Arizona Department of Health Services

Office of the Director

150 North 18th Avenue, Suite 500
Phoenix, Arizona 85007
(6020 542-1025
(602) 542-1062 FAX

JANET NAPOLITANO, GOVERNOR
SUSAN GERARD, DIRECTOR

March 5, 2008

Dear Arizona Resident,

With sadness for the lives lost, I am hopeful in presenting to you Arizona's report, "Injury Mortality among Arizona Residents – Intentional Self-Harm (suicide), that we can learn how to prevent suicide. Although the occurrence of suicide is rare in Arizona, tracking these incidents and analyzing data is important to our work in that it enables us to develop programs towards preventing these devastating occurrences. This report is particularly constructive in that it shows the rate of suicide by age, gender, race/ethnicity, marital status and county of residence. Having this level of disaggregated data provides us with the information needed to promote relevant programs that meet the needs of different population subgroups in our State.

I would like to congratulate the Bureau of Public Health Statistics in compiling a unique and robust report. It is my hope that this report provides us at The Department of Health Services and our partners alike, the data needed to work towards decreasing the incidents of intentional self-harm (suicide) in our state.

Sincerely,

Susan Gerard

Director
Arizona Department of Health Services

PURPOSE

This report is the annual update of information about suicide among Arizona residents. The data for 2006 are placed in a temporal context by comparison with the data for the preceding years.

Nine of the previously published suicide reports are also available online at http://www.azdhs.gov/plan/report/im/suicide.htm The oldest online report provides suicide statistics for 1985-1995.

This publication hopes to contribute to epidemiology of suicide – "the distribution of suicide deaths by characteristics of people, regions and over time – for one of the states that continues to have a much higher mortality rate from this cause than the country as a whole".[1] In 1999-2005, only five states (Alaska, Nevada, Montana, Colorado, and Wyoming) had higher suicide rates than Arizona.[2]

METHODS AND SOURCES

Data on the number and characteristics of suicide deaths in Arizona were obtained from the death certificates filed with the Arizona Department of Health Services.

Beginning with the 2000 data year in Arizona (1999 nationally) two major changes have occurred that affect the computation of mortality rates and analyses of mortality data over time. First, the International Classification of Diseases (ICD), used to classify causes of death was revised. The Tenth Revision (ICD-10) replaced the Ninth Revision (ICD-9), which was in effect since 1979. Second, a new population standard for the age adjustment of mortality rates replaced the 1940 standard that has been used since 1943. The new set of age-adjustment weights uses the year 2000 U.S. population as its standard.

Both changes have profound effects on the comparability of mortality data and continuity of statistical trends. Age-adjusted rates can only be compared to age-adjusted rates that use the same population standard. In this report, ALL age-adjusted mortality rates are based on the (new) 2000 standard, and CANNOT BE compared to rates using the 1940 standard population. This is because the age structures of the 1940 and year 2000 populations differ. From 1940 to 2000 the U.S. population "aged" considerably. The age-adjusted rates based on the year 2000 standard are different because the year 2000 population standard, which has an older age structure, gives more weight to death rates at older ages where mortality is higher.

The comparability ratio for suicide (a measure of comparison between ICD-9 and ICD-10) is close to 1.0 (.9982), indicates that the same number of deaths would be assigned to suicide when ICD-9 or ICD-10 was used. Prior to 2000, suicide is defined by the ICD-9 codes E950-E959 and, beginning in 2000, by the ICD-10 codes X60-X84, Y87.0 for underlying cause of death.

Population denominators for Arizona residents, used to calculate rates, are projections from the Population Statistics Unit in the Arizona Department of Economic Security (1996-1999) and the U.S. Census Bureau (census enumerations for 2000). For 2001-2006 we are using our own population estimates. For more detail regarding the data sources and estimation procedures see http://www.azdhs.gov/plan/menu/info/pd.htm. **Table A** in *Technical Notes* provides the denominators used to compute the age-adjusted suicide rates shown in Table 3-1 and 3-2, as well as in Figures 3-1 and 3-13.

Numerous studies have shown an association between marital status and suicide. We have expanded current edition of this report to provide age-specific and age-adjusted suicide rates by category of marital status and gender. Age adjustment is important for any analysis of the association between marital status and suicide because both marital status and risk of suicide vary by age. **Table B** in *Technical Notes* provides the population estimates by age group, gender and marital status for Arizonans aged 18 years or older in 2006 (note that **Table A** provides population estimates for Arizonans of all ages).

DATA ORGANIZATION

In 2002, in a special publication on "Injury Mortality among Arizona Residents, 1990-2000", we have incorporated the contents of several previously published reports on firearm-related deaths, drug-related deaths, suicide, unintentional drowning deaths, etc. Suicide was the subject matter of the 3rd chapter in this publication and we continue to use prefix 3 for the data tables and figures related to suicide. (A broad overview of patterns of injury mortality both by the "intent" or manner of injury death (that is accidents, homicides, suicides, etc.), and "mechanism" (for example drowning, firearm, drugs) continues to be updated annually and is available at http://www.azdhs.gov/plan/report/im/imindex.htm).

Figures 3-1, 3-2, and 3-5 show annual rates of suicide by year from 1996 to 2006. Temporal trends and changes may be assessed from these data. Figures 3-8 through 3-12 reveal race/ethnicity patterns in age-specific suicide mortality. In order to increase the statistical reliability of those rates, the total number of suicides from 1996 to 2006 is used as the numerator and the 2001 population estimates (population at mid-point) multiplied by 11 as the denominator. A comparison of age-adjusted suicide rates by race/ethnicity and gender is available in Figure 3-13. Figures 3-14, 3-15, and 3-16 provide for the first time in this report the age-adjusted and age-specific suicide rates by category of marital status and gender. Figure 3-17 and 3-18 provide evidence of striking differences in the risk of suicide among native-born and non-native Arizonans. Figure 3-7 contrast differences in the age-specific suicide rates by gender. Figure 3-19 provides data on method of self-injury by race/ethnicity. Geographic differences in age-adjusted suicide rate by county of residence in Arizona are illustrated in Figure 3-22.

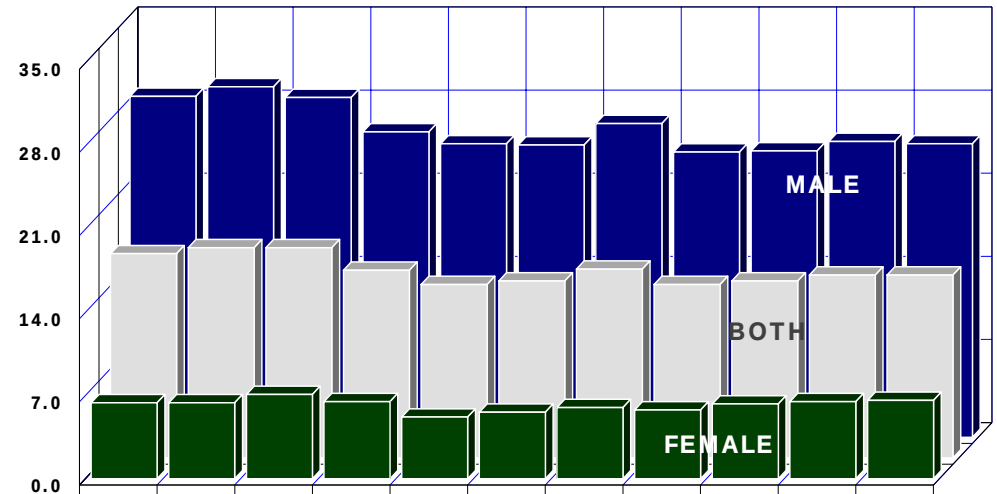
SUMMARY OF FINDINGS

This section presents some illustrative findings contained in the figures and tables of the report. It is not intended to be an exhaustive analysis of the tabulated data.

- **In 2006, 948 residents of Arizona prematurely ended their own lives.**
- **The age-adjusted suicide rate remained unchanged in 2006. However, this rate was 43 percent higher than the average annual rate of 10.8 suicides per 100,000 population nationally per year for 1996-2005.**
- **In Arizona, males accounted for 78.4 percent of all suicides. The 2006 male risk for intentional self-harm (24.7/100,000) exceeded 3.7 times the female risk of 6.6/100,000.**
- **The suicide rate for adolescents 15-19 years old decreased from 14.1 suicides per 100,000 in 2005 to 13.0 per 100,000 in 2006. In 1996-2006, the average annual suicide rate of 36.3 suicides per 100,000 American Indian adolescents 15-19 years old exceeded by 177.1 percent (or 2.8 times) the rate for all Arizona adolescents (13.1 suicides per 100,000 per year).**
- **Suicide rate among elderly Arizonans 65 years or older increased for the 3rd consecutive year from 19.8 suicides per 100,000 in 2003 to 20.4/100,000 in 2004, 20.9/100,000 in 2005, and 24.5/100,000 in 2006.**
- **In 1996-2006, the average annual suicide rate of White non-Hispanic elderly 65 years or older was the highest rate among the race/ethnicity groups. In contrast, the lowest suicide rate was among the Black or African American elderly 65 year or older. The suicide rate of White non-Hispanic elderly was 3.4 times greater than the suicide rate of Black or African American elderly Arizonans.**
- **As in the past, married Arizonans were the least likely to end their own lives in 2006, as compared to Arizonans with other marital statuses. A divorced female was 6 times, never married female 3.9 times, and a widowed female 3.2 times more likely to end her own life than a married female. The suicide rate for widowed males (94.6/100,000) was the highest among the four marital status categories.**
- **In each of the marital status categories, the suicide rates were substantially higher for men than women.**
- **Females have the highest suicide rates in midlife (ages 45-64), but even in this age group the risk of suicide for those who were unmarried was 3.5 times greater than for those who were married (20.9 suicides per 100,000 vs. 5.9 per 100,000).**
- **In 2006, all age-specific suicide rates for married males were consistently lower than the rates for unmarried males.**
- **The suicide rate among foreign-born residents of the State (14.2/100,000) exceeded by 15.4 percent the suicide rate of native-born Arizonans. The suicide rate among residents of Arizona born in other states in the U.S. (23.9/100,000) was 1.9 times greater than the rate for native-born Arizonans.**
- **Firearms accounted for 58.4 percent of suicides in 2006. White non-Hispanic suicides used firearms more frequently (62.7 percent). Asian or Pacific Islander and American Indian suicides were more likely to die from hanging or strangulation than firearm use.**
- **Male suicides used firearms more frequently (69.3 percent) than female suicides (41.0 percent). In contrast, poisoning accounted for 41.0 percent of female suicides, but 10.1 percent of male suicides in 2006.**
- **The age-adjusted suicide mortality rates varied in Arizona in 2006 from 8.1 suicides per 100,000 residents of La Paz County, to 26.1 suicides per 100,000 residents of Navajo County.**

KEY FINDINGS

Figure 3-1
Age-Adjusted Mortality Rates for Intentional Self-Harm (suicide) by Gender and Year, Arizona, 1996-2006



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Female	6.4	6.4	7.1	6.5	5.2	5.6	6.0	5.8	6.3	6.5	6.6
Both	17.2	17.7	17.7	15.8	14.6	14.9	15.9	14.6	14.9	15.4	15.4
Male	28.7	29.5	28.6	25.7	24.7	24.6	26.4	24.0	24.1	24.9	24.7

Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

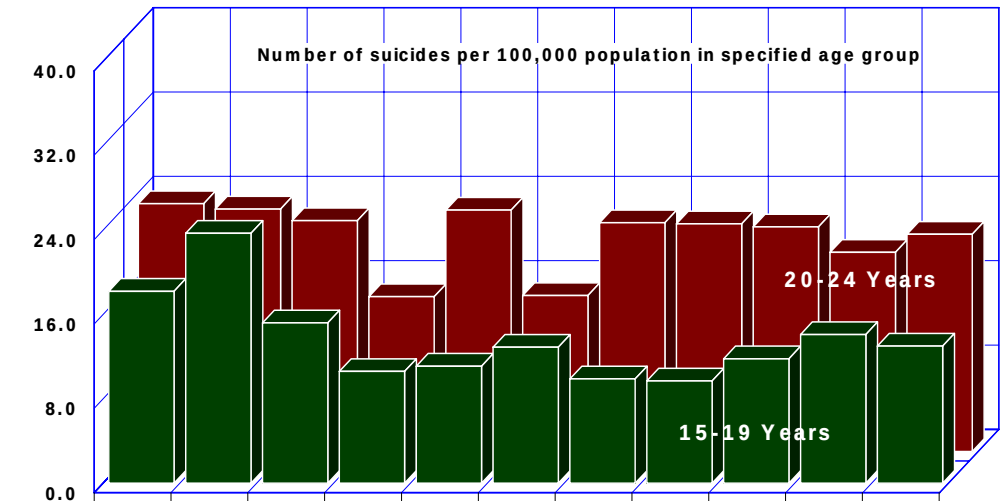
In 2006, 948 residents of Arizona prematurely ended their own lives. These suicide deaths exceeded the entire 2006 population of such Arizona cities as Patagonia or Duncan. However, the age-adjusted suicide rate remained unchanged in 2006 at 15.4 suicides per 100,000 resident population (**Figure 3-1, Table 3-1**).

In the 1996-2006 period, no suicide death rate among Arizona's males was below 24.0/100,000. In contrast, none of the annual female death rates from suicide exceeded 7.1/100,000 during that period.

The 2006 male risk for intentional self-harm (24.7/100,000) exceeded 3.7 times the female risk of 6.6/100,000. In 2006, males accounted for 78.4 percent of all suicides (**Table 3-1**).

In 2006, the rate of suicide deaths in Arizona was 43 percent higher than the average annual rate of 10.8 suicides per 100,000 population per year in 1996-2005 nationally.

Figure 3-2
Suicide Mortality Rates by Year for Adolescents 15-19 Years and Young Adults 20-24 Years, Arizona, 1996-2006



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
15-19	18.2	23.7	15.2	10.6	11.1	12.9	9.9	9.7	11.8	14.1	13.0
20-24	23.5	23.0	21.9	14.7	22.9	14.8	21.7	21.6	21.3	18.9	20.6

Note: See footnote to Table 3-1. The rates for 2001 are from the WISQARS site at http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html

The suicide rate for adolescents 15-19 years old decreased from 14.1 suicides per 100,000 in 2005 to 13.0 per 100,000 in 2006 (**Figure 3-2, Table 3-3**). In 2006, there were 57 suicides among Arizona adolescents 15-19 years old, compared to 61 suicides in 2005 and 39 suicides both in 2002 and 2003.

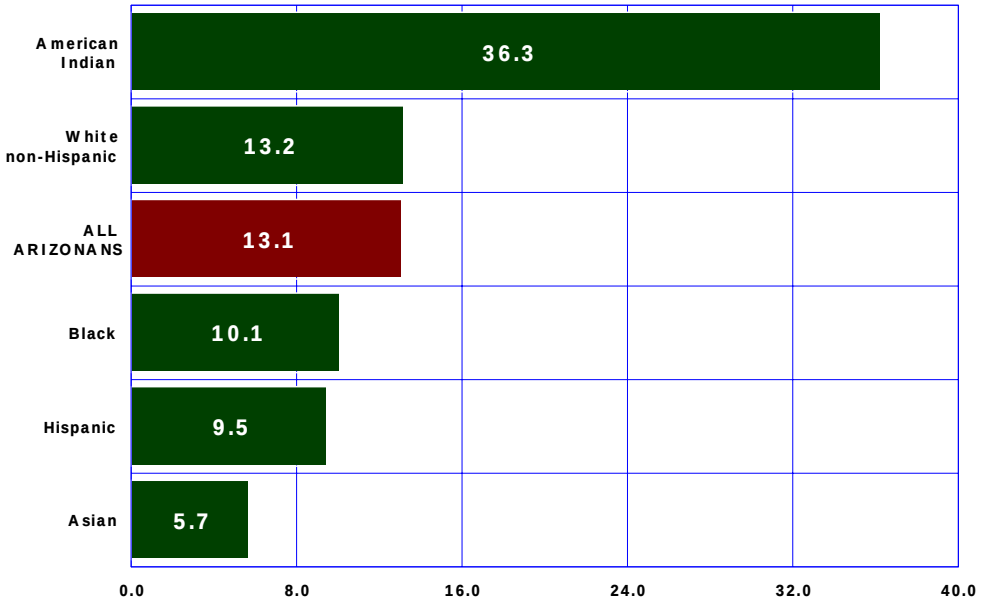
In contrast, the annual suicide rates for young adults 20-24 years old increased from 18.9 suicides per 100,000 in 2005 to 20.6/100,000 in 2006. In 2006, there were 92 suicides among young Arizona adults 20-24 years old, compared to 81 suicides in 2005 (**Table 3-15**).

KEY FINDINGS

In 1996-2006, the average annual suicide rate of 36.3 suicides per 100,000 American Indian adolescents 15-19 years old exceeded by 177.1 percent (or 2.8 times) the rate for all Arizona adolescents (13.1 suicides per 100,000 per year, **Figure 3-3**). American Indians, who accounted for 7.4 percent of Arizona adolescents 15-19 years old in 1996-2006, disproportionately accounted for 17.9 percent of all adolescent suicides.

If the average annual suicide rate for American Indian adolescents applied to all Arizonans 15-19 years old in 1996-2006, 1,578 would have died from self-inflicted injuries in suicide during that time, 975 more than 543 who actually did.

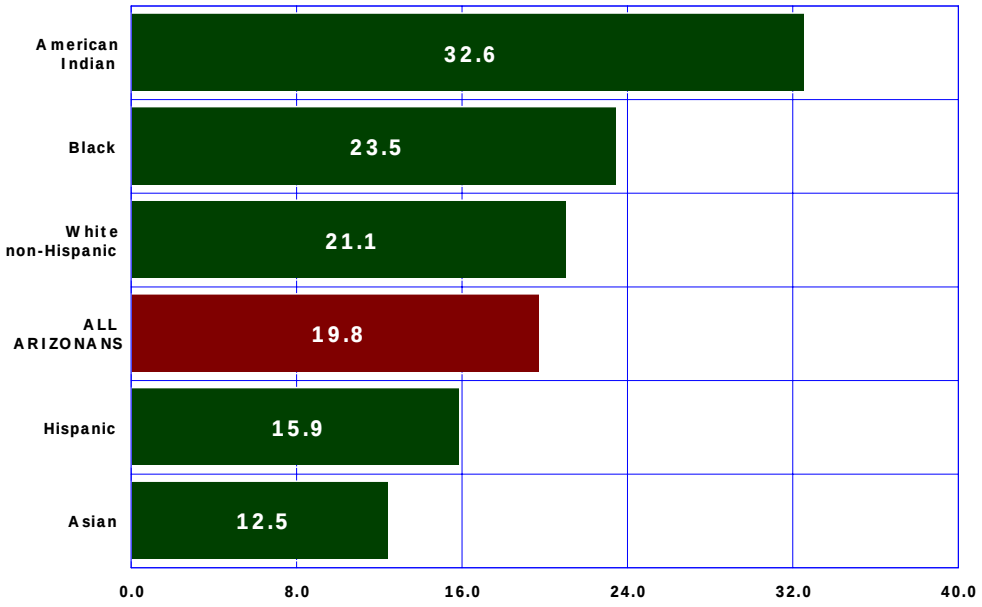
Figure 3-3
Average Annual Suicide Rates by Race/Ethnicity among Adolescents 15-19 Years, Arizona, 1996-2006



Number of suicides per 100,000 population in specified group per year in 1996-2006.

Among young adults 20-24 years old, the average annual suicide rate (computed for the entire period 1996-2006) for American Indians also was the highest rate among the race/ethnicity groups in Arizona. In contrast, the suicide rate among Asian or Pacific Islander residents of Arizona was 36.9 percent lower than the rate for all groups (**Figure 3-4**).

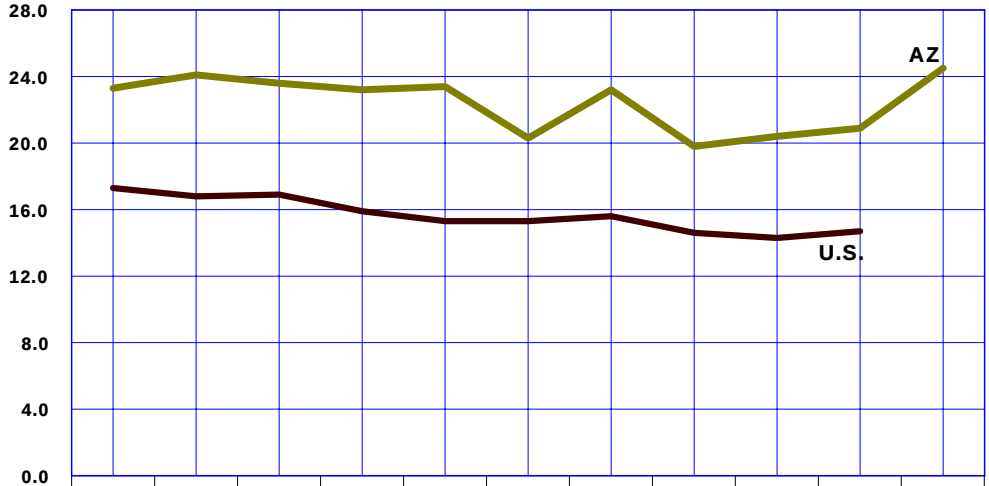
Figure 3-4
Average Annual Suicide Rates by Race/Ethnicity among Young Adults 20-24 Years, Arizona, 1996-2006



Number of suicides per 100,000 population in specified group per year in 1996-2006.

KEY FINDINGS

Figure 3-5
Suicide Mortality Rates by Year among Elderly 65 Years or Older, Arizona and the U.S., 1996-2006



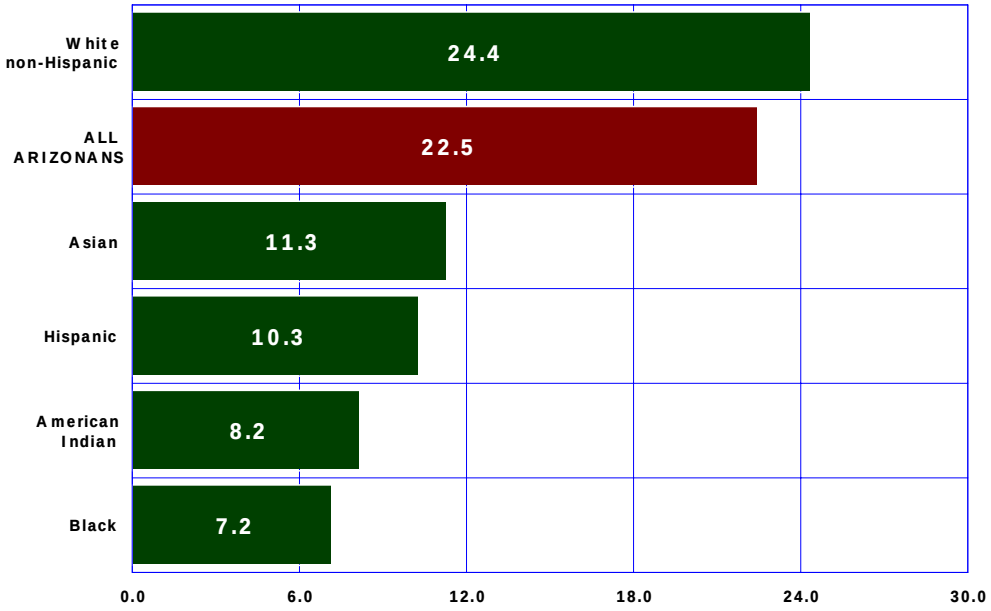
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
U.S.	17.3	16.8	16.9	15.9	15.3	15.3	15.6	14.6	14.3	14.7	NA
AZ	23.3	24.1	23.6	23.2	23.4	20.3	23.2	19.8	20.4	20.9	24.5

Number of suicides per 100,000 population 65+.

Suicide rate among elderly Arizonans 65 years or older increased for the 3rd consecutive year from 19.8 suicides per 100,000 in 2003 to 20.4/100,000 in 2004, 20.9/100,000 in 2005, and 24.5/100,000 in 2006. It was the highest elderly suicide rate of the 1996-2006 period (**Figure 3-5**). In 2006, 196 elderly Arizonans 65 years or older died from self-inflicted injuries, compared to 144 in 1996 (**Table 3-15**).

In 1996-2005, all annual age-specific suicide mortality rates among Arizonans aged 65 and older exceeded by at least 25.8 percent the corresponding U.S. rates.

Figure 3-6
Average Annual Suicide Rates by Race/Ethnicity among Elderly 65 Years or Older, Arizona, 1996-2006



Number of suicides per 100,000 population in specified group per year in 1996-2006.

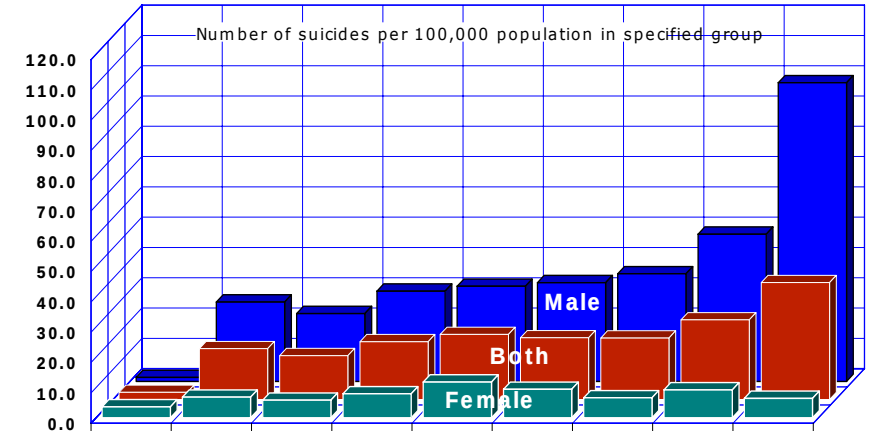
In 1996-2006, the average annual suicide rate of White non-Hispanic elderly 65 years or older was the highest rate among the race/ethnicity groups (**Figure 3-6**). In contrast, the lowest suicide rate was among the Black or African American elderly 65 years or older. The suicide rate of White non-Hispanic elderly was 3.4 times greater than the suicide rate of Black or African American elderly Arizonans.

KEY FINDINGS

Among males, the 2006 suicide mortality curve was bimodal (**Figure 3-7, Table 3-5**) reaching the first peak at ages 15-24 years (26.2/100,000), tapering off to 22.4/100,000 at ages 25-34, and rising to a second peak among the elderly 85 years or older (98.6/100,000). The suicide rate among the oldest was the highest rate among all age groups in Arizona. Among females, the highest suicide rate was among those 45-54 years old (11.8 suicides per 100,000).

The 2006 suicide rate among males 85+ years old was 15.4 times greater than the corresponding female rate of 6.4/100,000. In 2006, males accounted for 89.2 percent of all suicides among Arizonans 85 years or older (based on frequency counts by age group in Table 3-5).

Figure 3-7
Suicide Mortality Rates by Age Group and Gender, Arizona, 2006

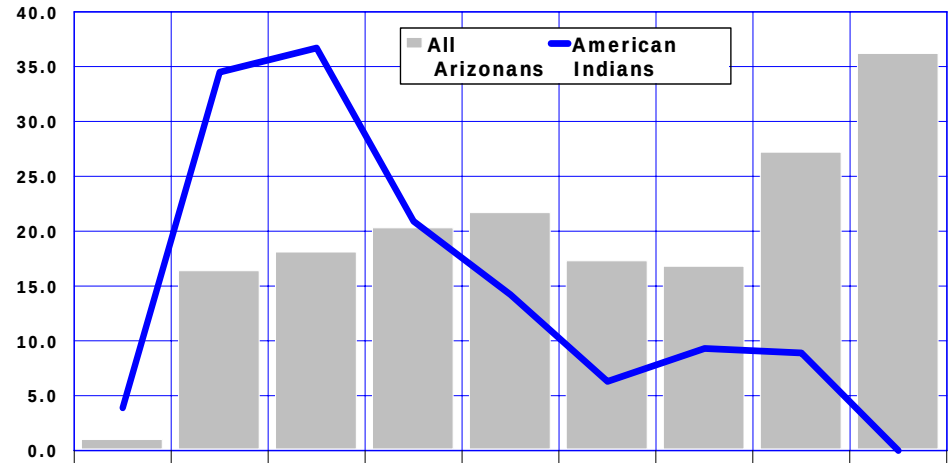


	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
Female	3.6	6.8	5.8	7.9	11.8	9.4	6.6	9.2	6.4
Both	2.4	16.8	14.5	19.1	21.5	20.4	20.3	26.3	38.6
Male	1.3	26.2	22.4	29.8	31.4	32.6	35.5	48.6	98.6

* 5-14 years old.

Figure 3-8
Comparison of Average Annual Suicide Mortality Rates by Age Group among American Indians or Alaska Natives and all Residents of Arizona, 1996-2006

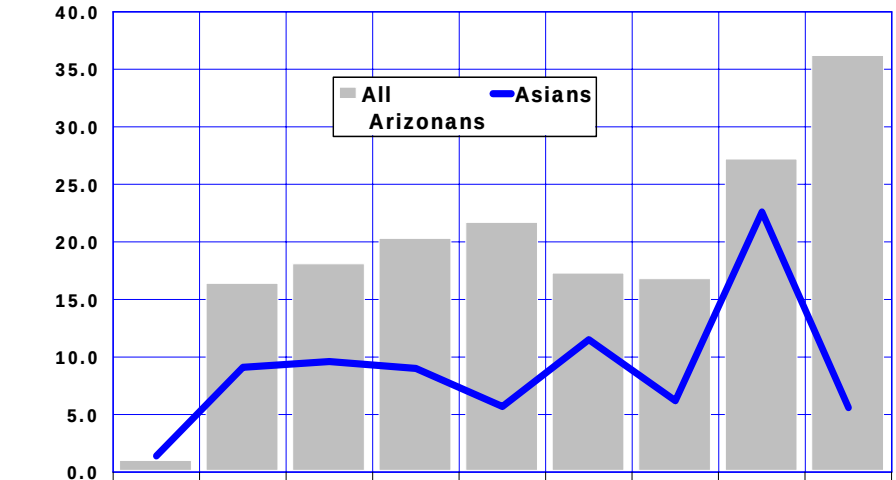
Figures 3-8, 3-9, 3-10, 3-11, and 3-12 reveal ethnic patterns in age-specific suicide mortality. Among American Indian residents of the State in 1996-2006, the highest average annual suicides rates were those of children, adolescents, and young adults (**Figure 3-8**). After reaching its peak at ages 25-34 years (36.7 suicides per 100,000 persons per year), the suicide rate dropped 82.8 percent to 6.3/100,000 among American Indians who were 35-44 years old in 1996-2006. There were no suicides among the oldest American Indians 85 years or older.



	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
All Arizonans	1.0	16.4	18.1	20.3	21.7	17.3	16.8	27.2	36.2
American Indians	3.9	34.5	36.7	20.9	14.2	6.3	9.3	8.9	0.0

Number of suicides per 100,000 population in specified group per year in 1996-2006.
*5-14 years old.

Figure 3-9
Comparison of Average Annual Suicide Mortality Rates by Age Group among Asians or Pacific Islanders and all Residents of Arizona, 1996-2006

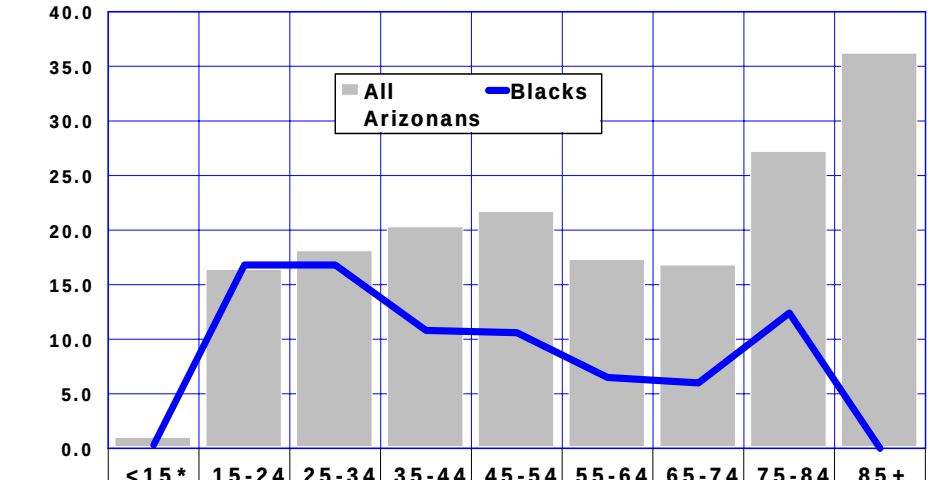


	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
All Arizonans	1.0	16.4	18.1	20.3	21.7	17.3	16.8	27.2	36.2
Asians	1.4	9.1	9.6	9.0	5.7	11.5	6.2	22.6	5.6

Number of suicides per 100,000 population in specified group per year in 1996-2006.
*5-14 years old.

Among Asian or Pacific Islander residents of Arizona none of the average annual (computed for the entire period 1996-2006) age-specific suicide rates exceeded the average rates for all groups (**Figure 3-9**). The suicide rate among elderly persons 75-84 years old was the highest age-specific rate among Asians or Pacific Islanders.

Figure 3-10
Comparison of Average Annual Suicide Mortality Rates by Age Group among Blacks or African Americans and all Residents of Arizona, 1996-2006



	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
All Arizonans	1.0	16.4	18.1	20.3	21.7	17.3	16.8	27.2	36.2
Blacks	0.3	16.8	16.8	10.8	10.6	6.5	6.0	12.4	0.0

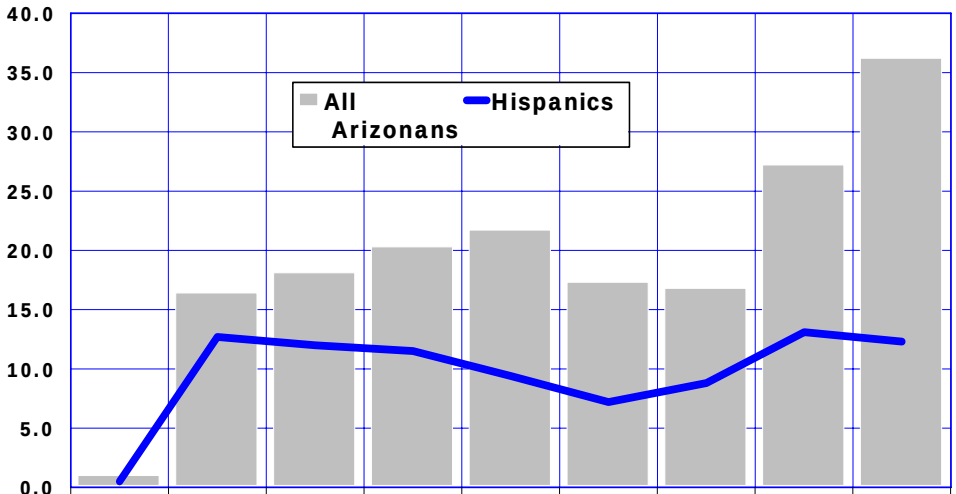
Number of suicides per 100,000 population in specified group per year in 1996-2006.
*5-14 years old.

Among Blacks or African Americans only one of the average annual (computed for the entire period 1996-2006) age-specific suicide rates slightly exceeded the average rates for all groups (a rate of 16.8/100,000 among those aged 15-24 years; **Figure 3-10**). However, the age-specific suicide mortality curve reflected 4 distinct peaks for Blacks at ages 15-24 years, 25-34 years, 45-54 years and 75-84 years.

KEY FINDINGS

In addition to Asians and Blacks, also among Hispanic or Latino residents of Arizona none of the average annual (computed for the entire period 1996-2006) age-specific suicide rates exceeded the average rates for all groups (**Figure 3-11**). Among Hispanics or Latino, the age-specific suicide mortality curve was bimodal, reaching its first peak at ages 15-24 years (12.7 suicides per 100,000), tapering off at ages 55-64 (7.2 suicides per 100,000), and rising to a second peak among the elderly 75-84 years old (13.1 suicides per 100,000).

Figure 3-11
Comparison of Average Annual Suicide Mortality Rates by Age Group among Hispanics or Latinos and all Residents of Arizona, 1996-2006

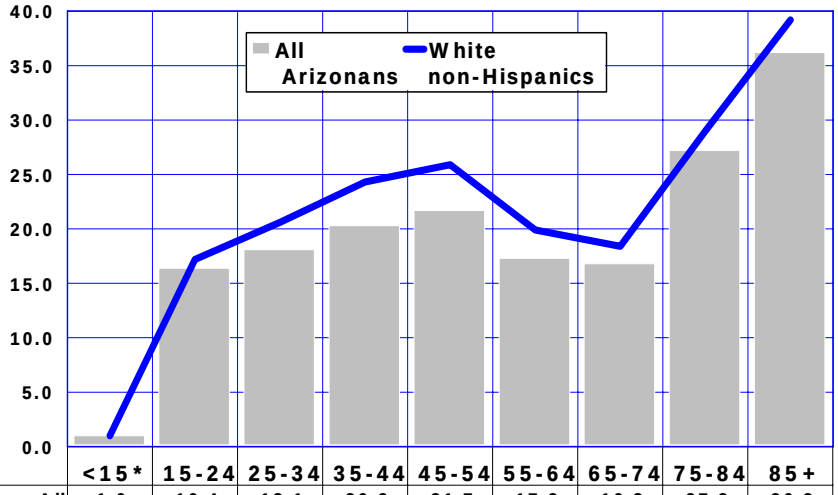


	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
All Arizonans	1.0	16.4	18.1	20.3	21.7	17.3	16.8	27.2	36.2
Hispanics	0.5	12.7	12.0	11.5	9.4	7.2	8.8	13.1	12.3

Number of suicides per 100,000 population in specified group per year in 1996-2006.
*5-14 years old.

The age-specific suicide mortality profile of White non-Hispanics (**Figure 3-12**) can be best contrasted with the American Indian profile (**Figure 3-8**). Beginning at ages 15-24 years, all of the average annual (computed for the entire period 1996-2006) age-specific suicide rates of White non-Hispanics exceeded the average rates for all groups. The suicide rate among the oldest 85 years or older (39.2 suicides per 100,000 persons per year) was the highest age-specific suicide rate among White non-Hispanic residents of Arizona.

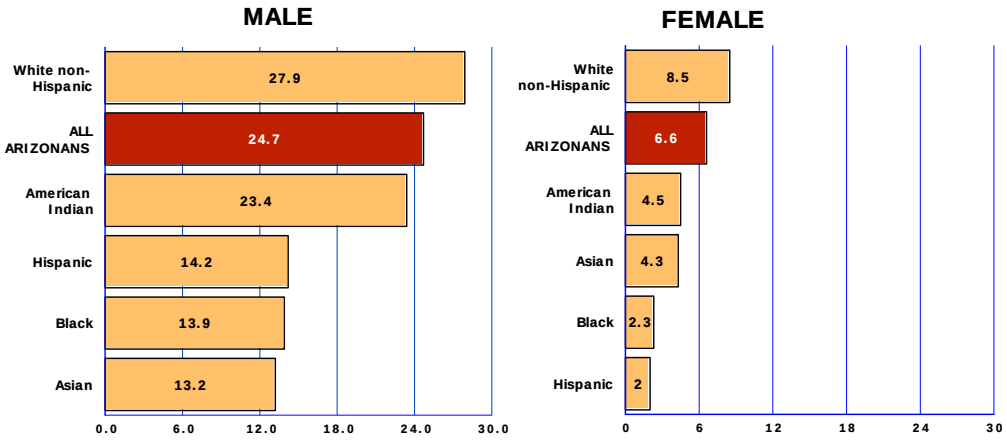
Figure 3-12
Comparison of Average Annual Suicide Mortality Rates by Age Group among White non-Hispanics and all Residents of Arizona, 1996-2006



	<15*	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
All Arizonans	1.0	16.4	18.1	20.3	21.7	17.3	16.8	27.2	36.2
White non-Hispanics	1.0	17.2	20.6	24.3	25.9	19.9	18.4	29.0	39.2

Number of suicides per 100,000 population in specified group per year in 1996-2006.
*5-14 years old.

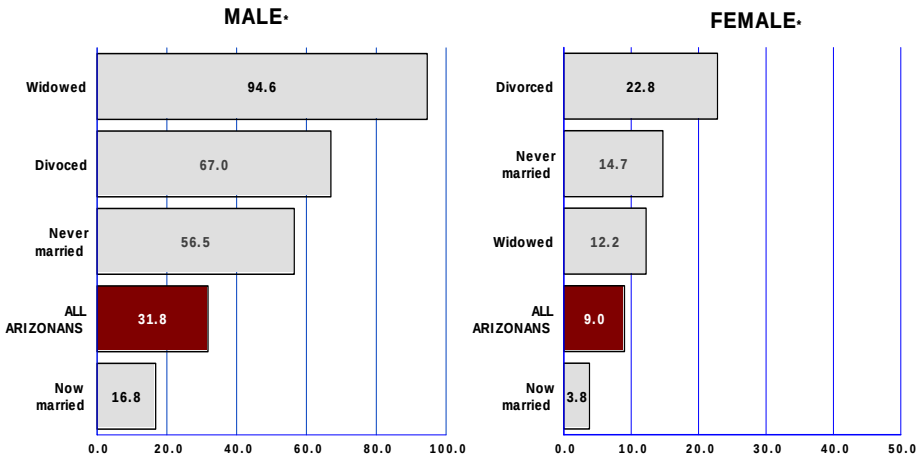
Figure 3-13
Age-Adjusted Mortality Rates for Suicide by Gender and Race/Ethnicity, Arizona, 2006



The age-adjusted suicide rate for White non-Hispanic males was the highest gender-specific rate in 2006, followed by American Indians among the race/ethnicity groups in Arizona. Among females, the suicide rate for White non-Hispanics was the highest, also followed by the suicide rate of American Indian females (**Figure 3-13**). Particularly high gender ratio in suicide mortality was evident in 2006 for Hispanics (male rate of 14.2 was 7.1 times the rate of 2.0 for females).

Number of deaths per 100,000 population in specified group age-adjusted to the 2000 U.S. standard.

Figure 3-14
Age-Adjusted Mortality Rates for Suicide by Category of Marital Status, Arizona Residents 18 years or Older in 2006



* Aged 18 years or older.

In his classic 1897 work "Suicide: A Study in Sociology"[1], Emile Durkheim proposed that we need to look beyond individual characteristics in explaining the act of suicide. Durkheim found out that suicide rates are higher for those who are widowed, never married and divorced compared to married. He proposed that suicide is directly linked to a person's feeling of social integration. Marital disruption in the form of divorce or death of a spouse "can greatly reduce people's feeling of social bonding to the extent at which they become more likely to commit suicide."[2]

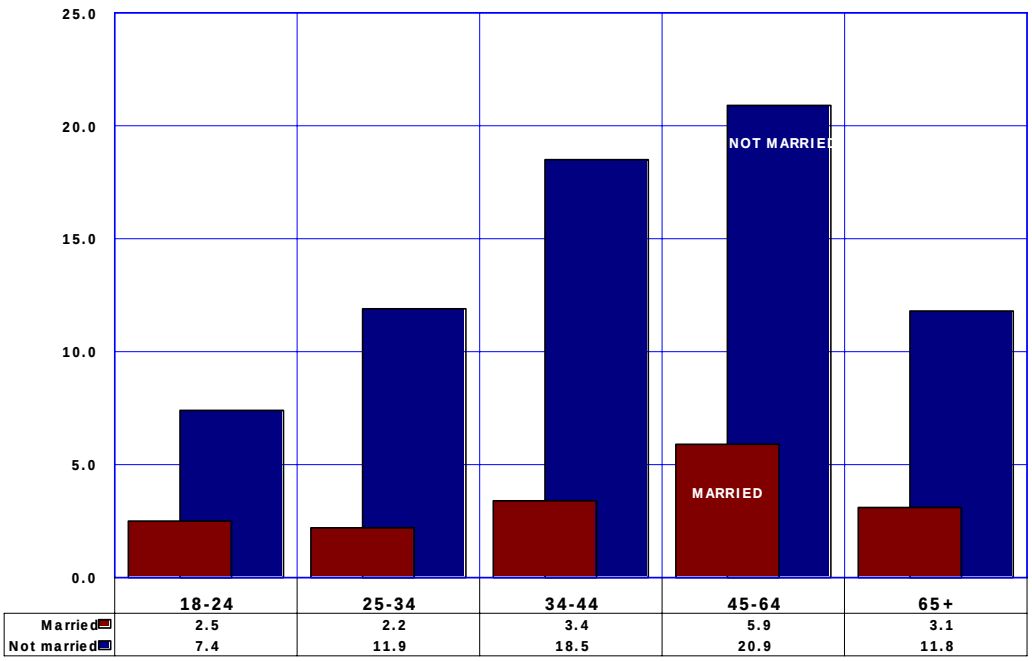
As in the past, married Arizonans clearly were the least likely to end their own lives in 2006 compared to Arizonans in other marital statuses (**Figure 3-14, Table 3-6**). A divorced female was 6 times, never married female 3.9 times, and a widowed female 3.2 times more likely to end her own life than a married female. Unlike for females, the suicide rate for widowed males (94.6/100,000) was the highest among the four marital status categories. In each of the marital status categories, the suicide rates were substantially higher for men than women.

KEY FINDINGS

Durkheim said, "The role of a spouse is the nucleus of their social support network for most persons in their adult lives."[3]

In 2006, the age-specific suicide rates for married females were consistently lower than the rates for unmarried females (**Figure 3-15, Table 3-6**). Females have the highest suicide rates in midlife (ages 45-64), but even in this age group the risk of suicide for those who were unmarried was 3.5 times greater than for those who were married (20.9 suicides per 100,000 vs. 5.9 per 100,000). For the two younger age groups, females 25-34 and 35-44 years old in 2006, the rate ratio of 5.4 was 54.3 percent higher than the rate ratio of 3.5 among the middle-age females.

Figure 3-15
Age-Specific Suicide Rates* by Marital Status among Arizona Females 18 Years or Older in 2006



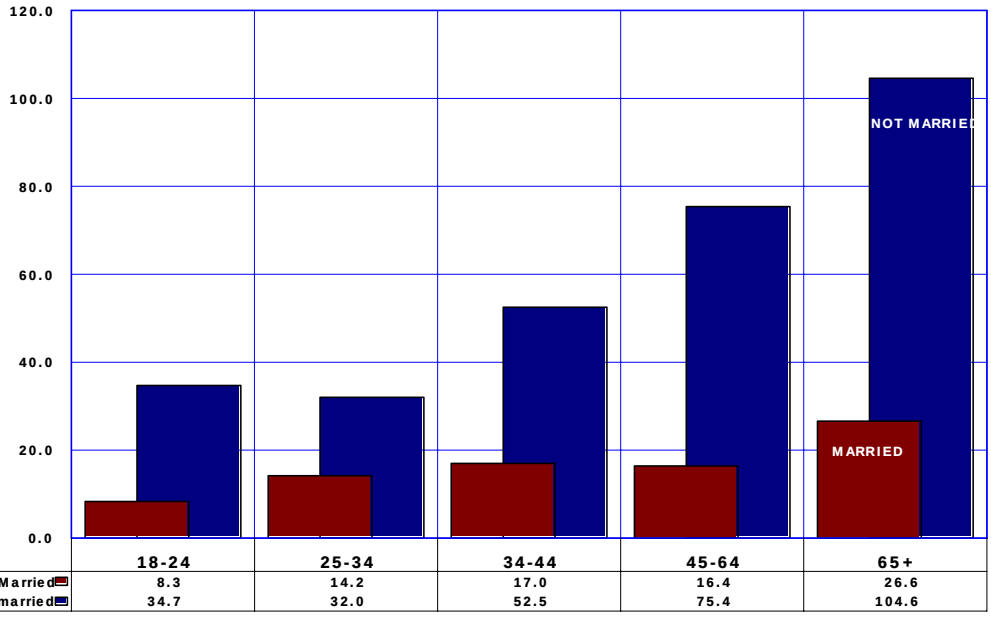
	18-24	25-34	34-44	45-64	65+
Married	2.5	2.2	3.4	5.9	3.1
Not married	7.4	11.9	18.5	20.9	11.8

The number of suicides per 100,000 females in specified group.

In 2006, the age-specific suicide rates for married males were consistently lower than the rates for unmarried males (**Figure 3-16**). Among married males, the 2006 suicide mortality curve by age was bimodal, reaching the first peak at ages 18-24, tapering off at ages 25-34, and rising to a second peak among the elderly 65 years or older. Among those aged 18-24 years, the risk of suicide for those who were unmarried was 4.2 times greater than for those who were married (34.7 suicides per 100,000 vs. 8.3/100,000). The rate ratio of 3.9 times greater for those unmarried was only slightly lower among Arizona males 65 years or older in 2006 (104.6 : 26.6 =3.9).

While the protective effect of marriage clearly operates in male suicide, men of any age and in any marital status commit suicide far more frequently than women (compare the rates in **Figure 3-15** and **Figure 3-16** or in **Table 3-6**).

Figure 3-16
Age-Specific Suicide Rates* by Marital Status among Arizona Males 18 Years or Older in 2006

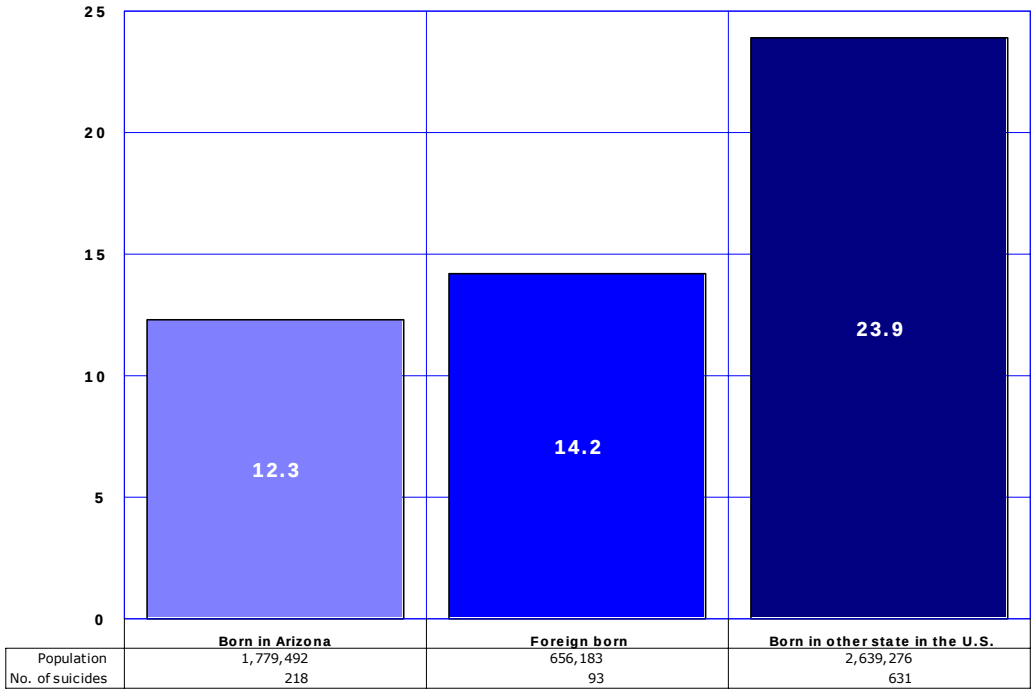


	18-24	25-34	34-44	45-64	65+
Married	8.3	14.2	17.0	16.4	26.6
Not married	34.7	32.0	52.5	75.4	104.6

The number of suicides per 100,000 males in specified group.

KEY FINDINGS

Figure 3-17
The Risk of Suicide among Native-Born and Non-Native Arizonans, 2006



	Born in Arizona	Foreign born	Born in other state in the U.S.
Population	1,779,492	656,183	2,639,276
No. of suicides	218	93	631

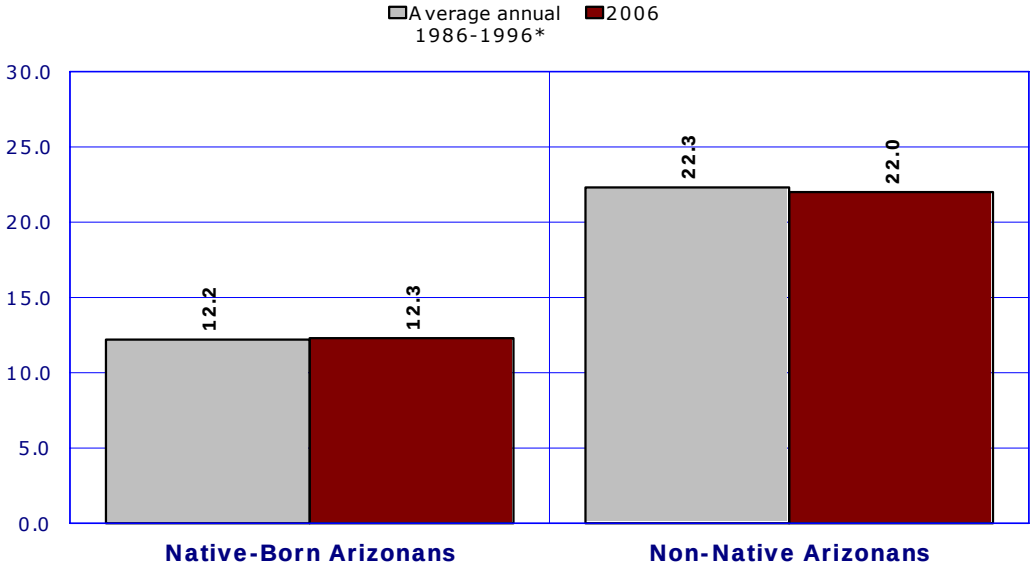
*The number of suicides per 100,000 population by category of place of birth.

It was Emile Durkheim who also proposed that suicide is directly linked to the degree of cohesion present in society and to a "person's feelings of social integration".[4] According to Durkheim, suicide proneness exists only in relation to specific social conditions.

One of the indirect measures of social integration is the proportion of a population which is native-born in an area. Arizona continues to be a state with a low rate of native-born residents. In 2000, as in 1990 and 1980, only one in three Arizonans were native-born (34.7, 34.1 and 33.0 percent respectively).

The suicide rate among foreign-born residents of the State (14.2/100,000) exceeded by 15.4 percent the suicide rate of native-born Arizonans (12.3/ 100,000; **Figure 3-17**). The suicide rate among residents of Arizona born in other states in the U.S. (23.9/100,000) was 1.9 times greater than the rate for native-born Arizonans.

Figure 3-18
Comparison of the Risk of Suicide among Native-Born and Non-Native Arizonans, Average Annual for 1986-1996 and 2006



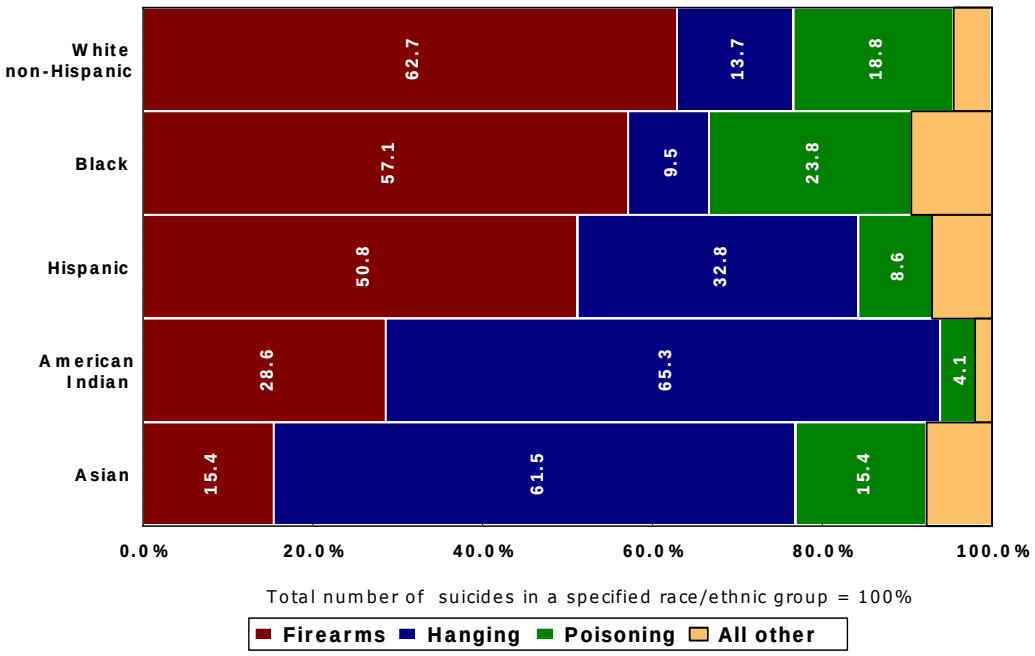
* http://www.azdhs.gov/plan/report/im/sm/suicid96/images/96suf8.htm

As shown in **Figure 3-18**, the pattern of suicide mortality in Arizona remained virtually unchanged since 1986-1996. In 1986-1996 as in 2006, the suicide rate was approximately 1.8 times higher for non-native (22.0 per 100,000) than the rate for native-born Arizonans (12.3 per 100,000).

KEY FINDINGS

Firearms accounted 58.4 percent of suicides in 2006 (based on data in **Table 3-7**). White non-Hispanic suicides used firearms more frequently (62.7 percent, **Figure 3-15**). Asian or Pacific Islander and American Indian suicides were more likely to die from hanging or strangulation than firearm use.

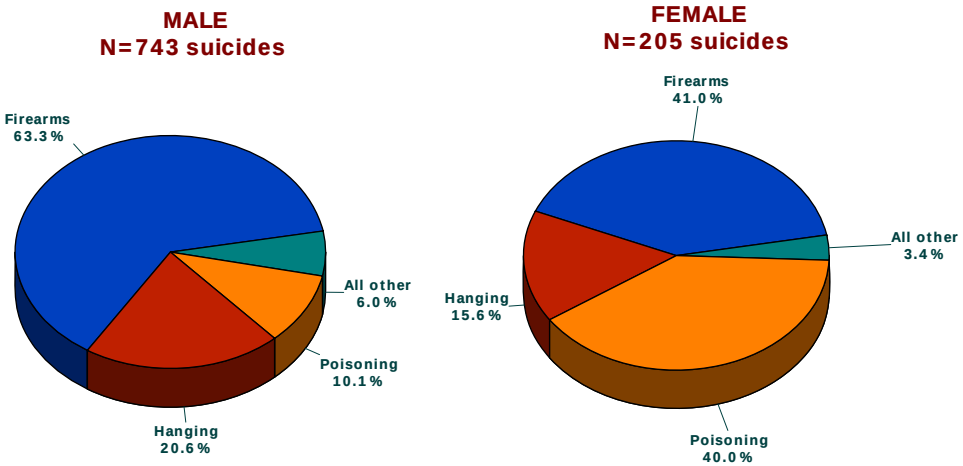
Figure 3-19
Percent Distribution of Suicides by Means of Injury and Race/Ethnicity, Arizona, 2006



Total number of suicides in a specified race/ethnic group = 100%.

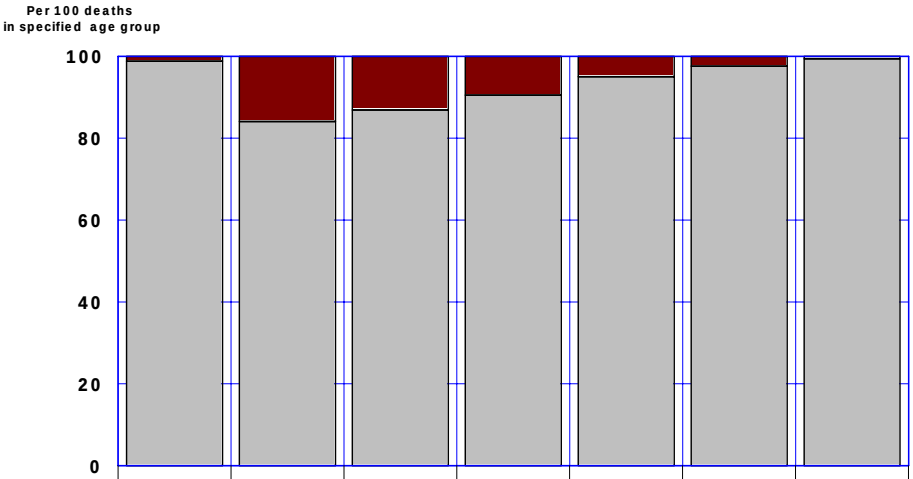
Male suicides used firearms more frequently (69.3 percent) than female suicides (41.0 percent, **Figure 3-16**). In contrast, poisoning accounted for 41.0 percent of female suicides, but 10.1 percent of male suicides in 2006.

Figure 3-20
Means of Self-Inflicted Injury per 100 Suicides by Gender, Arizona, 2006



KEY FINDINGS

Figure 3-21
Suicides per 100 Deaths by Age Group, Arizona, 2006

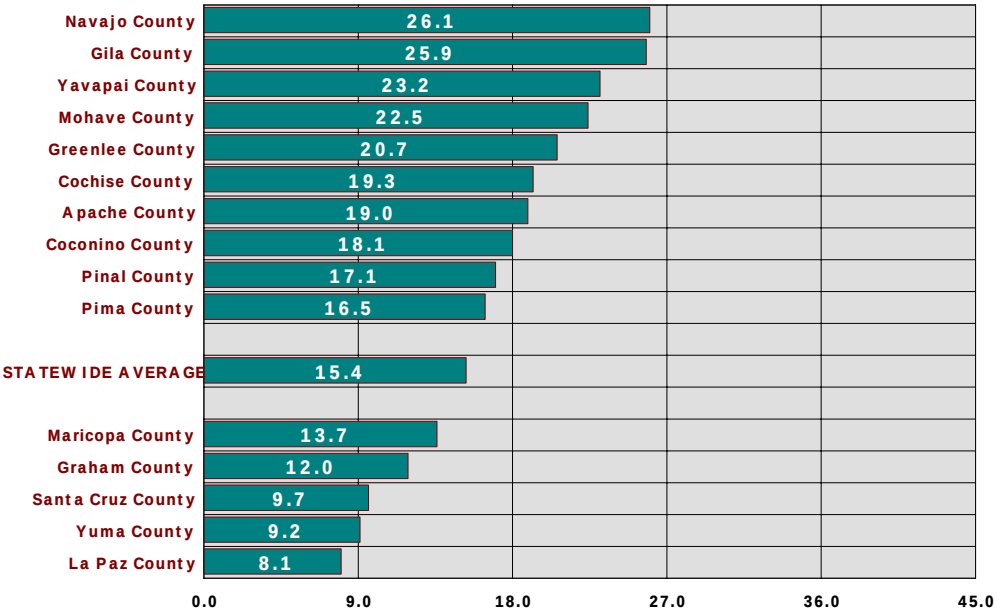


	< 15	15-24	25-34	35-44	45-54	55-64	65+
Suicides per 100 deaths	1.2	15.9	13.1	9.5	5	2.4	0.6
All other causes per 100 deaths	98.8	84.1	86.9	90.5	95	97.6	99.4
No. of suicides	11	149	131	165	170	125	196
No. of all deaths	920	935	1,002	1,733	3,395	5,223	32,192

Suicide has been and continues to be a relatively rare occurrence. In 2006, suicide accounted for 2.1 percent of the 45,415 total deaths of Arizona residents. Among 32,192 Arizonans aged 65 and older who died in 2006, only 0.6 percent (196 deaths) were suicides (**Figure 3-17**). Still, the elderly comprised 20.7 percent of all suicide deaths, a 59 percent excess over their proportion in the population (13 percent).

The contribution of suicide to total mortality was strongly marked at ages 15-24. One out of six deaths in this age group was a suicide in 2006 (149 suicides among 935 total deaths).

Figure 3-22
Age-Adjusted Mortality Rates* for Intentional Self-Harm (suicide) by County of Residence in Arizona, 2006



*Number of suicides per 100,000 population age-adjusted to the 2000 U.S. standard.

Note: The rates for Graham, Greenlee and Santa Cruz and La Paz counties are not statistically reliable. These rates are based on fewer than 10 suicides in 2006.

The age-adjusted suicide mortality rates varied in Arizona in 2006 from 8.1 suicides per 100,000 residents of La Paz County, to 26.1 suicides per 100,000 residents of Navajo County (**Figure 3-18, Table 5E-11 in *Arizona Health Status and Vital Statistics 2006***). Including Navajo, ten counties exceeded the statewide average rate of 15.4 suicides per 100,000 resident population in 2006.

Misclassification of suicides in 2000 and 2001

Before data 2000, mortality medical information was based on manual coding of an underlying death for each certificate in accordance with WHO rules, and done locally by the Office of Vital Records. Effective with the 2000 data year and the implementation of ICD-10, cause-of-death data presented in this publication were coded by the National Center for Health Statistics, using computerized procedures of SuperMICAR (Mortality Medical Indexing and Retrieval) and ACME (Automated Classification of Medical Entities) systems.

The conversion to computerized coding contributed to at least some of the breaks in comparability over time of cause-of-death statistics for intentional self-harm (suicide), drug-induced deaths and accidental discharge of firearms:

Data year	1999	2000	2001	2002	2003	2004
Drug-induced deaths	543	331	577	645	646	745
Suicide	773	737	600	855	807	854
Suicide by firearms	495	486	358	544	476	498
Suicide by drugs	105	59	76	100	93	115
Accidental discharge of firearms	7	11	114	26	13	13

Unprecedented decline in 2001 in the number of suicides and the equally unprecedented increase in the number of firearm deaths classified as accidental obviously are associated. Approximately 100 firearm fatalities, that would have been classified as suicides had the manual coding system been in place, were classified as accidents in 2001 because the "manner of death" was not indicated and the automated coding system defaulted to accidental injury. Computerized coding of the underlying cause of death also affected the number of drug-induced deaths in 2000, as well as the number of suicides by drug poisoning in both 2000 and 2001.

The suicide statistics for 2000-2001, both numbers and rates, should be used with caution. Whenever available, the originally reported data for 2001 have been supplemented with a bit more realistic statistical information from the WISQARS (Web-based Injury Statistics Query and Reporting System) site at http://www.cdc.gov/ncipc/wisqars/.

Age-adjustment of mortality rates

Because mortality from most causes of death occurs predominately among the elderly, a population group with a larger proportion of older persons would have a higher mortality rate. The "age-adjustment" removes the effect of the age differences among sub-populations (or in the same population over time) by placing them all in a population with a standard age distribution. All age-adjusted mortality rates in this report were computed by the direct method, that is, by weighting the age-specific rates for a given year by the age distribution of a standard population. The weighted age-specific rates are then added to produce the summary rate for all ages combined.

Age group	2006 population	2006 suicide deaths	Age-specific suicide Rates in 2006	2000 standard	Weighted age-specific rates and the age-adjusted suicide rate for 2006
A	B	C	D (C/B)*100000	E	F D*E
<1	97,113	0	.0	.013818	.0
1-4	385,231	0	.0	.055317	.0
5-14	907,783	11	1.2	.145565	.2
15-24	885,751	149	16.8	.138646	2.3
25-34	900,752	131	14.5	.135573	2.0
35-44	861,992	165	19.1	.162613	3.1
45-54	790,400	170	21.5	.134834	2.9
55-64	611,914	125	20.4	.087247	1.8
65-74	432,488	88	20.3	.066037	1.3
75-84	270,162	71	26.3	.044842	1.2
85+	95,896	37	38.6	.015508	.6
All ages	6,239,482	948		TOTAL	**15.4**

The age-adjusted suicide mortality rate should be viewed as relative index rather than as actual measure of mortality risk.

Age-adjustment weights used to compute age-adjusted rates by category of marital status

Age-adjusted suicide rates by marital status were computed based on the age-specific rates and the standard population for ages 18 years and older. Ages 17 years and younger were excluded because of their high variability, particularly for the widowed population. The age-adjustment weights shown below follow the Distribution #9 (See: Klein RJ, Schoenborn CA. Age-adjustment using the 2000 projected U.S. population. Healthy People Statistical Note, no. 20. Hyattsville, Maryland: National Center for Health Statistics. January 2007).

Age-adjustment weights based on the 2000 projected U.S. population

	Population in thousands	Adjustment weight
Total	**203,851**	**1.000000**
18-24	26,258	0.128810
25-34	37,233	0.182648
35-44	44,659	0.219077
45-64	60,991	0.299194
65+	34,710	0.170271

Computation of standard errors and confidence intervals

In table 3-6 each of the age-specific or age-adjusted suicide rates is accompanied by its standard error and 95 percent confidence interval.

When the number of deaths is 100 or greater

$$L(R) = R - 1.96\ (\mathrm{SE}(R)) \text{ and } U(R) = R + 1.96(\mathrm{SE}(R))$$

where *L(R)* and *U(R)* are the lower and upper limits of the confidence interval, respectively. The resulting 95 percent confidence interval can be interpreted to mean that the chances are 95 out of 100 that the "true" death rate falls between *L(R)* and *U(R)*.

For the number of deaths and death rates when the number of deaths is less than 100, 95 percent confidence limits can be estimated using the lower and upper confidence limit factors shown in Table XIV on p.118 in Minino AM, Heron MP, Murphy SL, Kochanek, KD "Deaths: Final Data for 2004". National vital statistics reports; vol. 55 no 19. Hyattsville, MD. National Center for Health Statistics. 2007.

REFERENCES

[1] Gersten, Joanne C., Teitelbaum, F, Chapin C, Research Notes, Vol.2 No.1, p.1. June 1986, *Suicide in Arizona*, Phoenix: Arizona Department of Health Services.

[2] Based on WISQARS (Web-based Injury Statistics Query and Reporting System), a CDC interactive database system at http://www.cdc.gov/ncipc/wisqars/

[3] Durkheim, Emile. (1897) 1951. *Suicide: A Study in Sociology*, trans. J.A. Spaulding and G. Simpson, New York: Free Press.

[4] Levin, William C.1991. *Sociological Ideas. Concepts and Applications*, Belmont: Wadsworth Publishing Company, p.384.

[5] Gersten, Joanne C., Teitelbaum, F, Chapin C, ibid. p 1.