

**Suicide and Firearm Injury in Utah**  
**Linking Data to Save Lives**

# Suicide and Firearm Injury in Utah

## Linking Data to Save Lives

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#### Acknowledgements

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## EXECUTIVE SUMMARY

Firearms are a valued part of the fabric of many homes in Utah. This report was assembled to provide legislators, firearm owners, suicide prevention and mental health advocates, health clinicians, and others with practical data on characteristics of incidents in which firearm use leads to death, particularly suicide. The purpose is to help stakeholders craft prevention strategies that are responsive to the local problem and that build on the strengths and values of the communities and individuals most affected by firearm suicides: gun owners and their families.

In 2016 the Utah State Legislature enacted HB 440, which instructs the Department of Human Services (DHS) to collect and analyze data for a Suicide Prevention and Gun Study. Utah had already established itself as a leader in bringing gun stakeholders into the conversation about suicide prevention and developing innovative outreach strategies. HB 440 has now established Utah as a leader in linking data from disparate data sources to best learn from yesterday's tragedies how to prevent tomorrow's.

Researchers at the Harvard T.H. Chan School of Public Health carried out the study under a contract with the DHS/s Division of Substance Abuse and Mental Health and with enormous assistance by a number of state agencies. The study linked data from Utah's Violent Death Reporting System to criminal background checks, concealed carry permit status, and hospital data to learn in greater depth about opportunities to prevent suicide overall and firearm suicide in particular. The study also examines BRFSS survey data on firearm ownership and storage in the state. All data provided to the study team were anonymous and contained no personal identifiers. Information about the datasets, data sharing agreements, and IRB approvals is in the Data Source section at the end. Main findings follow:

### BASIC FATALITY DATA

- Suicides outnumber homicides 8-1 in Utah. Suicides have been rising since 2008.
- Suicide rates in Utah far exceed homicide rates in both metropolitan and rural counties. The homicide rate in the most *rural* counties is somewhat higher than in metro counties.
- 85% of firearm deaths in Utah were suicides 2006-2015.
- Firearms account for half of all suicides.
- Utah's suicide rate is higher than the nation's, but similar to its neighbors.
- Utah suicide rates were highest among white and American Indian males. Suicide rates were highest among middle-aged men and men over 75.
- The higher suicide rate in the most rural counties was driven by a higher firearm suicide rate among all ages and among youth.

### FATAL AND NONFATAL SUICIDE ATTEMPTS

- Comparing suicide methods, firearms were the most lethal method of self-harm in Utah, with a Case Fatality Rate (CFR) of 87%. (CFR is the proportion of all acts—those treated in the hospital and those dying without hospital care—that are fatal.) Drug overdose and sharp instrument wounds were the least lethal, with a CFR of 2%.\*
- The method-specific CFR varied by age and sex, with higher CFRs for any given method among males and older people. Even given differences by demographics, however, the largest difference in CFRs was by method.
- Method-specific CFRs were about the same in metropolitan and rural counties.

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\* We recommend that this be referred to simply as "low" and not by the actual number in media coverage and public forums. Separate research has indicated that people assume these methods are more lethal than they are; this miscalculation may in fact save some lives.

- Metropolitan counties had higher rates of suicide attempts. Rural counties had higher rates of suicide deaths. The higher rural death rate was driven by greater use of firearms in attempts, not by higher CFR or higher attempt rate.

#### *Implications for Prevention*

- Given the high CFR for firearms, if a proportion of Utahns who would otherwise attempt suicide with a firearm were prevented from using a gun, there would likely be fewer suicide deaths, *even* if those who attempted substituted another method. One way to achieve this is if loved ones of people at risk for suicide lock any household guns and hold onto the keys or store the guns away from home until the person recovers.

### PREVIOUS HOSPITAL VISITS

- About half of people who took their lives were treated in a Utah hospital in the year before their death.
- Fewer of those decedents who used a gun vs. a non-gun method had a hospital visit at which a behavioral health problem was diagnosed (25% vs. 42%).
- 10% of decedents were treated for a suicide attempt or other intentional self-harm in the year before their death.
- People who died by guns were least likely (6%), and those by drugs were most likely (17%), to have been treated for self-harm in the year prior to their suicide death.
- Most (78%) previous self-harm was with drugs or sharp instruments, regardless of the method used in the fatal incident.

#### *Implications for Prevention*

- Hospitals are an important venue for prevention. However, focusing only on those in the hospital for a suicide attempt will miss 90% of suicides.
- Focusing on those who visit the hospital with a mental health or substance abuse issue could reach a third of would-be suicides. A message to convey is the potential safety advantage of storing guns away from home or otherwise inaccessibly to the patient until he or she recovers.
- With half of suicide decedents never seen in the hospital in the year before death, other healthcare organizations, places of worship, and community-based groups could extend this message outside the hospital.

### TOXICOLOGIC FINDINGS & SUICIDE CIRCUMSTANCES (NVDRS)

- Alcohol was the drug that most frequently tested positive among people who died by suicide.
- Alcohol test positives were low among the oldest and youngest victims and 36% among those ages 20-59.
- Antidepressants (52%), opioids (48%), and benzodiazepines (40%) were the most common test positives for people who died by drug overdose.
- After mental health/substance abuse problems, relationship problems like break-ups were the most common circumstance preceding suicides by firearm and by suffocation (hanging, ligature, plastic bag).
- Arguments were noted as playing a precipitating role in a quarter of suicides. Among these, those involving a gun had a unique trait: one-in-three took place in the midst of the argument.
- People dying by firearms were less likely than those dying by other methods to have attempted suicide before but as likely to have disclosed their suicidal thoughts to someone.

#### *Implications for Prevention*

- Many decedents were not known to be in mental health care. Given the prominence of life crises preceding suicide, religious leaders, social services staff, divorce and defense attorneys, and others could educate those in crisis about 1) strategies for safely handling su-

icidal thoughts if they emerge and 2) advantages of storing guns away from home or inaccessibly until things improve.

- Suicides that occur during an argument indicate not all suicides are planned; lethal means counseling could occur with people at risk, not only with people who disclose suicide plans.
- 40% of decedents were reported to have been in behavioral healthcare. Care systems potentially could develop ways to flag those whose distress is not improving and find alternate strategies.
- Locking abuse-prone medicines (like opioids and benzodiazepines) and limiting other medications accessible at home to non-toxic quantities may help reduce harm from overdose.
- Resources to support and evaluate this work would need to be identified.

## BACKGROUND CHECKS

- Most suicide decedents (about 87%) could have passed a background check for firearm possession on their day of death.
- 13% of suicide decedents—and 8% of those using a gun—would have been prohibited from possessing a firearm.
- Decedents who used a gun were more likely than those who used other methods to have been able to pass a background check at the time of their suicide.
- Most people who took their lives with a gun could have passed a background check, even if they had a drug or alcohol problem, criminal problem, or previous suicide attempts.

### *Implications for Prevention*

- The implications of the public safety data for prevention are probably best discussed by a diverse group of policy makers, gun owners, suicide prevention experts, public safety personnel, suicide survivors, clinicians and others to think outside the box and find strategies that work reasonably for all stakeholders.
- Since most people who kill themselves would be able to pass a background check, friends and family play an important role in urging loved ones in crisis to store their guns away from home or otherwise inaccessibly until the situation improves.
- 23% of men who kill themselves with a gun were CFP holders. Utah recently began including a suicide module in CFP classes. Evaluating such efforts is important. If effective, expanding to other community venues – like gun shows, gun shops, PTA meetings, sportsmen clubs, etc., might help change social norms regarding keeping a gun from a loved one who is struggling in the same way the “friends don’t let friends drive drunk” has had some impact on drunk driving.

## CONCEALED CARRY PERMIT STATUS

- One in four Utah men who took their lives with a firearm had a current or lapsed permit to carry a concealed firearm.
- Overall, Utahns with and without a current permit to carry a concealed firearm had similar suicide rates.
- Among males, 84% of decedents who were ever permit holders used a gun in their suicide.

### *Implications for Prevention*

- 23% of men who kill themselves with a gun were CFP holders. Utah recently began including a suicide module in CFP classes. Evaluating such efforts is important. If effective, expanding to other community venues – like gun shows, gun shops, PTA meetings, sportsmen clubs, etc., might help change social norms regarding keeping a gun from a loved one

who is struggling in the same way the “friends don’t let friends drive drunk” has had some impact on drunk driving.

## YOUTH FIREARM SUICIDES

- 91% of firearm suicides among youth under 18 occurred at home.
- Most of the guns used in youth suicides belonged to the family (68%) or the youth (19%).
- Rifles and shotguns accounted for 62% of rural youths’ firearm suicides.
- Utah’s youth suicide rate is similar to its neighbors but significantly higher than the nation’s.

### *Implications for Prevention*

- With parents/guardians having legal authority over nearly 9 out of 10 of the firearms used in suicides of youth under 18, parents are key to prevention.
- Urging parents to lock their guns may not entirely address the youth firearm suicide issue if their teenagers know where the keys are or indeed own a gun and control the keys. A more useful message may be to lock all guns and ensure children and teens don’t have access to the keys or combination. When a youth is struggling with a mental health or substance abuse problem or life crisis, storing guns away from home may be prudent.
- Parents may be unaware that youth can use long guns to take their lives.
- Some parents who do lock their guns may be unaware their child can defeat the lock.
- Clinicians, gun owners, and others could work together to develop messaging and storage options that are sensitive to local values and realities.

## FIREARM OWNERSHIP & STORAGE (BRFSS)

- Nearly half of Utah households have firearms, with ownership highest in rural counties and in Tooele County, according to the BRFSS survey of Utah adults.
- 13% of households in the most rural counties have an unlocked and loaded firearm at home compared with 6% statewide.
- Heavier drinkers were more likely than others in Utah to report having guns at home. People with poorer mental health were about as likely as others to report having guns.
- Among married people with guns at home, a higher proportion of men (20%) than women (6%) report that at least one gun was both unlocked and loaded—suggesting that wives may not always know how their husbands actually store their guns.

### *Implications for Prevention*

- Higher rates of unlocked, loaded guns in rural counties may help explain their higher suicide rates. Unlocked guns may also explain the higher % of gun suicides that occur in the midst of an argument.
- Utahns with poor mental health and those with potential drinking issues do not appear to be hearing the message—whether from loved ones, places of worship, clinicians, or firearm stakeholders—to store guns locked or away from home. Utahns from a variety of perspectives may consider working together to develop and evaluate strategies to convey this message.
- Clinicians who advise parents to store guns locked should be aware that if they’re speaking with the non-gun owning parent, that parent might not actually know how the guns are stored.
- BRFSS data on gun storage patterns is a useful way to track changes in household ownership and storage over time and to measure whether changes are associated with changes in injury outcomes. Repeating this module every 3-5 years would assist in evaluating the impact of interventions.

## HOMICIDE-SUICIDES

- On average, a homicide-suicide incident occurred every other month in Utah.

- Homicide-suicide victims were usually the intimate partner or family member of the perpetrator. There were no cases of a stranger-perpetrated homicide-suicide over the ten-year period studied (2006-2015).

## HOMICIDES

- Homicides by strangers were infrequent in Utah, accounting for 6% of all homicides.
- Over three-quarters of child homicide victims (2011-2015) were killed by a family member, most often the parent or mother's boyfriend. No child homicides were listed as perpetrated by a stranger.
- Two-thirds of women under 65 were killed by a current or former intimate partner; 2% were killed by a stranger.
- When men were killed by a stranger or a person of undetermined relationship, typically the decedent was either criminally involved (e.g., drug dealer killed by customer), killed in a justifiable homicide, or killed during an escalating argument, often at a bar or party.
- Random attacks by a stranger or robbery homicides of non-criminally-involved people whether at home, at a place of business, or in public, occurred an estimated 3-4 times a year.

### *Implications for Prevention*

- Homicides by a stranger are rare in Utah. When they do occur they are often precipitated in part by the victim's own criminal activity or by an escalating, mutual argument. Still, homicides of non-criminally involved victims, for example during a home invasion or store robbery, do occur an estimated 3-4 times a year.
- The relevance of homicide data to suicide prevention is that Utahns can use Utah data as they weigh the relative threat of stranger violence, domestic violence, and suicide with respect to their own family's safety and their own household's acquisition and storage of firearms.



## **Section 1**

### **FATALITY DATA**

We begin with basic fatality data. Do homicides outnumber suicides? Are problems getting better or worse? Who is most affected, and where?

FATALITY DATA

**Suicides far outnumber homicides in Utah. The suicide rate has been rising since 2008.**

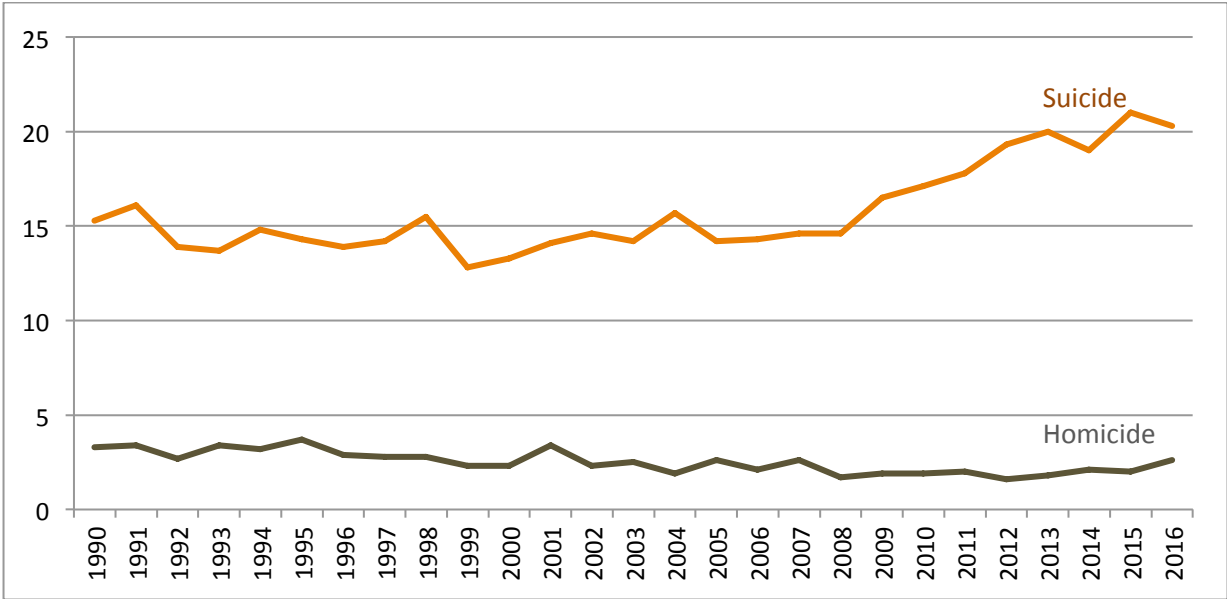


Fig. 1a Suicide and homicide rates per 100,000 persons, all methods, Utah, 1990-2016 (Source: CDC WONDER)\*

Suicides outnumber homicides 8-to-1 in Utah and have increased by about a third since 2008. Increases have been among both males and females, primarily among the young and middle-aged, and across most suicide methods.

**Suicide rates in Utah far exceed homicide rates in both metropolitan and rural counties. The homicide rate in the most rural counties is higher than in metro counties.**

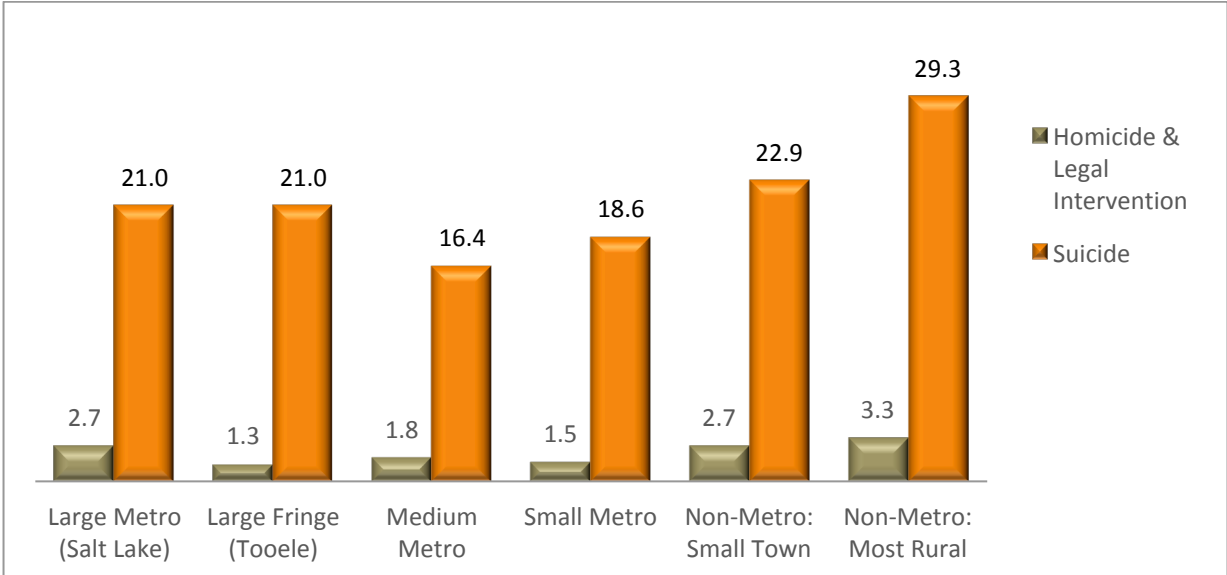


Fig 1b Suicide and homicide rate per 100,000 residents by decedent's type of county of residence, Utah suicides, 2007-2016 (Source: CDC WONDER)

\* Throughout this report, all rates are crude (unadjusted) rates.

FATALITY DATA

**85% of firearm deaths in Utah are suicides.**

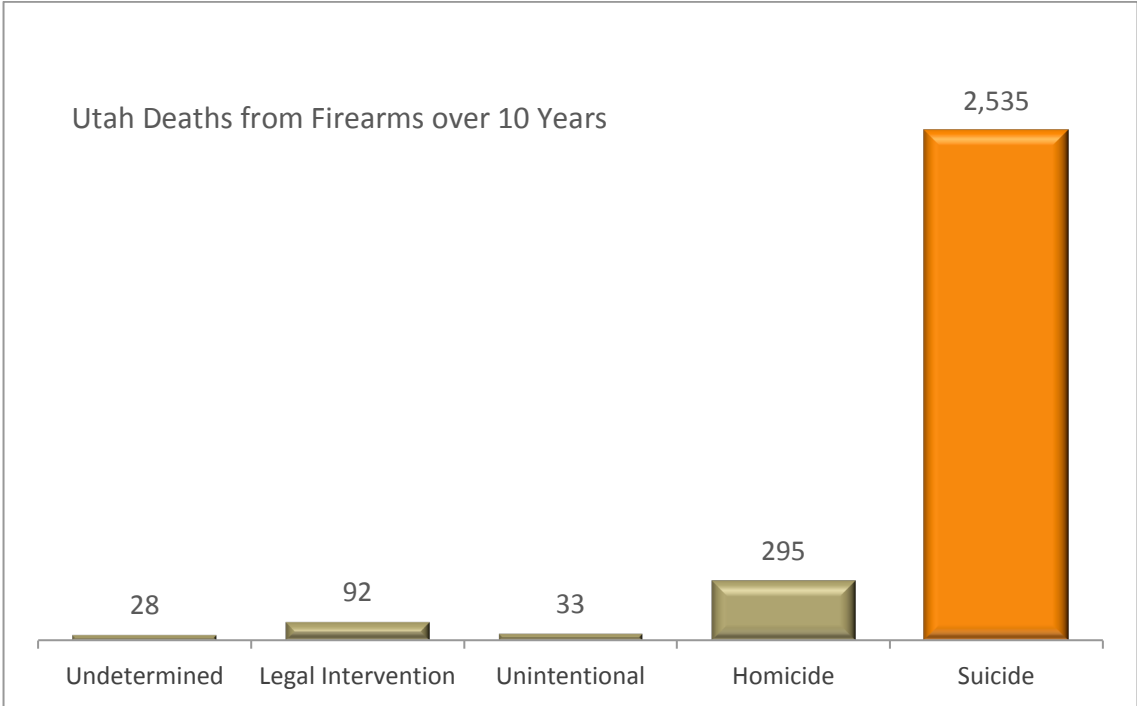


Fig 1c. Number of Utah firearm deaths by type, 2006-2015 (Source: NVDRS\*)

Suicides make up the vast majority of firearm deaths in Utah. For every death from unintentional gunshot wound, there are 75 firearm suicides.

**Firearms are the leading method of suicide.**

Suffocation (e.g., hanging, ligature, plastic bags) and drug overdose (usually by medications) make up most of the remaining ways people take their lives, followed by gas inhalation (usually by motor vehicle exhaust). Suicides by sharp instruments, jumping, drowning, motor vehicle crashes, etc., (“other”) are less common.

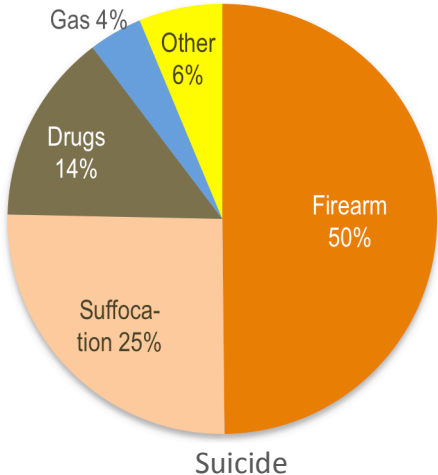


Fig. 1d Method of suicide, Utah, 2016 (Source: CDC WONDER)

\* Because legal intervention deaths are not always picked up as such in official mortality data, we use NVDRS data here which more accurately differentiates homicides from legal intervention deaths.

FATALITY DATA

Utah’s suicide rate is higher than the nation’s, but similar to its neighbors.

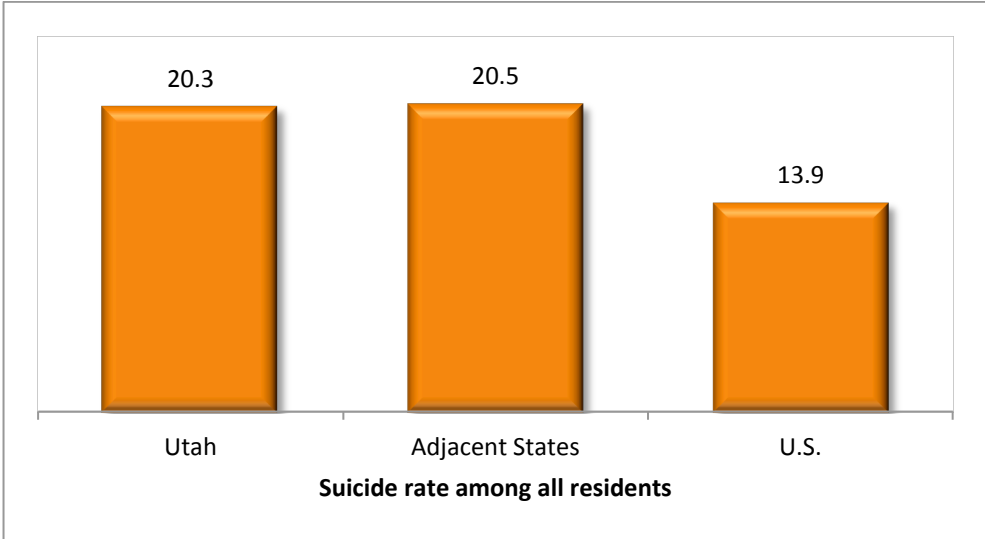


Fig. 1e OVERALL suicide rates per 100,000 population, 2016 (Source: CDC WONDER)

At 20.3 suicides for every 100,000 residents, Utah’s 2016 suicide rate is higher than the nation’s (13.9) and similar to the overall average in bordering states (CO, NM, AZ, NV, ID, WY).

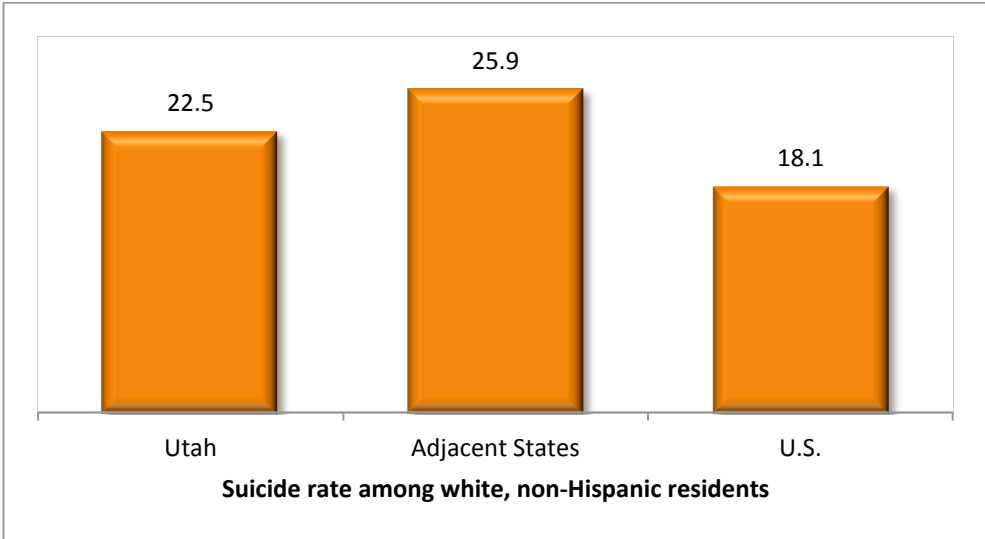


Fig. 1f WHITE (non-Hispanic) suicide rates per 100,000 population, 2016 (CDC WONDER)

Suicide rates vary a great deal by race/ethnicity, among many other factors. Utah has a higher proportion of white residents than the nation (80% vs. 62%). When comparing among white, non-Hispanic residents only, the gaps between Utah and the U.S. suicide rates are not as wide (Fig 1f).

FATALITY DATA

Utah suicide rates were highest among white and American Indian males.

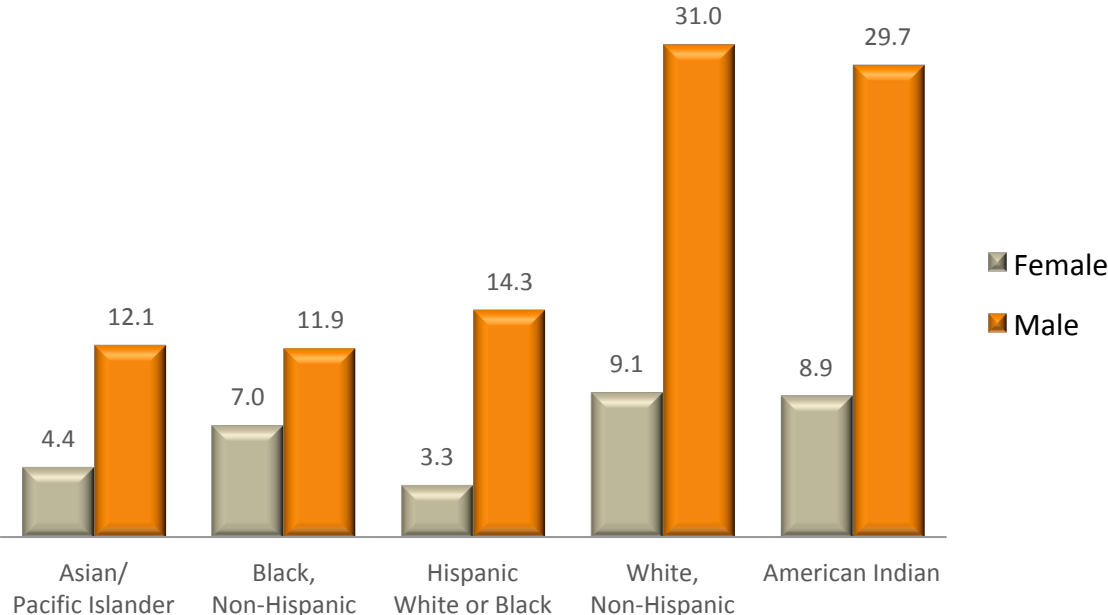


Fig 1g. Female and male suicide rates per 100,000 by race/ethnicity, Utah 2007-2016 (Source: CDC WONDER)

Suicide rates were markedly higher among white (non-Hispanic) residents and American Indian residents. In terms of the burden of suicide, whites made up 88% of suicide deaths. Over the decade ending with 2016, 2,644 whites (non-Hispanic), 166 Hispanics (black or white), 56 American Indians, 54 Asians, and 18 blacks (non-Hispanic) died by suicide in Utah.

Suicide rates were highest among middle-aged men and men over 75.

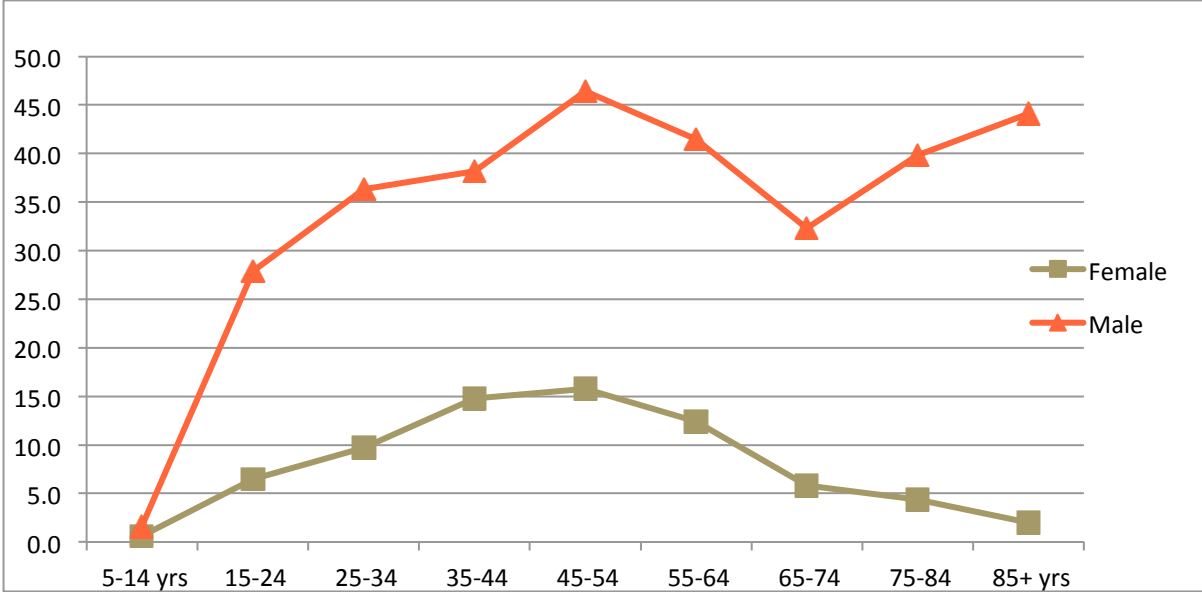


Fig 1h. Female and male suicide rates per 100,000 by age group, Utah 2007-2016 (Source: CDC WONDER)

FATALITY DATA

The higher suicide rate in the most rural counties was driven by a higher fire-arm suicide rate among all ages...

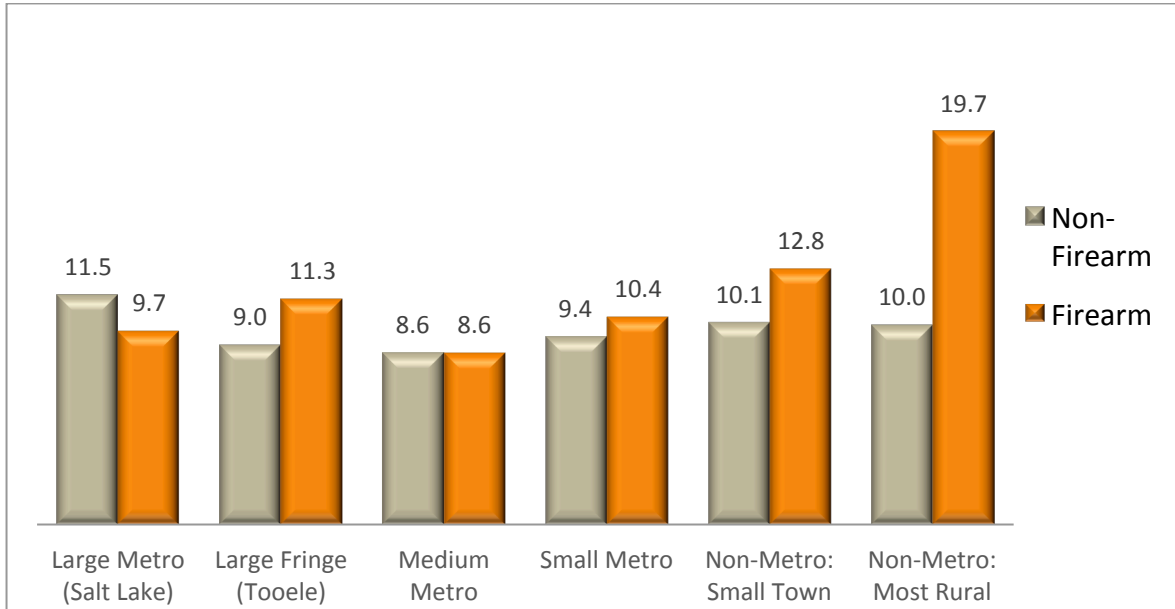


Fig 1i Suicide rate among all ages by firearm and by other methods, sorted by type of county of residence, 2012-2016 (Source: CDC Wonder)

...and among young people under 21.

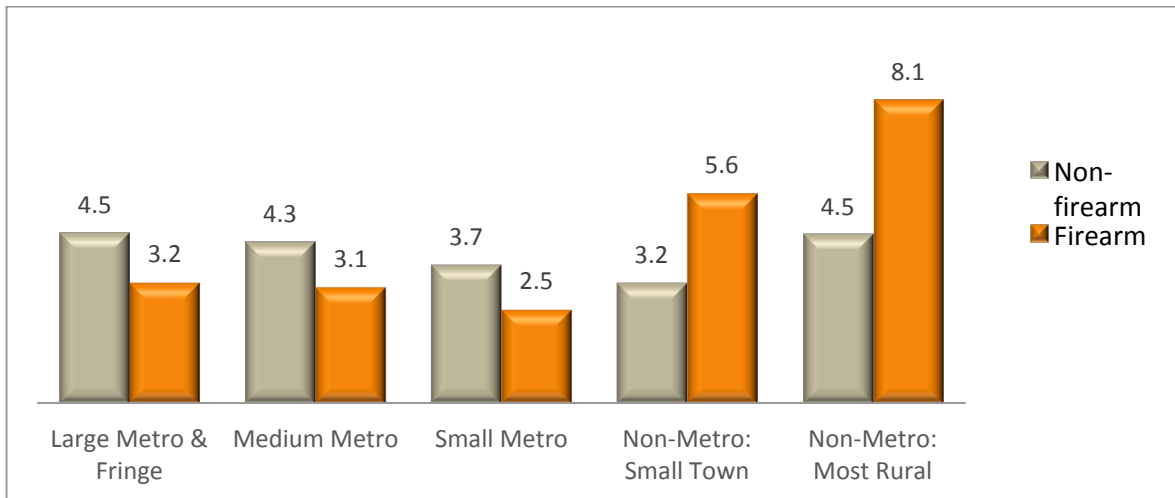


Fig 1j Suicide rate among youth under 21 years by firearm and by other methods, sorted by type of county of residence, 2010-2016 (Source: CDC Wonder) NOTE: Due to smaller population of youth, a longer time span was used. The Large Fringe category (with 12 suicides) was combined with the Large Metro category due to small numbers. Rates are per 100,000 7-20 year-olds.

While suicide rates were highest in rural areas, 75% of suicides among all ages were among residents of Large and Medium Metro Counties (Salt Lake, Box Elder, Davis, Juab, Morgan, Utah, Weber), since these are the counties in which most Utahns live.

Among youth living in metro areas, suffocation was the most common suicide method.

## Section 2

### FATAL & NONFATAL SUICIDE ATTEMPTS

In the last section we learned that suicide is a far larger problem than homicide in Utah, that the problem is most pressing (in terms of rates and numbers) among White non-Hispanic middle-aged and older men, and that rates were highest in rural areas.

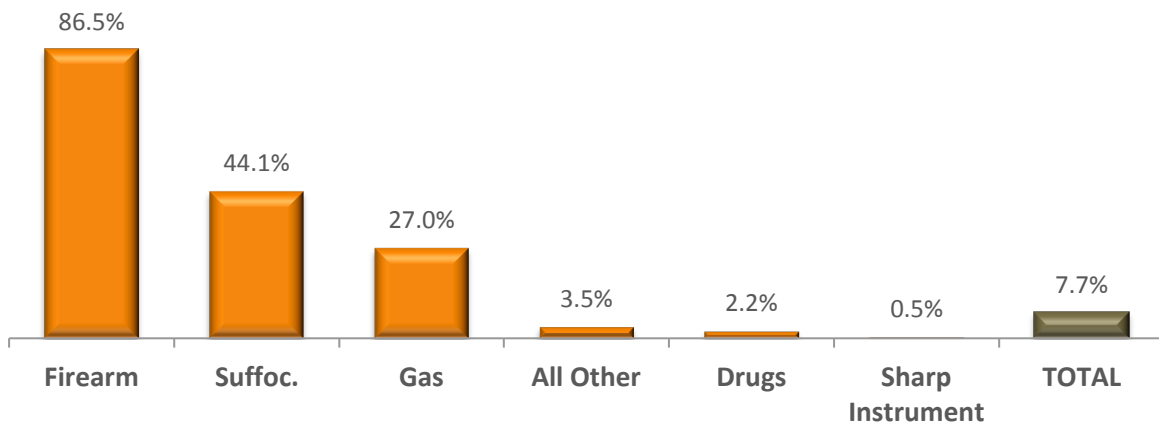
Higher suicide rates are driven by two components: the proportion of people who attempt to end their lives, and the proportion of those attempts that are lethal (Case Fatality Rate, or CFR).

This section uses Utah hospital data to measure both—the rate of suicide attempts and the CFR—and to examine differences between metropolitan and rural counties as a case study.

The special case of youth firearm suicide—an area of critical concern in the state—is covered in Section 6.

## CASE FATALITY RATE

**Drug overdose and sharp instrument wounds were the least lethal methods of self-harm in Utah; firearms were the most lethal.**

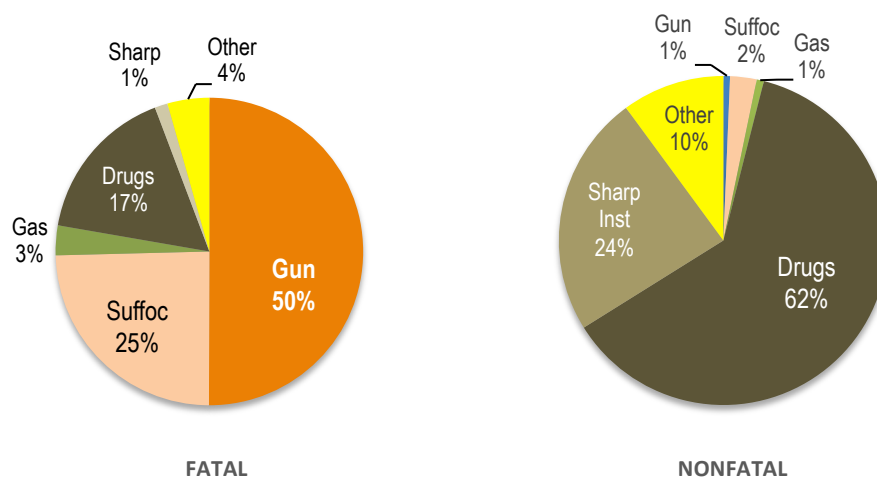


**Fig. 2a** Case Fatality Rate (% of incidents that were fatal), by method of self-harm –Utah suicides and hospital-treated self-harm, 2014-2015. (“Suffoc.” refers to suffocation and covers hanging, ligature, plastic bag, etc.)

The Case Fatality Rate (CFR) for self-harm\* presented here is the percent of all self-harm events (whether seen in the hospital or dying at the scene) that are fatal. This report combines suicide deaths with nonfatal self-harm treated in the emergency department or inpatient at Utah acute care, VA, and psychiatric hospitals.

**The proportion of events that was fatal was 87% for firearms, 44% for suffocations/hangings, 27% for gas inhalations, 2% for drug/medication overdoses, and less than 1% for sharp instrument wounds.\*\***

**For every suicide death, over 12 nonfatal incidents were treated in the hospital.** The suicide methods used in nonfatal events were very different from those used in fatal events. Most nonfatal events (86%) were with drugs or sharp instruments, while most deaths (75%) were with firearms or suffocation (hanging, ligature, plastic bags).



**Fig 2b** Type of suicide method used in nonfatal and fatal events, Utah 2014-2015.

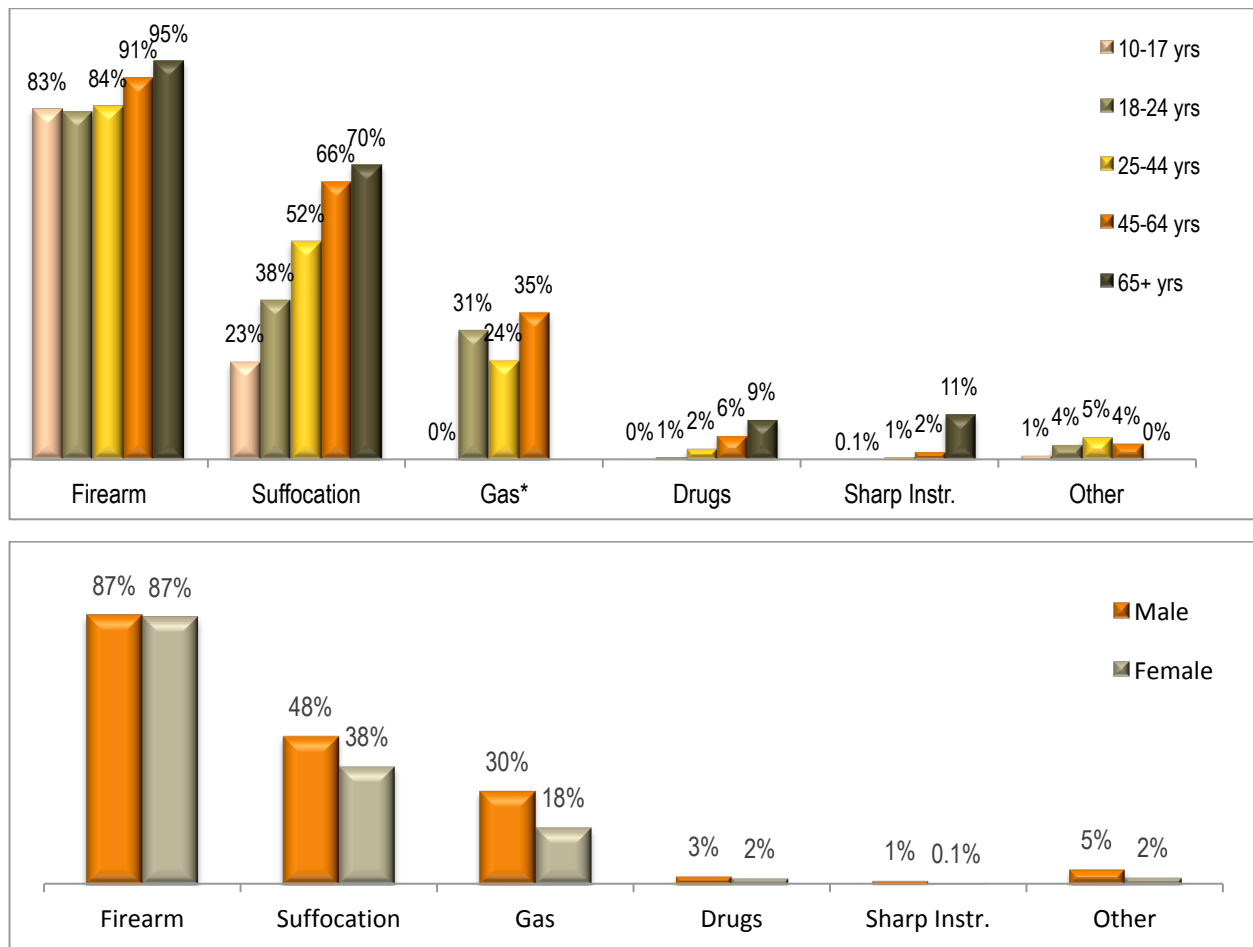
\* Throughout this report “self-harm” refers to suicide, suicide attempts, and other intentional self-harm. It is not possible to reliably differentiate suicidal from non-suicidal intentional self-harm in hospital data. Based on other research, the majority of hospital visits coded for self-harm are suicide attempts.

\*\* We advise in media reporting that the CFR for overdose and sharp instruments be referred to only as “low.” The fact that many people assume these methods are more lethal than they often are may in fact save some lives.



## CASE FATALITY RATE (Cont'd)

The method-specific CFR varied somewhat by age and sex.



**Fig. 2c** Case Fatality Rate (% of incidents that were fatal), by method of self-harm and age group (top graph) and sex (bottom graph) –Utah suicides and hospital-treated self-harm, 2014-2015.

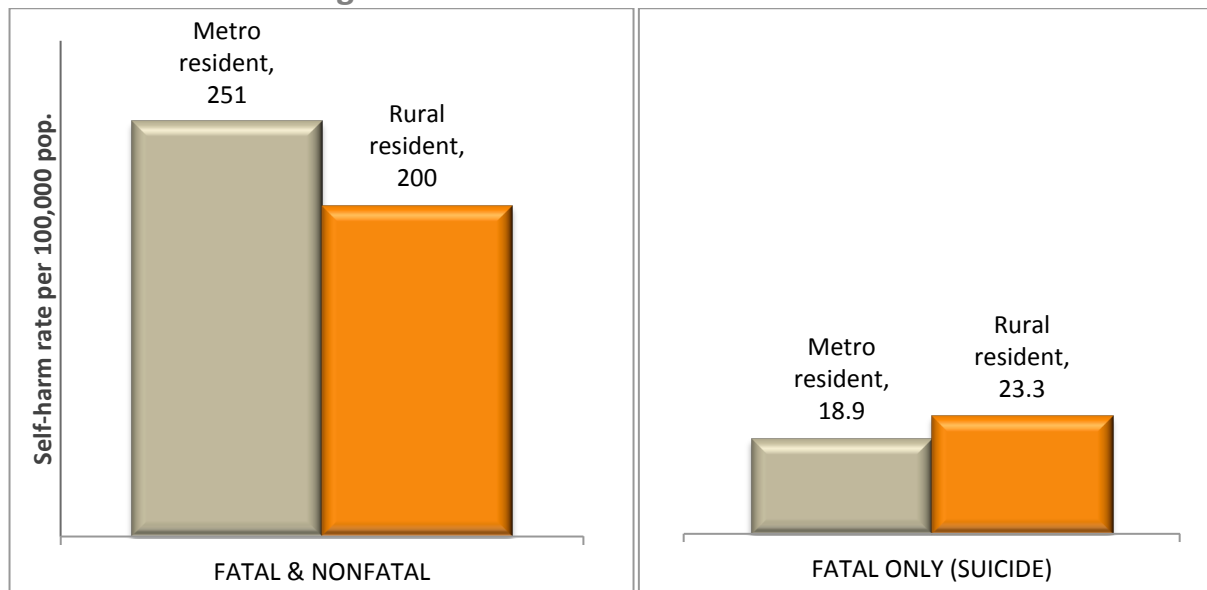
\* There were too few gas inhalation events in the 65+ group from which to generate a reliable CFR.

Across the major methods, CFR was lowest for youth and females and highest for people 65 and over. 83% of gunshot wounds among those under 18 were lethal, compared with 95% for elders (Fig 2c). Males had higher method-specific CFRs for every method except firearms. Whether, and the extent to which, factors such as greater suicidal intent, age-related frailty, and technical know-how play a role in demographic differences in CFRs cannot be determined from the data.

**The largest differences in CFRs was by method** (e.g. 87% for guns vs. 1-2% for sharps and drugs), not demographics.

## SELF-HARM RATES IN RURAL AREAS

The overall self-harm rate was higher in *metropolitan* counties. But the *fatal* self-harm rate was higher in *rural* counties.

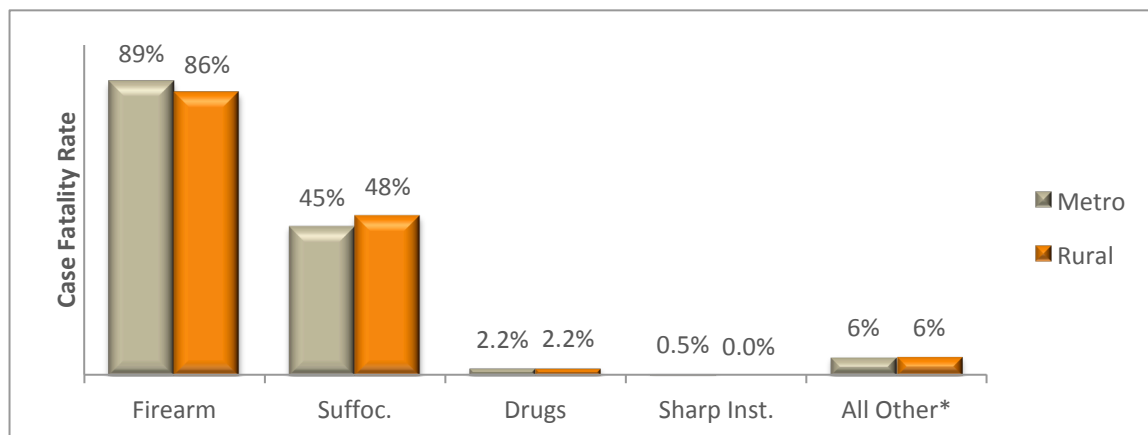


**Fig. 2d** Self-harm rate by metro-rural county of residence for FATAL & NONFATAL cases (left chart) and FATAL cases (right chart)—Utah suicides and hospital-treated self-harm, 2014-2015.

If suicidal behavior is higher in metropolitan counties, what explains the higher suicide rate in rural counties? Does greater travel time to emergency care mean those who attempt suicide in the country are more likely to die? It doesn't appear so.

### Method-specific CFRs were similar in metropolitan and rural counties.

That is, people who shot themselves in the country were about as likely to die as those who shot themselves in the city. And people who swallowed pills in the country were just as *unlikely* to die as people who swallowed pills in the city.



**Table 2e.** Case Fatality Rate by suicide method and victim's county of residence—Utah suicides and hospital-treated self-harm, 2014-2015.

\* Gas inhalation incidents are included in the Other category because there were too few in rural counties from which to generate a reliable CFR.

SUICIDE RATES IN RURAL AREAS

The higher suicide rate in rural counties was the result of a higher rate of incidents involving firearms in rural counties.

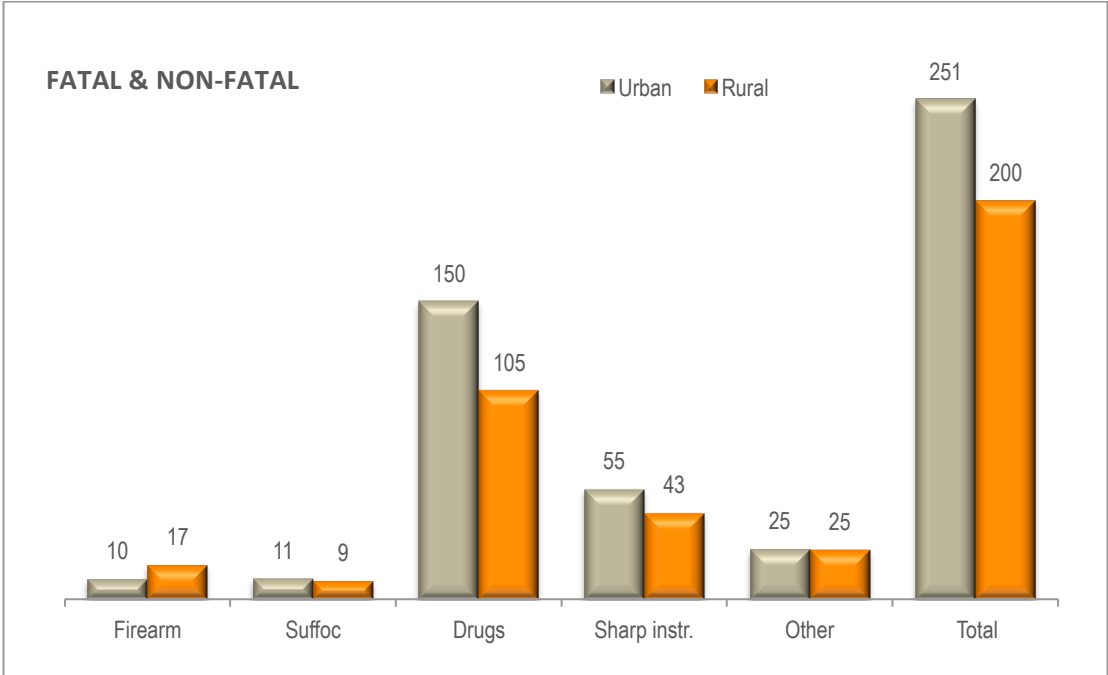


Fig. 2f Self-harm rate (FATAL AND NONFATAL) per 100,000 residents in urban and rural counties—Utah, 2014-2015.

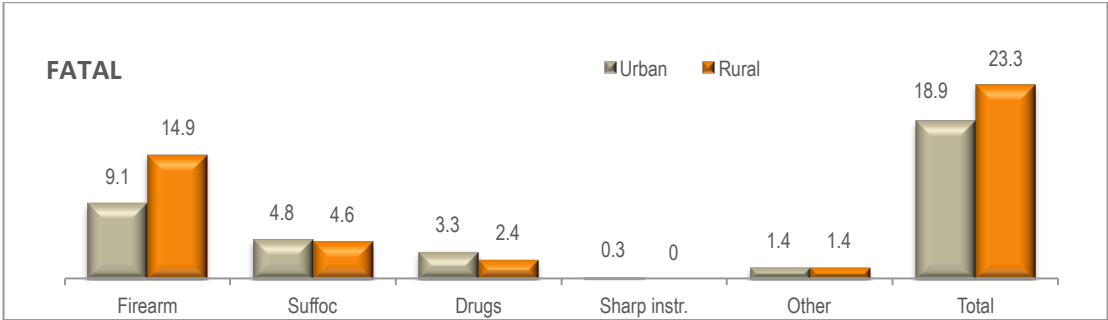


Fig. 2g Self-harm rate (FATAL [Suicide]) per 100,000 residents in urban and rural counties—Utah, 2014-2015

Method-specific CFRs were the same in rural and metropolitan counties, and metro counties had higher rates of suicidal acts. **Why, then, were suicide rates higher in rural counties?** The answer lies at least in part in the mix of methods used in attempts.

There were higher rates of intentional drug overdoses and sharp instrument wounds in urban counties, but given their low CFR, these incidents yielded relatively few deaths (Fig 2f). There were similar rates of suffocation and “other” acts; these yielded similar rates of deaths in urban and rural counties. **But there was a higher rate of firearm injuries in rural counties. This yielded large enough numbers of deaths to push the rural suicide rate above the urban suicide rate (Fig 2g).**

**Implications for Prevention**

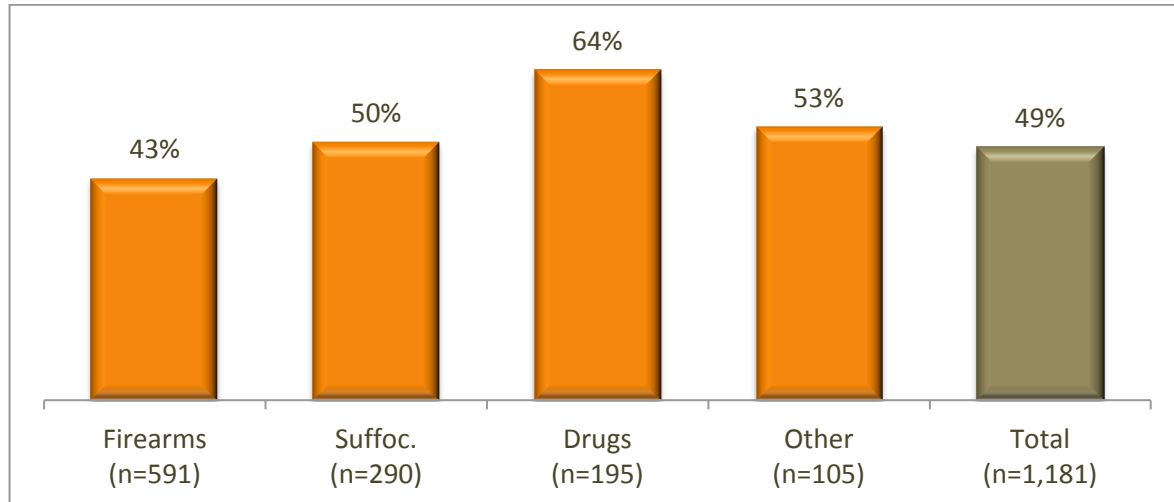
- Given the high CFR for firearms, if a proportion of Utahns who would otherwise attempt suicide with a firearm were prevented from using a gun, there would likely be fewer suicide deaths, *even* if the people substituted another method. One way to achieve this is if family members help keep guns from a loved one at risk for suicide.

## **Section 3**

### **HISTORY OF HOSPITAL VISITS**

Here we examine one venue for potential intervention with suicide decedents before they act to take their lives: the hospital.

**About half of suicide decedents were treated in a Utah hospital in the year before their death.**



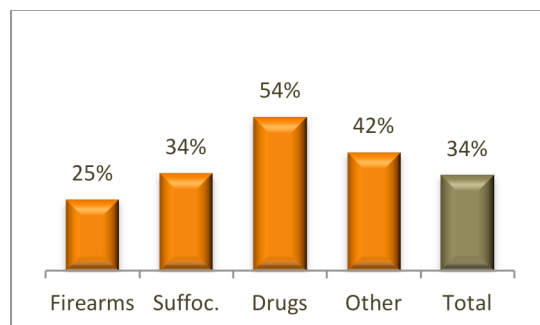
**Fig. 3a** Percent of decedents previously treated in a Utah hospital in the year preceding their suicide, by method of suicide--Utah Suicides, 2014-2015

The Utah Office of Health Care Statistics matched people who died by suicide in Utah in 2014 and 2015 to the Healthcare Facilities Database to learn whether they had visited an acute care, psychiatric, or VA hospital in recent years. Data were anonymized by the Office of the Medical Examiner before being shared with the research team.

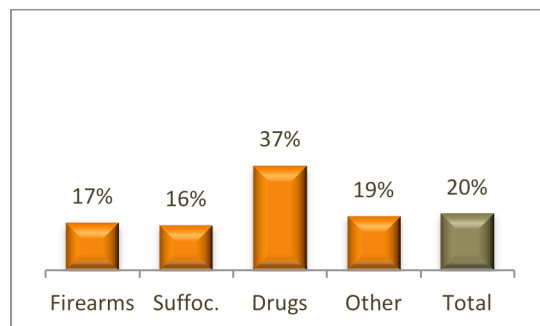
The proportion of suicide decedents who had been seen in a hospital in the past year\* ranged from 43% of those dying by guns to 64% of those dying by drug overdose.

**Fewer decedents who took their life with a gun had a hospital visit in the past year at which they were diagnosed with a behavioral health problem than those who used other methods** (25% vs. 42%). Behavioral health problems were defined as mental health, substance use, or self-harm diagnoses. Among suicide decedents overall, substance abuse diagnoses (24%) were about as frequent as mental health diagnoses (26%), with much overlap.

**One in five suicide decedents had been admitted as an inpatient in the past year.** More of those who overdosed than other decedents had a past-year admission.



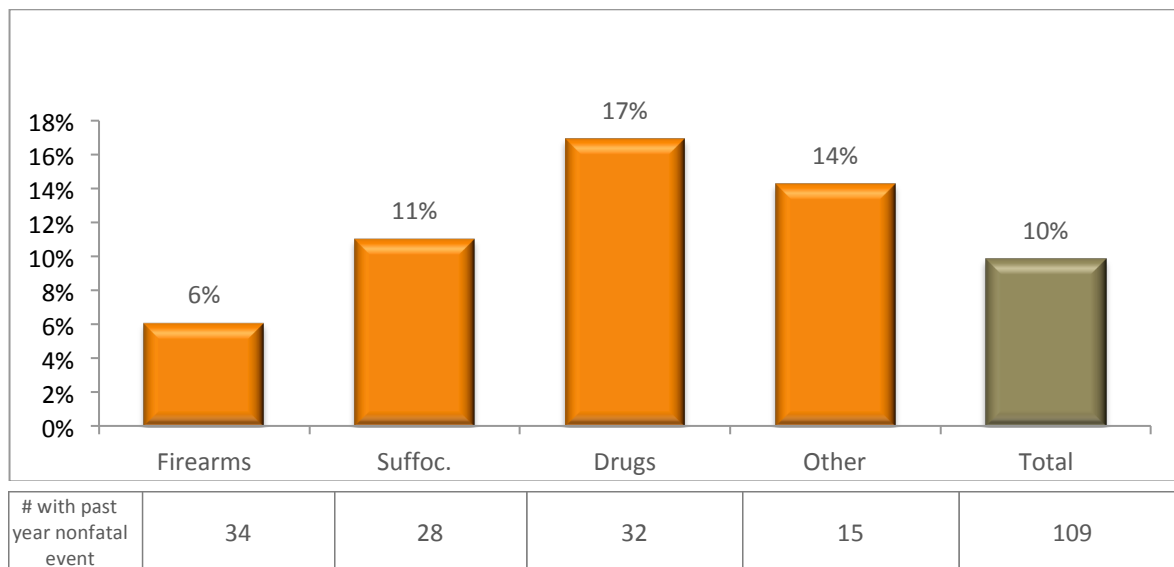
**Fig. 3b.** % of decedents diagnosed in the hospital with a behavioral health issue in the year before death – Utah Suicides, 2014-2015



**Fig 3c.** % of decedents treated inpatient in the year before death – Utah Suicides, 2014-2015.

\*To protect patient confidentiality, the Healthcare Facility Database notes the calendar quarter—not actual date—of a patient’s visit. Depending on when within a quarter a suicide occurred, the “one-year look-back” will sometimes be a 10- or 11-month look-back.

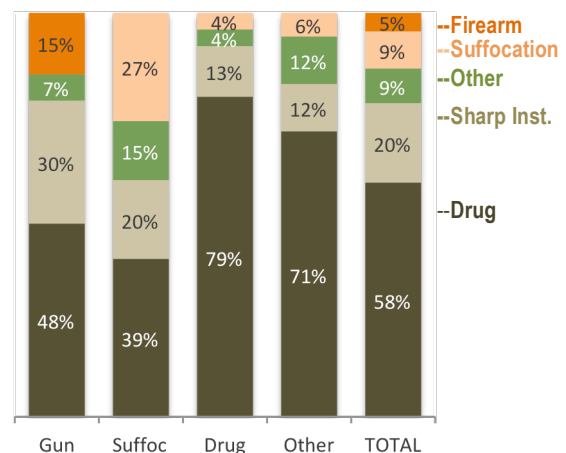
**Ten percent of suicide decedents were treated for a suicide attempt or other intentional self-harm in the year before their death.**



**Fig. 3d** % and number of people treated in a hospital for a suicide attempt or other self-harm in the year before their suicide, by method of suicide--Utah suicides 2014-2015

**People who took their lives with guns were least likely (6%), and those dying by drugs were most likely (17%), to have been treated for self-harm in the past year.** Still, people who died by guns made up the largest *number* of people seen for a nonfatal event, because guns comprised half of all suicide deaths. Looking back over 3 years yielded somewhat higher hospital-treated self-harm history overall (13%), ranging from 8% for gun suicides to 25% for drug suicides.

**Most (78%) previous self-harm was with drugs or sharp instruments, regardless of the method used in the fatal incident (Fig 3e).** Many people with a previous attempt switched methods over time. Among suicides with a history of a nonfatal event, 85% of gun suicides and 73% of suffocations used a different method in their nonfatal event.



**Fig. 3e** Method used in last nonfatal event (colored bands), sorted by method used in fatal event (columns) among suicides with a history of hospital-treated self-harm in past 3 years.

**Implications for Prevention**

- Hospitals are an important venue for prevention. However, focusing only on those who are treated for a suicide attempt will miss 90% of suicides.
- Focusing on those who visit the hospital with a mental health or substance abuse issue could reach a third of would-be suicides. A message to convey is the potential safety advantage of storing guns away from home or otherwise inaccessibly to the patient until he or she recovers.
- With half of suicide decedents never seen in the hospital in the year before death, other healthcare organizations, places of worship, and community-based groups could extend this message outside the hospital.

## **Section 4**

### **NATIONAL VIOLENT DEATH REPORTING SYSTEM (NVDRS)**

Utah's Violent Death Reporting System links data from the death certificate with reports filed by the Utah Office of the Medical Examiner and local law enforcement.

The data shed light on the circumstances preceding suicide and can inform prevention strategies.

## Alcohol was the drug that most frequently tested positive among suicides.

Table. Post-Mortem Toxicologic Test Results by Suicide Method, Utah Suicide Decedents, 2013-2015\*

	Firearm n=832	Hanging/ Suffocation n=442	Drug Overdose n=271	Other n=146	Total n=1,694
Alcohol	33%	30%	19%	28%	30%
Opioid	15%	8%	48%	15%	18%
Antidepressant	6%	6%	52%	13%	14%
Marijuana	15%	18%	7%	12%	14%
Benzodiazepine	7%	6%	40%	11%	13%
Amphetamine	6%	11%	15%	4%	8%
Muscle relaxants	2%	1%	9%	3%	3%
Cocaine	1%	3%	2%	6%	2%
Anticonvulsants	<1%	2%	19%	3%	4%
Antipsychotics	0%	1%	16%	3%	3%

\* Results shown are % test positives among those tested. Results are limited to 2013-2015 because testing was high in those years (over 85% for cocaine and marijuana; over 95% for the remainder).

Toxicologic testing is conducted under the authority of the Office of the Medical Examiner, and results are recorded in NVDRS. Some drugs that tested positive were present for medicinal use, others for recreational or addictive use, and others as a suicide method. Alcohol was the most common test positive for those dying by firearm, suffocation, and non-drug methods. **Antidepressants (52%), opioids (48%), and benzodiazepines (40%) were the most common test positives for overdose suicides.** All three—singly or in combination--were the substances most frequently flagged as causing the death.

### Alcohol test positives were highest among those ages 20-59.

Alcohol test positives were low (5% and 3%) among those under 18 and 80+ years of age. Among those 18-20 (still under the legal age to buy alcohol), the percent of cases involving alcohol rose significantly (30% by age 20) and peaked at age 23 (42%).

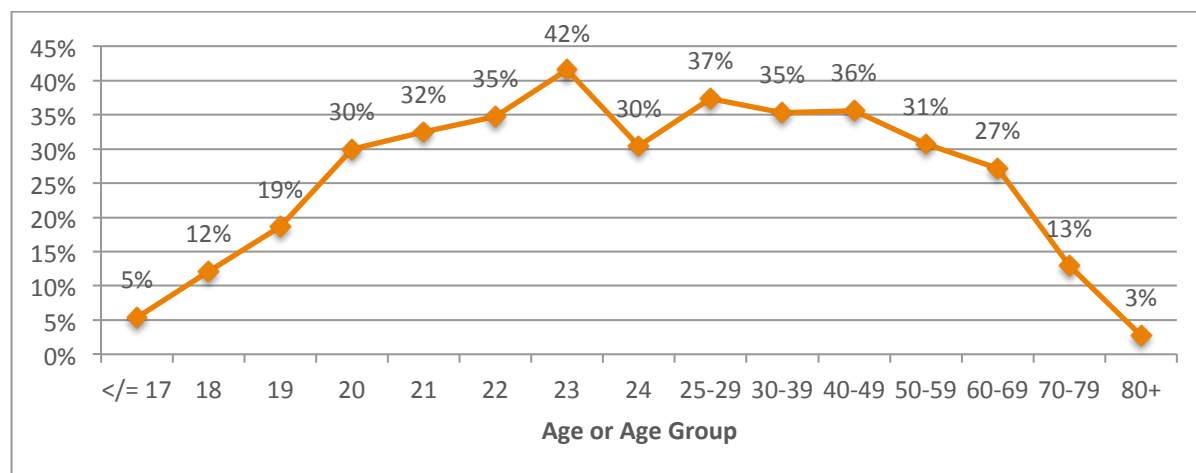
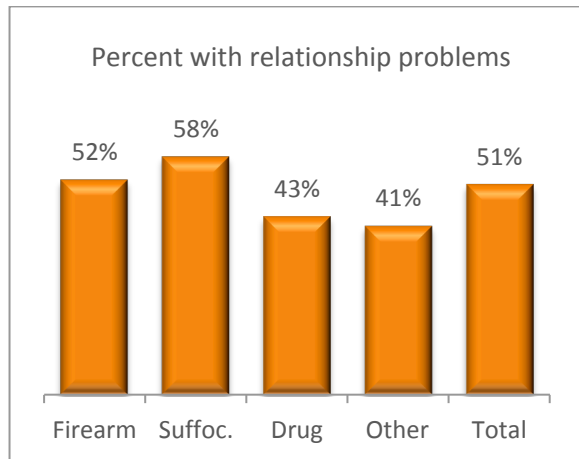


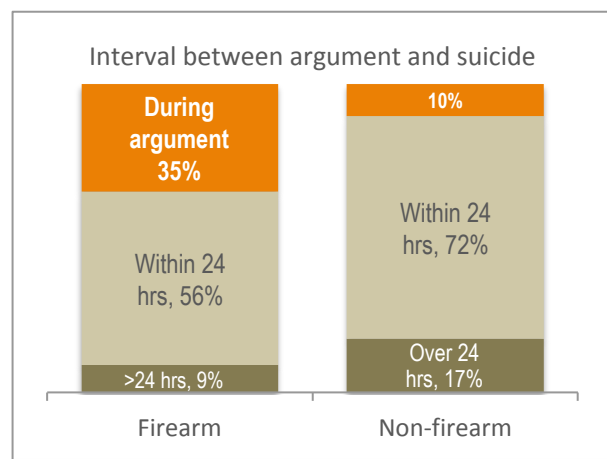
Fig. 4a Alcohol test positives by age, Utah Suicides, 2006-2015 (Source: NVDRS)



**Relationship problems like break-ups were the most common circumstance preceding firearm and suffocation suicides.**



**Fig 4b** % of decedents with relationship problems-- Utah suicides, 2006-2015. (NVDRS)



**Fig 4c** Interval between argument and suicide among suicides preceded by arguments, sorted by method.

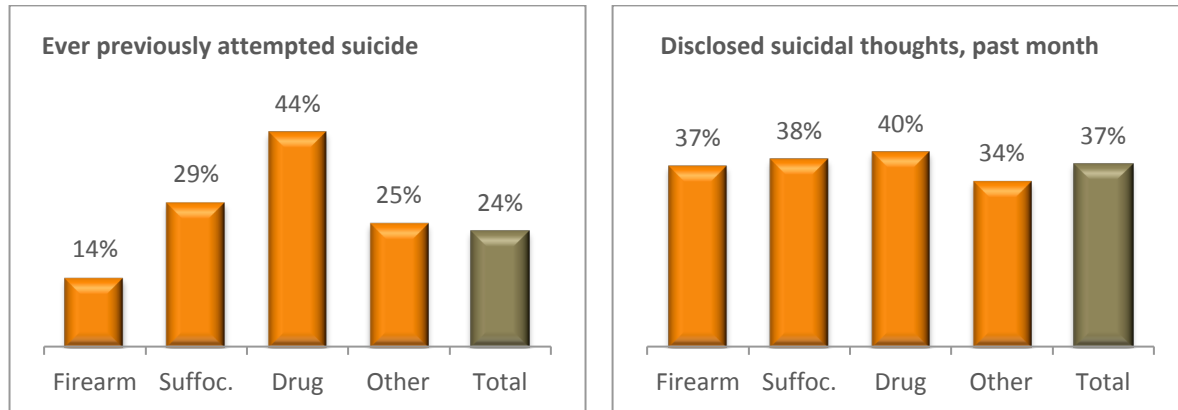
Police and Medical Examiner personnel ask next of kin and witnesses about the circumstances preceding suicide. Items below and on the next page are not always asked, known, or documented, so their prevalence in NVDRS may be an underestimate. Many suicide decedents were facing one or more life crises, according to reports by next of kin and others. Relationship problems were by far the most common circumstance, particularly for firearm and suffocation suicides. Health problems were often noted among older decedents. **Arguments were noted as playing a precipitating role in about a quarter of suicides.** Among these, those involving a gun had a unique characteristic: one-in-three occurred in the midst of the argument.

Percent of Decedents with Selected Life Stressors Noted—Utah Suicides, 2006-2015 (NVDRS)

Life Stressors Contributing to Suicide	Firearm n=2535	Suffoc. n=1186	Drug n=798	Other n=469	Total n=4,988
Relationship problem...	52%	58%	43%	41%	51%
...with intimate partner	41%	42%	31%	29%	39%
...with family/friends	19%	25%	18%	16%	20%
Crisis within 2 weeks	39%	40%	30%	28%	37%
Physical health problems	27%	15%	40%	18%	25%
Argument preceded suicide*	25%	25%	19%	15%	23%
Criminal/legal problems	14%	22%	11%	14%	15%
Job problem	15%	15%	11%	15%	14%
School problem (age <21 only)	12%	15%	21%	8%	13%
Financial problem	13%	12%	10%	12%	12%
Suicide preceded by serious crime**	8%	9%	4%	7%	8%
Suicide/death of loved one, past 5 yrs.	8%	9%	8%	8%	8%
Eviction/housing loss**	5%	6%	5%	6%	5%
Perpetrator of violence, past mo.	6%	5%	2%	4%	5%
Victim of violence, past mo.	1%	1%	1%	0%	1%

\* New variable; years shown are 2011-2015    \*\* New variable; years shown are 2009-2015  
Columns do not sum to 100% because decedents often have multiple stressors

**Firearm decedents were less likely than others to have attempted suicide before but as likely to have disclosed their suicidal thoughts to someone.**



**Fig 4d** % of decedents with previous suicide attempts and past-month disclosures of suicidal feelings to others according to police and Medical Examiner reports—Utah Suicides, 2006-2015. (Source: NVDRS)

People who took their lives with drugs were more likely than others to have had a known mental health or substance abuse problem (85%) and to have previously attempted (44%); two-thirds were also in treatment when they took their lives. The majority of those dying by firearms and other methods were reportedly not in treatment.

Table. % of decedents with selected mental health/substance issues—Utah Suicides, 2006-2015

Mental health/Substance Abuse Issue	Firearm n=2535	Suffoc. n=1186	Drug n=798	Other n=469	Total n=4,988
Any mental health/substance abuse problem	57%	67%	85%	56%	64%
Mental health problem	42%	49%	74%	44%	49%
Alcohol problem	16%	18%	17%	13%	17%
Other drug problem	14%	25%	34%	14%	20%
Any substance abuse problem	27%	35%	42%	23%	31%
In mental health/subs abuse treatment	33%	39%	68%	35%	40%
Disclosed suicidal thoughts, past mo.	37%	38%	40%	34%	37%
Previous attempt	14%	29%	44%	25%	24%
Left suicide note	37%	38%	45%	41%	39%

**Implications for Prevention**

NVDRS

- Many decedents were not known to be in mental health care. Given the prominence of life crises preceding suicide, religious leaders, divorce and defense attorneys, social services staff and others could educate those in crisis about 1) strategies for safely handling suicidal thoughts if they emerge and 2) advantages of storing guns away from home or inaccessibly until things improve.
- Suicides that occur during an argument indicate not all suicides are planned; lethal means counseling could occur with people at risk, not only with people who disclose suicide plans.
- 40% of decedents were reported to have been in behavioral healthcare. Care systems potentially could develop ways to flag those whose distress is not improving and find alternate strategies.
- Locking abuse-prone medicines (like opioids and benzodiazepines) and limiting other medications at home to non-toxic quantities may help reduce harm from overdose.
- Resources to support and evaluate this work would need to be identified.

## **Section 5**

### **PUBLIC SAFETY DATA**

The 2016 legislation calling for a study on guns and suicide directed that the data indicate whether suicide decedents could have passed a criminal background check to possess a firearm, whether firearm decedents were the owner of the suicide gun and had gone through a background check, and whether they had firearm safety training.

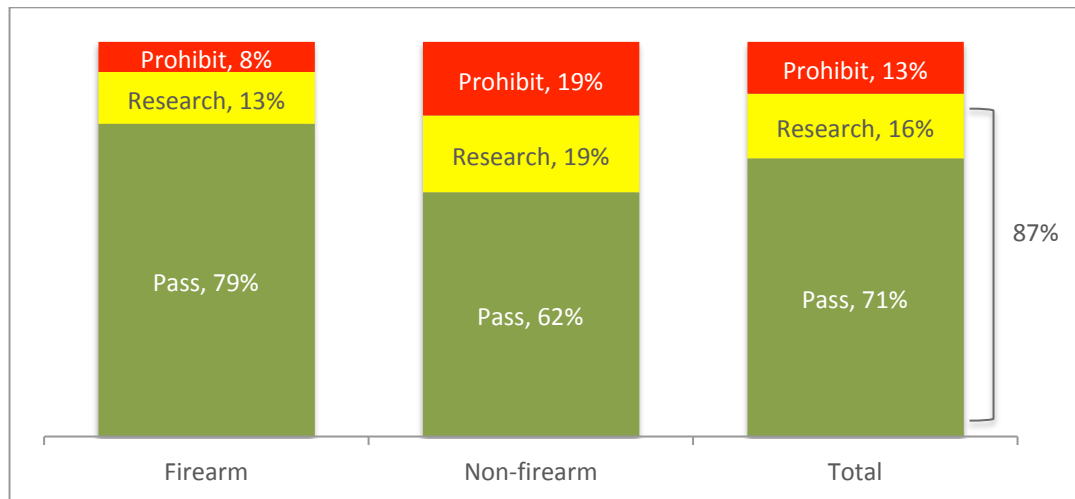
Utah's Bureau of Criminal Identification (BCI) conducted a background check on each suicide decedent for a two-year period to answer the first question. BCI has submitted trace requests to the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) to help answer the second and third question. ATF traces are not yet complete and will be summarized in an addendum to this report when they are supplied to BCI by ATF. Data are not uniformly available on the fourth question (firearm safety training). We used whether a decedent had a permit to carry a concealed firearm as a crude proxy for both training and having actually undergone a background check.

Data provided to the research team were anonymous and did not list the conditions causing an individual to fail a background check.

This use of background check and CFP status is novel and is an attempt to provide information about the public-safety characteristics of Utahns who have died by suicide. The data is presented in the spirit of helping stakeholders think creatively and outside the box about suicide prevention.

## BACKGROUND CHECKS

**Most suicide decedents (about 87%) could have passed a background check for firearm possession on their day of death. 13% of suicide decedents—and 8% of those using a gun—would have been prohibited from possessing a firearm.**



**Fig. 5a** Proportion of decedents who could have passed a background check to possess a firearm at the time of their suicide, by method of suicide— Utah suicides, 2014-2015

### **People who took their lives with a firearm were more likely than those using other methods to have been able to pass a background check at the time of their suicide.**

79% of those using a firearm were not prohibited possessors, 8% were prohibited, and another 13% required further research. Among people using non-gun methods, 19% were prohibited and 19% required research.

### **About Utah Background Checks**

The state Bureau of Criminal Identification (BCI) conducts background checks in Utah to determine a person's eligibility to possess a firearm. BCI consults databases of outstanding Utah and national warrants, Utah and national criminal history, Utah juvenile history, Utah and national drivers licenses, Utah court adjudications of mental incompetence and involuntary hospitalizations, and the NICS index.

Prohibited persons under federal law include those with convictions for felonies or domestic violence misdemeanors, fugitives from justice, underage people, people who have been involuntarily hospitalized or found mentally incompetent

by a court, unlawful users of controlled substances, subjects of domestic abuse restraining orders, unlawful immigrants, dishonorable military discharges, and people who have renounced their citizenship. Additionally, under state law, people adjudicated delinquent as a juvenile for a violent felony in the past 7 years or non-violent felony in the past 10 years are prohibited.

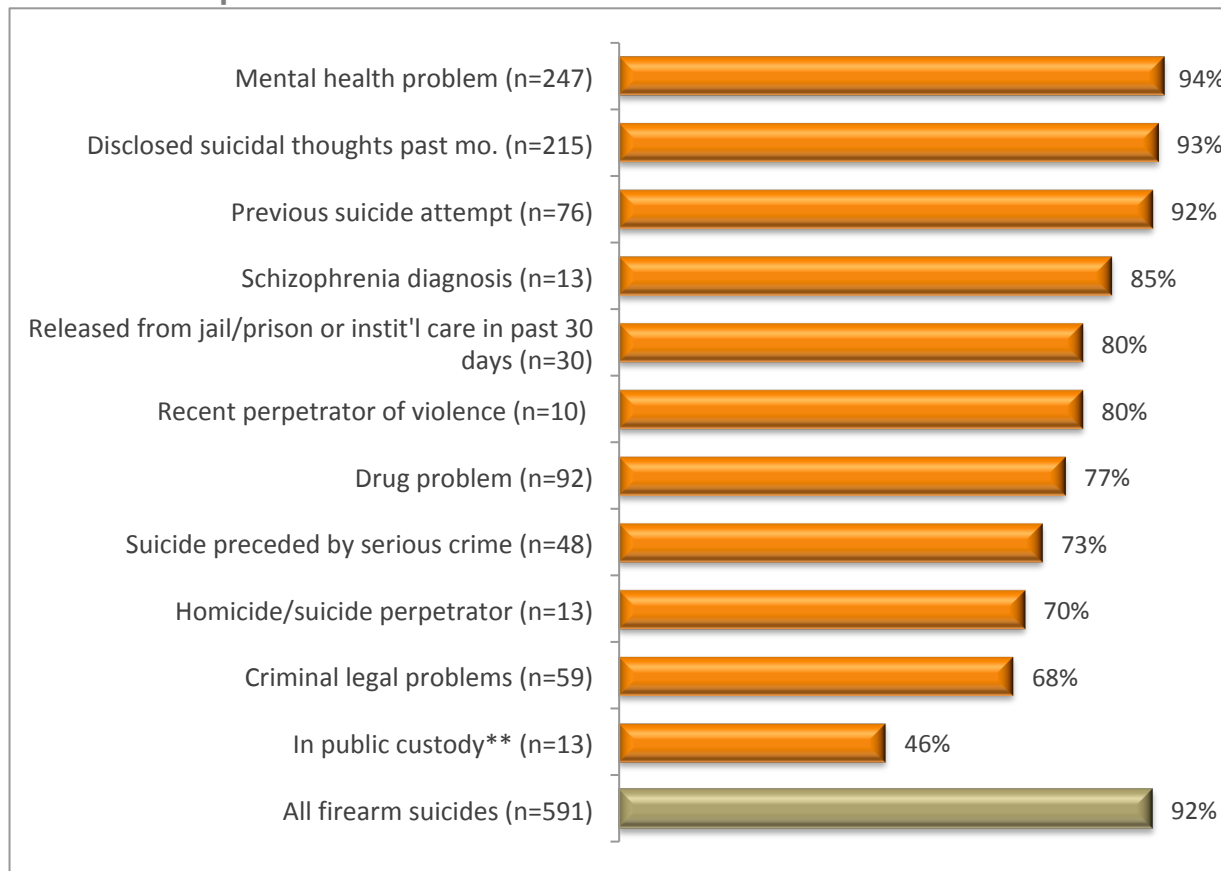
Background checks are required when a person buys a gun from a federally-licensed retailer. They are not updated on individuals over time, nor are they required for all other firearm purchases or transfers.

### **About Background Checks for this Report**

For this report, BCI conducted a background check on each person dying by suicide in Utah in 2014 and 2015, as of their date of death. **"Research"** meant an issue would require hand-checking before a determination of "pass" or "prohibit" could be made. Research issues include a felony arrest with no court disposition, outstanding warrants, certain restraining orders, and having a common name. Typically, 95% of "research" cases pass the check.

## BACKGROUND CHECKS

**Most firearm decedents could have passed a background check, regardless of whether they had a drug or alcohol problem, a criminal problem, or previous suicide attempts.**



**Fig. 5b** Suicide circumstances noted in the ME or police report and the % of decedents with that characteristic who would have passed\* a firearm background check at the time of their suicide— Utah firearm suicides, 2014-2015.

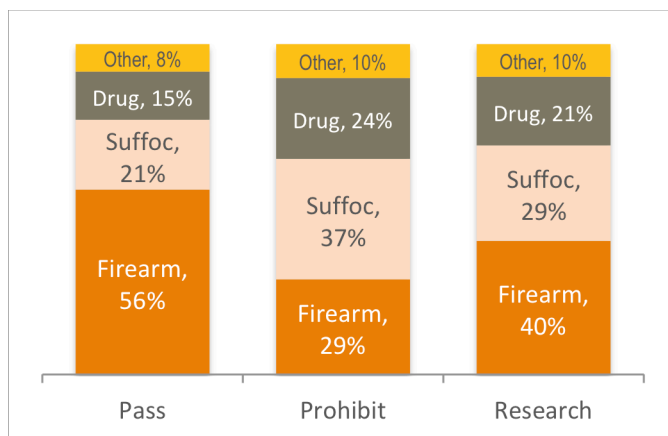
\* Criminal background status equals “pass” or “research” (BCI reports that 95% of “research” cases ultimately pass).

\*\* Includes in jail/prison or other mandated state care, or under arrest, attempted arrest, or house arrest.

The chart above indicates the proportion of suicide decedents with a given characteristic who could have passed a background check. For example, of the 76 people who took their lives in 2015 and 2015 who had a previous suicide attempt, 92% could have passed a background check.

Note: Circumstances in the chart above do not necessarily meet the legal bar to prohibit possession, or, if they do, are not always in a database that can be accessed by the background check.

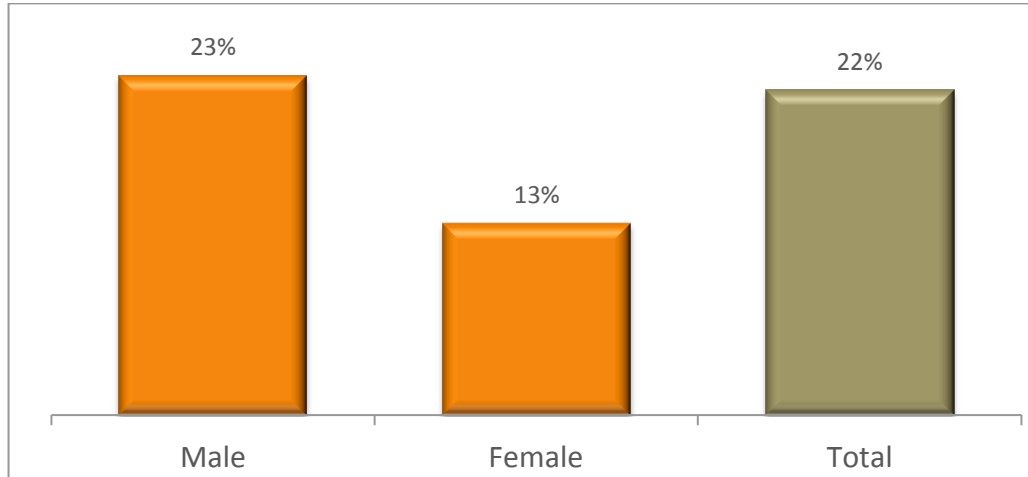
Fewer people who could not have passed a background check at the time of their death used a firearm in their suicide (29%) than people who could have passed (56%) (Fig 5c).



**Fig. 5c** Suicide method used by suicide decedents, sorted by whether they could pass a background check, were prohibited, or required further research— Utah suicides, 2014-2015

## CONCEALED CARRY PERMIT STATUS

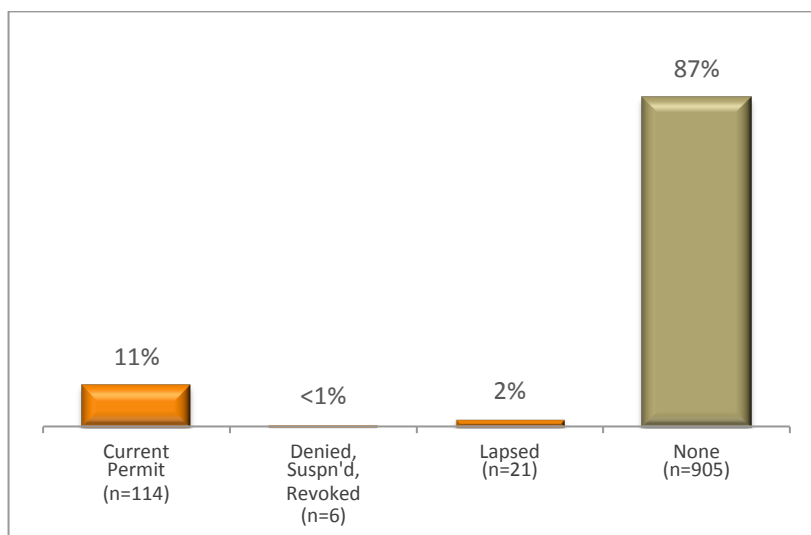
**One in four men who took their lives with a firearm had a current or lapsed permit to carry a concealed firearm.**



**Fig. 5d** % of firearm decedents who currently or ever held a concealed firearm permit, by sex—Utah firearm suicides, ages 21 and older, 2014-2015

Ten percent of Utahns ages 21 and up have a current permit to carry a concealed firearm (CFP). Permit holders must take an approved firearms class, pass a standard background check, and pass an expanded check for crimes of “moral turpitude” such as sexual, violent, or alcohol-related crimes. BCI runs permits nightly against Utah arrests to update individuals’ eligibility. For this report, BCI checked permit status on Utah suicide decedents 2014-15.

11% of suicide decedents overall were current permit holders, 2% had lapsed permits, and a handful had their permit suspended, revoked, or denied (Fig 5e).



**Fig. 5e** Permit status among all (firearm and non-firearm) suicide decedents ages 21 and older— Utah 2014-2015

## CONCEALED CARRY PERMIT STATUS

Overall, Utahns with and without a current permit to carry a concealed firearm had similar suicide rates.

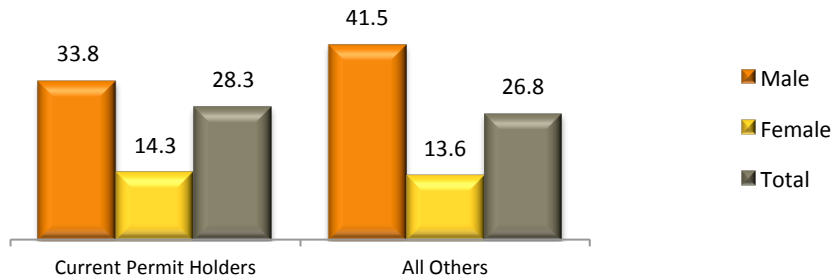


Fig 5f. Suicide rate per 100,000 people, by permit status and sex, Utah residents ages 21+, 2014-2015.

More permit holders were male, and males typically have higher suicide rates. Comparing by sex, **male Utah-resident permit holders had a lower suicide rate than male Utah residents without a permit.** Female permit holders had roughly the same rate as their non-permit holding peers. Rates are calculated based only on current holders, not those whose permits lapsed or were suspended, revoked, or denied. An age breakdown of permit holders was not available.

**Among male suicide victims who had ever had a CFP, nearly all (84%) used a gun in their suicide.** Drug overdose was their second leading method (Fig 5g).

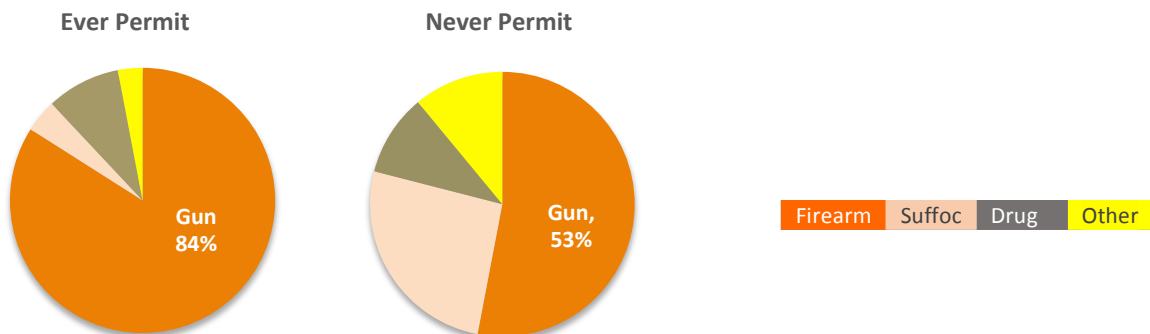


Fig. 5g. Suicide method among men who ever vs. never had a CFP, Utah suicide deaths, 2014-2015.

### Implications for Prevention

### PUBLIC SAFETY DATA

- The implications of the public safety data for prevention are probably best discussed by a diverse group of policy makers, gun owners, suicide prevention experts, public safety personnel, suicide survivors, clinicians and others to think outside the box and find strategies that work reasonably for all stakeholders.
- Most people who kill themselves would be able to pass a background check. Friends and family therefore play an important role in urging loved ones in crisis to store their guns away from home or otherwise inaccessibly until the situation improves.
- 23% of men who kill themselves with a gun were CFP holders. Utah CFP classes now include a suicide module. Evaluating this effort is important. If effective, expanding to other venues – like gun shows, gun shops, PTA meetings, sportsmen clubs, etc., may help change social norms regarding keeping a gun from a loved one who is struggling in the same way that “friends don’t let friends drive drunk” has lowered drunk driving.

## **Section 6**

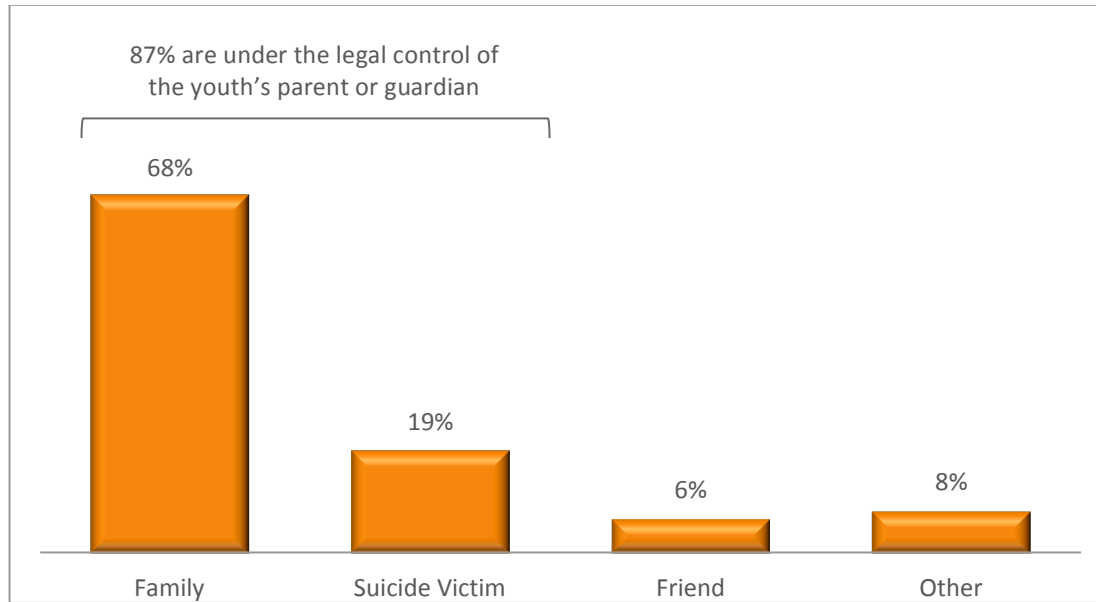
### **YOUTH FIREARM SUICIDES (NVDRS)**

Youth firearm suicides are a special concern in Utah. NVDRS includes useful information on where these suicides occurred, with whose gun, and what specific type of gun.



## YOUTH FIREARM SUICIDES

### Guns used in suicides by youth under 18 typically came from the home.



**Fig. 6a** Owner of gun used in firearm suicides by youth ages 17 and under, Utah, 2014-2015. Source: NVDRS  
 Note: Data shown here are among the 77 cases where ownership was reported. It was unavailable for 23 cases.

The owner of guns used in youth suicides was usually a parent or family member (68%) or the youth him or herself (19%)\* based on NVDRS data.

Storage status was infrequently reported in NVDRS (57% unknown among youth). When it was known, guns were stored locked in just over half of youth cases, indicating that the youth either had authorized access to the key or combination, was able to find the key or combination, was able to defeat the lock, or was the owner him or herself.

Youth suicide rates are higher in Utah than in the nation or its neighboring states (AZ, CO, ID, NV, NM, WY). Given Utah's higher proportion of white residents, comparing among white (non-Hispanic) residents only, **Utah's youth suicide rate is similar to its neighbors but significantly higher than the nation's.**

Table: Youth (7-17 yrs) suicide rate, 2012-2016

Suicide rate among 7-17 yr-olds	Utah	Neighbors	US
All youth	6.0	4.6	2.0
White non-Hisp. youth	6.4	6.0	3.7

#### Firearms and Minimum Ages

Parents and guardians have control over firearms in the homes of youth under 18, even when the youth owns the gun. Under Utah law, 14-17 year-olds may possess firearms and use them without adult supervision for certain activities, **but only with the permission of their parent.** Youth under age 14 may only use a gun under adult supervision.

Federal law sets no minimum age for possessing a **long gun** or buying one from a private individual. Those buying from a federally-licensed firearm dealer (FFL) must be 18. The federal minimum age for possessing a **handgun** is 18, except during activities like hunting, target practice, etc. The federal minimum age for buying a handgun at an FFL is 21 and elsewhere 18. Under Utah law, youth 14-18 may buy a firearm if accompanied by their parent.

\* In separate research, GumCo Communications interviewed 32 gun-owning parents in Utah who have teenagers at home. 41% reported that their teenager owns their own gun—for example a hunting rifle given to them by their parents.

## YOUTH FIREARM SUICIDES

Rifles and shotguns accounted for 62% of rural youths' firearm suicides.

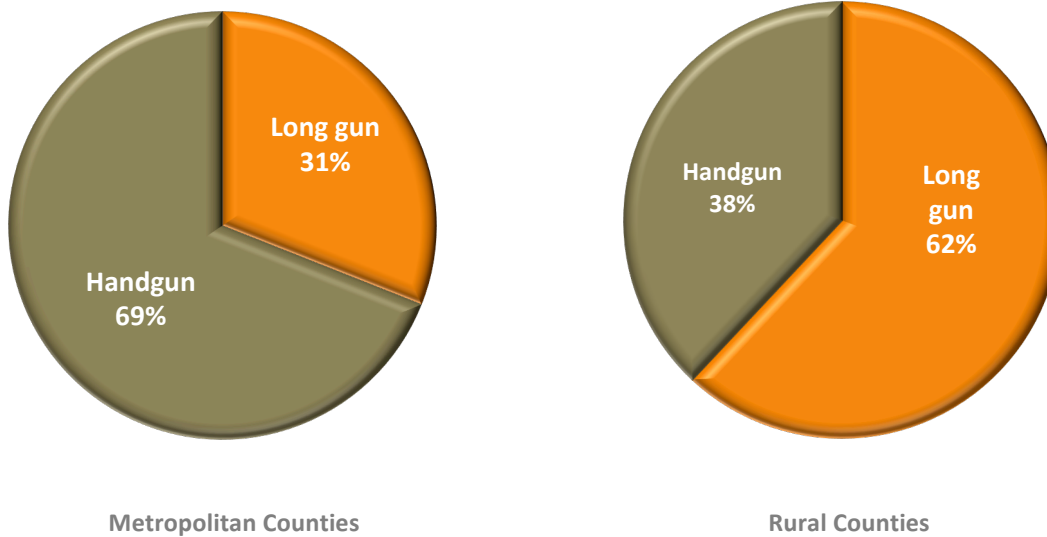


Fig 6b. Type of firearm used in firearm suicides among people under the legal age (21) for handgun purchase from an FFL, Utah, 2006-2015. Source: NVDRS

Among rural young people who died by firearm suicide, nearly two-thirds used a rifle or shotgun. In metropolitan counties, youth predominantly used handguns (69%). Overall in Utah, handguns made up 76% of adult firearm suicides and 61% of youth firearm suicides.

### 91% of firearm suicides among youth under 18 occurred at home.

Among firearm suicides, about two-thirds of youth under 21, and 91% of those under 18, took their lives at home. When the suicides did not occur at home (74 youth under 21 over a 10-year period), typical locations were a natural area like a field or woods (31%), another person's home (28%), or a motor vehicle (15%).

#### Implications for Prevention

- With parents/guardians having legal authority over nearly 9 out of 10 of the firearms used in suicides of youth under 18, parents are key to prevention.
- Urging parents to lock their guns may not entirely address the youth firearm suicide issue if their teenagers know where the keys are or indeed own a gun and control the keys. A more useful message may be to lock all guns and ensure children and teens don't have access to the keys or combination. When a youth is struggling with a mental health or substance abuse problem or life crisis, storing guns away from home may be prudent.
- Parents may be unaware that youth can use long guns to take their lives.
- Some parents who do lock their guns may be unaware their child can defeat the lock.
- Clinicians, gun owners, and others could work together to develop messaging and storage options that are sensitive to local values and realities.

#### YOUTH FIREARM SUICIDES

## **Section 7**

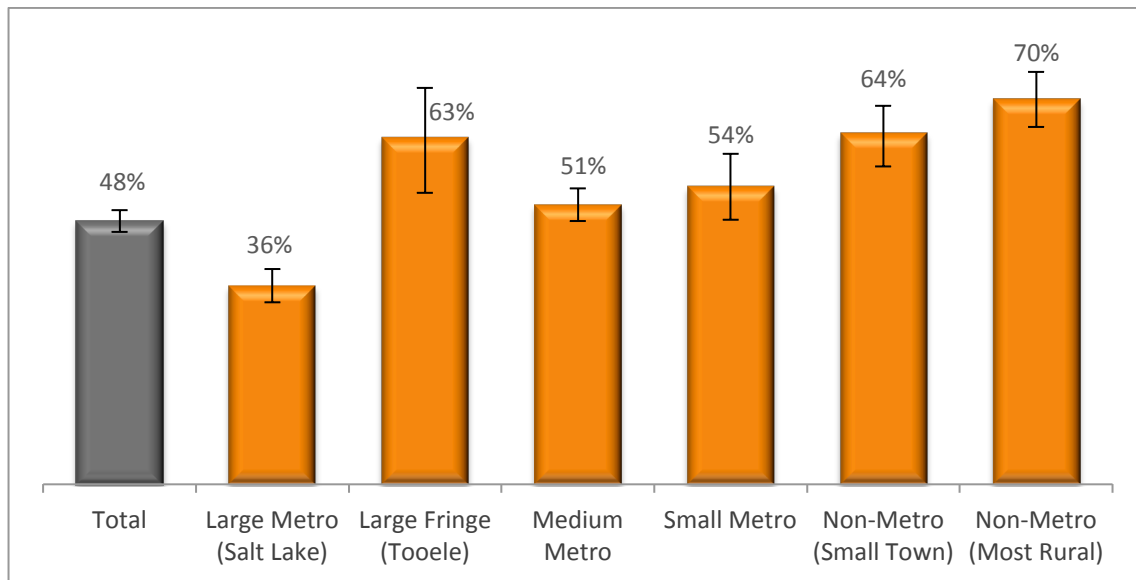
### **HOUSEHOLD FIREARM OWNERSHIP (BRFSS)**

The BRFSS is a telephone survey of residents' health status and behaviors like exercise, eating habits, and seat belt use. Nationally, the last time the BRFSS asked about firearm ownership and storage was in 2004. In 2017 the Utah BRFSS asked adults about household firearm ownership and storage.

Combining survey-based information on household firearm access with data on suicide can provide useful insights about the distribution of firearm death in the state.

## HOUSEHOLD GUN OWNERSHIP

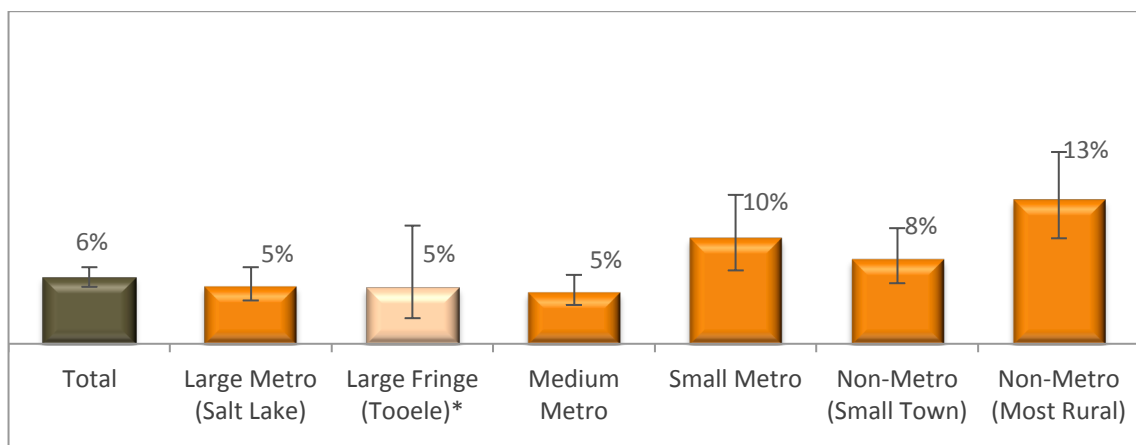
**Nearly half of adults in Utah have firearms at home, with ownership highest in rural counties and in Tooele County.**



**Fig. 7a.** Proportion of Utah adults reporting a firearm at home, sorted by metropolitan/rural status of county of residence—Utah BRFSS, 2017 (Bars represent 95% upper and lower confidence intervals to account for sampling error.)

Nearly half of Utahns reported having at least one gun at home, with higher rates in rural areas and lower rates in Salt Lake County.

**13% of homes in the most rural counties have an unlocked and loaded firearm compared with 6% statewide.**

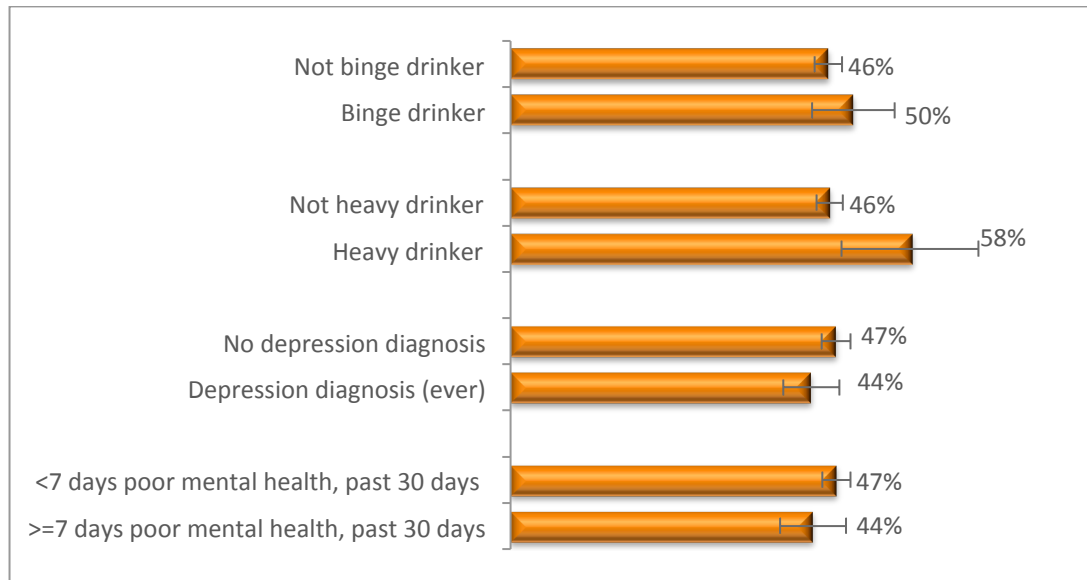


**Fig. 7b.** Proportion of Utah adults reporting an unlocked and loaded firearm at home, sorted by metropolitan/rural status of county of residence—Utah BRFSS, 2017. Percents are of all homes, not gun-owning homes. \*Note: Sample size was too low in this category for a reliable estimate.

The BRFSS asked if any firearms were stored loaded, and, if yes, if any of these were stored unlocked. Respondents were not asked about locking status of unloaded guns. Six percent of Utah adults (or 13% of adults in gun households and 20% in gun households in the most rural counties) reported an unlocked and loaded gun at home.

## HOUSEHOLD GUN OWNERSHIP

**Heavier drinkers were more likely than others to report guns at home. People with poorer mental health were as likely as others to report guns at home.**



**Fig. 7c** Percent of Utahns reporting a firearm at home, sorted by selected health conditions—Utah BRFSS, 2017

BRFSS asks respondents about their alcohol use, whether they've ever been told by a health provider that they have a depressive disorder, and how many days out of the past 30 their mental health was poor. Binge drinkers, those with a depressive disorder, and those with a week or more of poor mental health were about as likely to report having a gun at home as others. Differences in Fig 4c were not statistically significant with the exception of heavy drinkers, who were more likely to report a gun at home (58%) than those who were not heavy drinkers (46%). The threshold for binge drinking was 5 or more drinks on one occasion for men (4 for women) and for heavy drinking was 15 or more drinks weekly for men (8 for women).

10% of adults who binge drink reported an unlocked and loaded gun at home vs. 5% of those who don't binge drink. People with poorer mental health were as likely as others (6%) to report an unsecured, loaded gun.

### **Do Wives Always Know How the Guns are Stored?**

The same proportion of married men reported guns at home as married women. But among married people with guns at home, a much higher proportion of men (20%) than women (6%) report that at least one gun was both unlocked and loaded. This may indicate that some married women are unaware of how the guns at home are actually stored.

### **Implications for Prevention (BRFSS)**

- Higher rates of unlocked, loaded guns in rural counties may help explain their higher suicide rates. Unlocked guns may also explain the higher percent of gun suicides that occur during an argument.
- Utahns with poor mental health and those with potential drinking issues do not appear to be hearing the message—whether from loved ones, places of worship, clinicians, or firearm stakeholders—that storing guns locked or away from home may be prudent. Utahns from a variety of perspectives may consider working together to develop and evaluate strategies to convey this message.
- Clinicians who advise parents to store guns locked should be aware that if they're speaking with the non-gun owning parent, that parent might not actually know how the guns are stored.
- BRFSS data on gun storage patterns is a useful way to track changes in household ownership and storage over time and to measure whether changes are associated with changes in injury outcomes. Repeating this module every 3-5 years would assist in evaluating the impact of interventions.

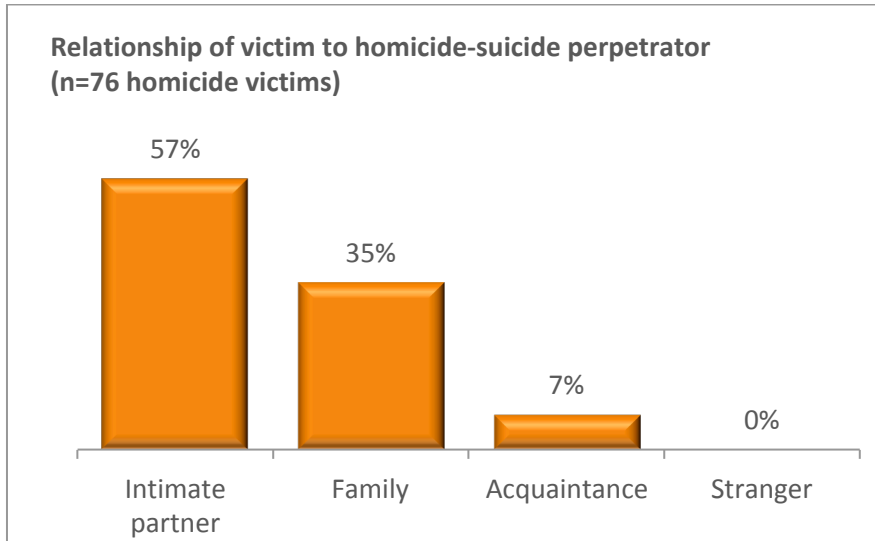
## **Section 8**

### **HOMICIDE-SUICIDE and HOMICIDE (NVDRS)**

One reason to have an unlocked and loaded gun at home is to be prepared in the event that it is needed for protection. We are unaware of a data source in Utah that sheds light on the number of times a gun is used to successfully ward off an intrusion or attack without loss of life to either the defender or intruder.

Since one of the most important reasons to keep a gun for self-defense is to guard against a fatal attack, a sponsor of the legislation calling for this report requested that data be provided on the incidence and characteristics of homicide-suicide and of homicide, particularly those perpetrated by strangers.

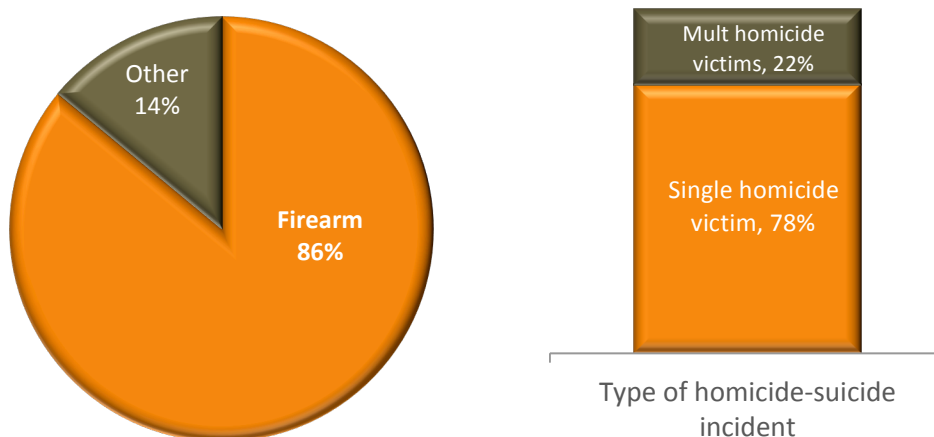
**On average, a homicide-suicide incident occurred every other month in Utah; 91% involved intimate partner violence or other domestic violence.**



**Fig 8a** Relationship of victim to suspect in homicide-suicide incidents, Utah, 2006-2015

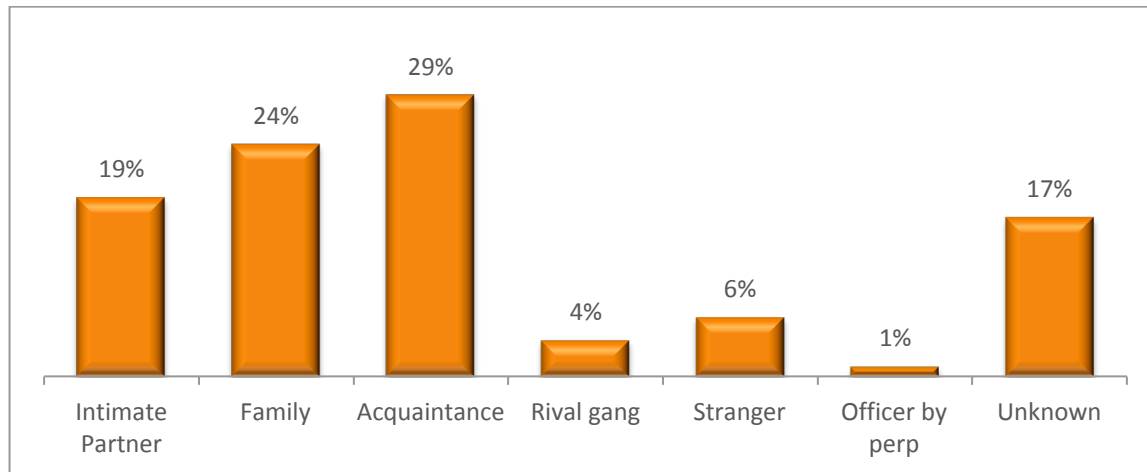
Over a ten-year period, 63 people in Utah killed another person before taking their own life. In most cases, the victims were the current or former intimate partner (57%) of the perpetrator or a family member (35%) - usually the perpetrator’s child or his intimate partner’s child. Acquaintances were usually the new boyfriend or husband of the perpetrator’s “ex.” **There were no cases over the ten years in which a stranger perpetrated a homicide-suicide in Utah.** Nine out of ten perpetrators were male.

Most of the homicide-suicide cases (86%) were by firearm. 78% involved a single homicide victim, and 22% involved multiple victims, for a total of 147 victims (63 suicide decedents, 84 homicide victims). While most occurred in large and medium metropolitan counties (where most Utahns live), the *rate* of homicide-suicide was higher in rural counties.



**Fig 8a.** Type of weapon used (pie) and type of incident (bar) in homicide-suicide incidents, Utah, 2006-2015

**Homicides by strangers were infrequent in Utah.**



**Fig 8d** Relationship of victim to suspect—Utah Homicides, 2011-2015. (Source: NVDRS)

The relationship between victim and suspect varied across demographic groups (see table below). **Over three-quarters (79%) of child homicide victims were killed by a family member, most often the parent or mother’s boyfriend. No child homicide was listed as perpetrated by a stranger. Two-thirds of women ages 18-64 were killed by a current or former intimate partner; 2% were killed by a stranger.** Homicides of seniors were infrequent (about 5 per year), and nearly half (47%) were committed by an intimate partner or family member. Seniors were the one group for whom strangers were a sizeable proportion of perpetrators (22%), although numbers were small (1 or 2 a year, if including a portion of the homicides where victim-perpetrator relationship was undetermined).

Men ages 18-64 were the most frequent victims of homicide at about 30 per year. Acquaintances were the largest category of perpetrators. These tended to fall into categories of people with whom the victims were criminally involved (e.g., mutually engaged in drug trade), escalating arguments (often at a bar or party), and men who kill, or are killed by, their intimate partner’s ex-partner. Strangers made up 8% of suspected perpetrators for men.

Table: Relationship of Victim to Suspect, by Demographic Group of Victim, Utah Homicides, 2011-2015 (Source: NVDRS)

	Children <18 n=53	Women n=65	Men n=148	Seniors 65+ n=23
Intimate partner	0%	65%	5%	17%
Family	79%	9%	10%	30%
Acquaintance	17%	15%	43%	9%
Rival gang	0%	0%	7%	0%
Stranger	0%	2%	8%	22%
Officer by perpetrator	0%	0%	2%	0%
Undetermined	4%	9%	24%	22%
	100%	100%	100%	100%



**Homicides by strangers and by perpetrators for whom relationship was undetermined were not always what you’d picture.**

Something was known about the circumstances in all of the stranger cases over a 5-year period (n=18) and half of the cases for which relationship was undetermined (50 cases, 24 with some information). A review of these cases indicated that 40% of the victims were involved in criminal activity, and that activity appeared to play a precipitating role in the homicide (e.g., drug dealer targeted for robbery). Another 17% were justifiable homicides of criminals or perceived criminals, and 14% were escalating arguments. The remaining 11 homicides (26%) were the sort one more typically imagines when referring to stranger homicides, such as a home invasion, random attack, or store robbery.

**The homicide rate in Utah is lower than that of the nation and neighboring states.**

Even moreso than for suicide, homicide rates vary markedly by race/ethnicity. Because Utah has a higher proportion of white residents than the nation (80% vs. 62%), comparing homicide rates among white, non-Hispanic residents is useful. Differences between Utah, its neighbors (AZ, CO, ID, NV, NM, WY), and the U.S. are not as wide (Fig 8e).

**Utah’s white homicide rate ranks 8<sup>th</sup> lowest nationally. States with the five lowest white homicide rates for the period 2012-2016 were MA, NJ, MN, NY, and NH.** Utah’s black homicide rate ranks lowest in the nation.

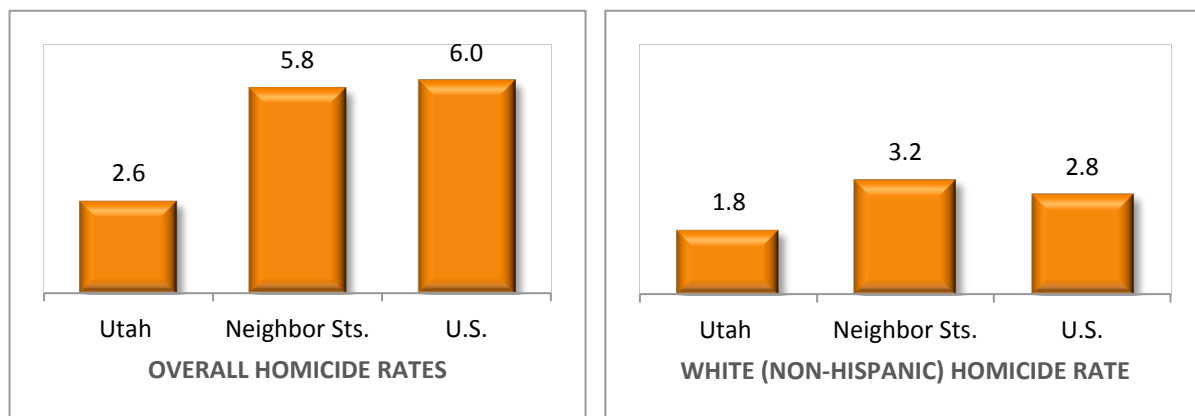


Fig. 8e. Homicide rate overall (left) and among white non-Hispanic residents—Utah, Neighboring States, and the U.S., 2007-2016 (Source: CDC WONDER)

**Implications for Suicide Prevention**

- Homicides by a stranger are rare in Utah. When they do occur they are often precipitated in part by the victim’s own criminal activity or by an escalating, mutual argument. Still, homicides of non-criminally involved victims, for example during a home invasion or store robbery, do occur an estimated 3-4 times a year.
- The relevance of homicide data to suicide prevention is that Utahns can use Utah data as they weigh the relative threat of stranger violence, domestic violence, and suicide with respect to their own family’s safety and their own household’s acquisition and storage of firearms.

**HOMICIDE DATA**

**Section 9**  
**RECOMMENDATIONS**

## RECOMMENDATIONS

In 2016, the Utah State Legislature took steps to make Utah one of the few states in the country to use comprehensive, linked, public health and public safety data to better understand suicide in the community, moving the state beyond merely counting suicides and suicide attempts to actively identifying opportunities to reduce their toll. The state's decision in recent years to focus in part on firearm suicides, and to do so with the engagement not only of traditional partners but with firearm stakeholders as well places it as a leader in the field.

This report contains novel data to help Utahns reduce suicide. We list below the "implications for prevention" that appeared in each data section. Our intent in this report was not to outline ready-made interventions and policies. Rather, it was to supply data so that working groups of Utahns from a variety of political perspectives, areas of expertise, and arenas could, in coming months, talk over what the data means and what changes, if any, can be taken at the level of the individual, community, health care organization, place of worship, firearm organization, and elsewhere to save lives.

### FATALITY DATA

- Given the high CFR for firearms, if a proportion of Utahns who would otherwise attempt suicide with a firearm were prevented from using a gun, there would likely be fewer suicide deaths, *even* if those who attempted substituted another method. One way to achieve this is if loved ones of people at risk for suicide lock any household guns and hold onto the keys/combination or store the guns away from home until the person recovers.
- NONFATAL & FATAL SCUICIDATE ATTEMPT DATA
- Hospitals are an important venue for prevention. However, focusing only on patients treated for a suicide attempt will miss 90% of suicides.
- Focusing on those who visit the hospital with a mental health or substance abuse issue could reach a third of would-be suicides. One message to convey to them is the potential safety advantage of storing household guns away from home or otherwise inaccessibly to the patient until he or she recovers.
- With half of suicide decedents never seen in the hospital in the year before death, other healthcare organizations, places of worship, and community-based groups could extend this message outside the hospital.

### NVDRS DATA

- According to death investigation reports, many decedents were not in mental health care. Given the prominence of life crises preceding suicide, religious leaders, divorce and defense attorneys, social services staff and others could potentially educate those in crisis about 1) strategies for safely handling suicidal thoughts if they emerge and 2) advantages of storing household guns away from home or otherwise inaccessibly until things improve.
- Suicides that occur during an argument indicate not all suicides are planned; lethal means counseling may be advisable with people at risk, not only with people who disclose suicide plans.
- 40% of decedents were reported to have been in behavioral healthcare. Care systems potentially could develop ways to flag those whose distress is not improving and find alternate strategies.
- Locking abuse-prone medicines (like opioids and benzodiazepines) and limiting other medications at home to non-toxic quantities may help reduce harm from overdose.
- Resources to support and evaluate this work would need to be identified.

### PUBLIC SAFETY DATA

- The implications of the public safety data for prevention are probably best discussed by a diverse group of policy makers, gun owners, suicide prevention experts, public safety personnel, suicide survivors, clinicians and others to think outside the box and find strategies that work reasonably for all stakeholders.

- Most people who kill themselves would be able to pass a background check. Friends and family therefore may play an important role in urging loved ones in crisis to store their guns away from home or otherwise inaccessibly until the situation improves.
- One in four men who kill themselves with a gun were CFP holders. Utah CFP classes now include a suicide module. Evaluating this effort is important. If effective, expanding to other venues – like gun shows, gun shops, PTA meetings, sportsmen clubs, etc., may help change social norms regarding keeping a gun from a loved one who is struggling in the same way that “friends don’t let friends drive drunk” has lowered drunk driving.

#### YOUTH FIREARM SUICIDE

- With parents/guardians having legal authority over nearly 9 out of 10 of the firearms used in suicides of youth under 18, parents are key to prevention.
- Urging parents to lock their guns may not entirely address the youth firearm suicide issue if their teenagers know where the keys are or indeed own a gun and control the keys. A more useful message may be to lock all guns and ensure children and teens don’t have access to the keys or combination. When a youth is struggling with a mental health or substance abuse problem or life crisis, storing guns away from home may be prudent.
- Parents may be unaware that youth can use long guns to take their lives.
- Some parents who do lock their guns may be unaware their child can defeat the lock.
- Clinicians, gun owners, survivors, and others could work together to develop messaging and storage options that are sensitive to local values and realities.

#### BRFSS GUN OWNERSHIP & STORAGE DATA

- Higher rates of unlocked, loaded guns in rural counties may help explain higher rural suicide rates. This may also help explain the higher proportion of firearm suicides (compared with other methods) that occur in the midst of an argument.
- Utahns with poor mental health and those with potential drinking issues do not yet appear to be hearing the message—whether from loved ones, places of worship, clinicians, or firearm stakeholders—that storing their guns locked or away from home may be prudent. Utahns from a variety of perspectives may consider working together to develop and evaluate strategies to convey this message.
- Clinicians who advise parents to store guns locked should be aware that if they’re speaking with the non-gun owning parent, that parent might not actually know how the guns are stored.
- BRFSS data on gun storage patterns is a useful way to track changes in household ownership and storage over time and to measure whether changes are associated with changes in injury outcomes. Repeating this module every 3-5 years would assist in evaluating the impact of interventions.

#### HOMICIDE-SUICIDE AND HOMICIDE DATA

- Homicides by a stranger are rare in Utah. When they do occur they are often precipitated in part by the victim’s own criminal activity or by an escalating, mutual argument. Still, homicides of non-criminally involved victims, for example during a home invasion or store robbery, do occur 2-3 times a year.
- The relevance of homicide data to suicide prevention is that Utahns can use Utah data as they weigh the relative threat of stranger violence, domestic violence, and suicide with respect to their own family’s safety and their own household’s acquisition and storage of firearms.

**Section 10**  
**NOTES ON DATA SOURCES**

**DATA SOURCES**

This study was reviewed and approved by the Utah Department of Health Institutional Review Board and by the Harvard T. H. Chan School of Public Health’s institutional review board. Data sources used included the following:

**NVDRS - National Violent Death Reporting System, 2006-2015.**

The NVDRS is funded and coordinated by the Centers for Disease Control and Prevention (CDC) and operated by state governments or their proxies. The Utah NVDRS is operated by the Utah Department of Public Health under the direction of Anna Fondario. Abstractors collect data on suicides, homicides, and selected other deaths using death certificates and death investigation reports by law enforcement agencies and the Office of the Medical Examiner. HSPH received NVDRS data through 2015 from the CDC in November 2017 using the Research Access Data data request process.

**CDC WONDER**

CDC WONDER makes official mortality data from the National Vital Statistics System available online. CDC’s National Center for Health Statistics designed and hosts the website at: <https://wonder.cdc.gov/ucd-icd10.html> Mortality data can be queried at the state and county level sorted by decedent demographics and specific type of death. NCHS has developed a six-level urban-rural classification scheme for U.S. counties. Utah counties are classified as follows:

NCHS Rural-Urban County Classification

Large Central Metro	Salt Lake County
Large Fringe Metro	Tooele County
Medium Metro	Box Elder County
	Davis County
	Juab County
	Morgan County
	Utah County
	Weber County
Small Metro	Cache County
	Washington County
Rural - Small towns	Carbon County
	Iron County
	Summit County
	Uintah County
	Wasatch County
Most Rural	Beaver County
	Daggett County
	Duchesne County
	Emery County
	Garfield County
	Grand County
	Kane County
	Millard County
	Piute County
	Rich County
	San Juan County
	Sanpete County
	Sevier County
	Wayne County

### **Utah BRFSS (Behavioral Risk Factor Surveillance System), 2017**

The BRFSS is a telephone survey of adults that is implemented by the states and coordinated by the Centers for Disease Control and Prevention. A module that assesses household gun ownership and storage was asked nationwide in 2004, but has not been repeated nationally since then. The Utah BRFSS, which is operated by the Utah Department of Health, opted to ask these items in 2017. Aggregate Utah BRFSS data provided in this report were supplied by Department of Health statistician Michael Friedrichs.

### **Background Checks and Concealed Carry Permit Status, BCI, 2014-2015**

The Utah Department of Public Safety's Bureau of Criminal Identification (BCI) conducted criminal background checks on all suicide decedents who died in 2014 and 2015 as of their date of death and identified whether they held a current permit to carry a concealed firearm. The Utah Office of the Medical Examiner (OME) supplied a list of decedents to BCI. BCI conducted the checks and recorded in the dataset whether the person would have been classified as firearm-restricted as of their date of death (no, yes, or needs further research) and whether they possessed a CFP (current, lapsed, denied/suspended/revoked, or never a permit holder/requester). No details were supplied on specific criminal history. BCI returned the dataset to OME; OME added the NVDRS ID number to the dataset, stripped all personal identifiers, and sent the data to HSPH. In order to compare suicide rates among current permit holders vs. other Utahns, BCI supplied the number of current Utah resident permit holders as of December 2014. The percent male and female was not available for that period, so the proportion as of summer 2018 was applied to the 2014 data.

Jacob Dunn, Manager of BCI, coordinated the data collection process, which was conducted in adherence to a data sharing agreement between BCI and the Utah Department of Health. The Harvard T. H. Chan School of Public Health's institutional review board approved the study's use of the linked dataset.

### **Healthcare Facility Database - Hospital Visit History (2011-2015) for All Utah Suicide Decedents (2014-2015) and Hospital-Treated Intentional Self-Harm Patients (2014-2015)**

The Office of Health Care Statistics (OHCS) at the Utah Department of Health maintains the Healthcare Facility Database, a summary of patient encounters at Utah's licensed hospitals, including acute care hospitals, VA medical centers, and psychiatric hospitals. The OME provided a list of Utah suicide decedents from 2014 and 2015 to OHCS. OHCS also identified all patient discharges from the emergency department and inpatient care that included an ICD-9-CM (or, in the last quarter of 2015, ICD-10-CM) diagnosis code or external cause of injury code for intentional self-harm in 2014 and 2015. For both the deaths and the hospital-treated cases, OHCS then searched the Healthcare Facility Database for any previous emergency department or inpatient visits that the decedent or patient made, regardless of diagnosis, from January 1, 2011 forward. OHCS stripped the dataset of personally-identifying information. Patients were uniquely identified by an ID number, and fatalities were identified by the NVDRS ID number. To avoid double counting self-harm cases, the study team excluded hospital-treated cases that were transferred to another Utah hospital or that died before discharge.

The linked OME and Healthcare Facilities data were assembled under the direction of OME epidemiologist Michael Staley and OHCS director Norman Thurston. Access to the de-identified data was permitted under an agreement with the Utah Office of the Medical Examiner, in conjunction with the Utah Health Data Committee. The study was reviewed and approved by the Utah Department of Health Institutional Review Board and by the Harvard T. H. Chan School of Public Health's institutional review board.

For questions about the study, please contact Catherine Barber, [cbarber@hsph.harvard.edu](mailto:cbarber@hsph.harvard.edu)