	74.9
Motor vehicle (excluding school bus and public transportation)	58	4.6
Natural area (e.g., field, river, beaches, woods)	54	4.3
Street/road, sidewalk, alley	40	3.2
Hotel/motel	31	2.5
Parking lot/public parking garage	28	2.2
Jail, prison, detention facility	16	1.3
Park, playground, public use area	13	1.0
Other commercial establishment (e.g., grocery, retail store)	10	0.8
Highway, freeway	10	0.8
Other	59	4.7
Unknown	9	0.7
Total	1265	100.0

The “other” category for location type includes all of the below types of places.

- Supervised residential facility (e.g., shelter, halfway house, group home) (n=3)
- Abandoned house, building, or warehouse (n=2)
- Cemetery, graveyard, or other burial ground (n=2)
- Bridge (n=4)
- Public transportation or station (e.g. bus, train, plane, airport, depot, taxi)(n=2)
- Hospital or medical facility (n=4)
- Industrial or construction areas (e.g., factory, warehouse)(n=4)
- Office building (n=4)
- High school, including school dormitory, residential school (n=2)
- Railroad tracks (i.e., other than Public transportation or station)(n=6)
- Sports or athletic area (e.g. stadium, baseball field, gymnasium, recreationcenter) (n=3)
- College/University, including dormitory, fraternity/sorority (n=3)
- Synagogue, church, temple (n=2)

Circumstances of Suicide Victims

AZ-VDRS collects information about the circumstances and conditions surrounding all violent death events, with some specific variations for different manners of death (e.g. suicide event histories collected for suicides, not homicides). Exhibit 10 below presents our findings on the frequency of circumstances that surrounded decedents across five major dimensions: mental health; substance abuse and other addictions; interpersonal problems; life stressors; and prior suicide events.

In 2016, 96% of our 1,265 suicide cases contained circumstance data. Overall, 55.9 percent (n=707) of victims had at least one indication of a mental health problem, 27.8 percent (n=352) of victims had at least one substance abuse/addiction problem, and 33.2 percent (n=420) of victims had at least one interpersonal problem. Forty-four percent (44.0%; n=556) of victims had at least one life stressor and 54.8 percent (n=693) of victims had at least one indication of suicide prior to the suicide taking place.

Exhibit 10: Circumstances of Suicide Victims in Arizona, 2016*		
Mental Health		
Current Mental Health Problem	501	41.2
Current Depressed Mood	409	33.6
Ever Treated for Mental Illness or Substance Misuse	315	25.9
Current Treatment for Mental Illness or Substance Misuse	235	19.3
Any Mental Health Problem	707	55.9
Substance Abuse / Addiction		
Alcohol Problem	213	17.5
Other Substance Problem	214	17.6
Other Addiction (gambling, sexual, etc.)	6	0.5
Any Addiction Problem	352	27.8
Interpersonal		
Family Relationship Problem	92	7.6
Intimate Partner Problem	276	22.7
Other Relationship Problem	18	1.5
Perpetrator of Interpersonal Violence in Past Month	25	2.1
Victim of Interpersonal Violence in Past Month	7	0.6
Suicide of Friend/Family in Past 5 Years	20	1.6
Other Death of Friend/Family	56	4.6
Any Interpersonal Problem	420	33.2
Life Stressor		
Physical Health Problem	295	24.3
Job Problem	119	9.8
Recent Criminal Related Legal Problem	84	6.9
Other Legal Problems	22	1.8
Financial Problem	105	8.6
School Problem	14	1.2
Eviction or Loss of Home	47	3.9
Any Life Stressor	556	44.0
Suicide Event		
History of Suicide Attempts	255	21.0
Disclosed Intent to Complete Suicide	338	27.8
History of Suicidal Thoughts	528	43.4
Any Indication of Suicide	693	54.8

* Circumstances were available for 96.1 percent (n=1216) of all 2016 suicide victims.

Toxicology of Suicide Victims

AZ-VDRS collects information on toxicology results conducted by the medical examiner's office. Of the 1,265 suicide victims in 2016, 715 victims underwent toxicology testing and 487 victims tested positive for at least one drug, as noted in Exhibit 13. The results of the analysis indicated that of the 713 victims tested for alcohol, 36.3 percent (n=259) tested positive for alcohol at the time of death. Additionally, of the 707 victims who were tested for amphetamines, 8.6 percent (n=61) tested positive. Of the 391 victims tested for antidepressants, 26.1 percent (n=102) tested positive; and, of the 689 tested for cocaine, 3.8 percent (n=26) tested positive. About 15 percent (14.8%; n=26) of the 176 victims tested for marijuana tested positive; and about 18 percent (18.4%; n=130) of the 707 victims tested for opiates tested positive. Last, 710 victims were tested for the use of other substances at time of death (i.e. antipsychotics, carbon monoxide, barbiturates, and benzodiazepines) and 23.5 percent (n=167) tested positive.

Exhibit 13: Toxicology Results of Suicide Victims (n=715)

	Total victim's tested	# testing positive	% testing positive among tested
Any	715	487	68.1
Alcohol	713	259	36.3
Amphetamine	707	61	8.6
Antidepressant	391	102	26.1
Cocaine	689	26	3.8
Marijuana	176	26	14.8
Opiates	707	130	18.4
Other substances*	710	167	23.5

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

Conclusion and Summary

Suicide is one of the most a tragic forms of violence to strike a community. The purpose of this report is to provide a general description of the scope and nature of the suicide problem in Arizona. This report relies on data provided through death certificates, law enforcement and medical examiner reports, and thus, details rely on officially collected and reported information. Below are our major findings:

- In 2016, there were 1,265 suicide victims in Arizona, for a statewide suicide rate of 18.8 per 100,000 population.
- The majority of suicide victims were white males who were between the ages of 45 and 64. These suicide victims typically had a high school degree or above (82.4%), were never married (36.8%) and were non-Veterans (70.8%).
- A firearm was the most common weapon used for suicide in Arizona (60.0%).
- The majority of suicides in Arizona took place in a house or apartment (74.9%).
- About 56 percent (n=707) of victims had at least one indication of a mental health problem, 27.8 percent (n=352) of victims had at least one substance abuse/addiction problem, and 33.2 percent (n=420) of victims had at least one interpersonal problem. Additionally, forty-four percent (44.0%; n=556) of victims had at least one life stressor and 54.8 percent (n=693) of victims had at least one indication of suicide prior to the suicide taking place.
- About 36 percent of tested victims tested positive for alcohol use at the time of death, 26.1 percent tested positive for antidepressants, 8.6 percent tested positive for amphetamines, and 18.4 percent tested positive for opiates.

Appendix A

Suicide Rate by Residence County per 100,000 population, 2016	
Residence County	Rate
Yavapai	34.6
Navajo	33.2
Graham	31.9
Mojave	30.3
Gila	28.2
La Paz	24.8
Cochise	21.4
Apache	19.6
Pima	17.5
Maricopa	16.2
Pinal	16.0
Coconino	15.1
Yuma	12.2
Santa Cruz	10.8
Greenlee	10.5
Statewide Suicide Rate	18.8