

# Suicide Surveillance

## Salt Lake County, 2017



*Medical Division*  
*Epidemiology Bureau*  
*April 2018*

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# ACKNOWLEDGEMENTS

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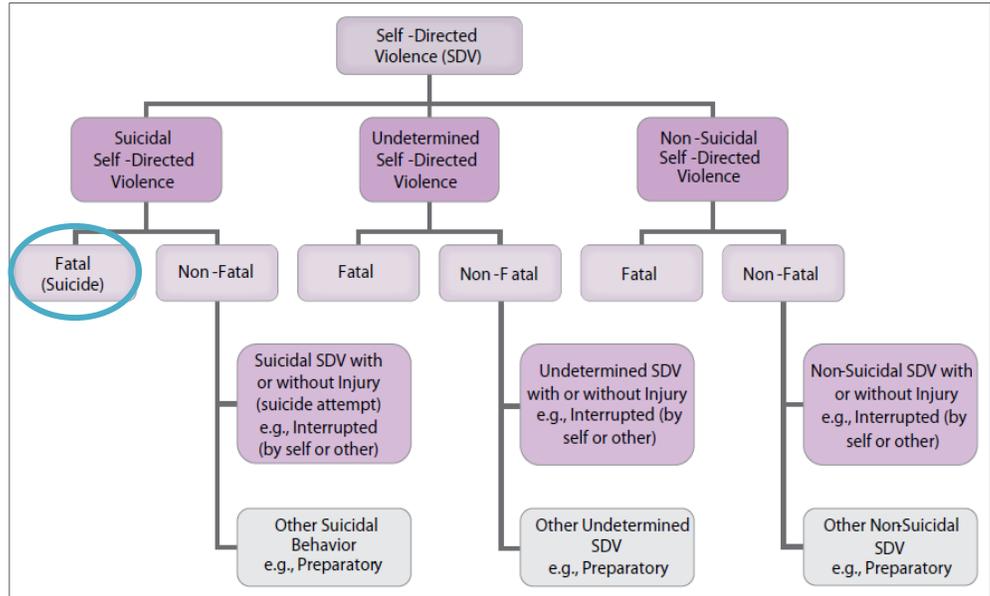
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## Executive Summary

Suicide has been a leading cause of death in Salt Lake County for many years, most recently ranked as the 8<sup>th</sup> leading cause of death in 2016. It is one form of self-directed violence, which also includes fatal and non-fatal suicidal behavior, non-suicidal intentional self-harm and suicidal ideation.

A self-directed violence surveillance system (right) monitors both fatal and non-fatal suicidal, undetermined and non-suicidal self-directed violence. Deaths are one component of this surveillance system and are presented in this report. Non-fatal events such as suicide attempts, non-suicidal self-directed violence, suicidal ideation and other suicidal behavior are not presented.



From: Crosby AE, Ortega L, Melanson C. [Self-directed Violence Surveillance: Uniform Definitions and Recommended Data Elements, Version 1.0](#). Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2011.

The goals of suicide surveillance are to obtain an estimate of the number of

Salt Lake County residents who died from suicide, define the burden, describe the characteristics of decedents and study factors that increase or decrease risk to guide suicide prevention efforts.

Data in this report are presented by several demographic and socioeconomic variables, including gender, age, race, ethnicity, educational attainment, military history, marital status, occupation and industry, to highlight differences in suicide rates and increased risk of suicide among certain populations.

### 2017 SNAPSHOT

In 2017, there were 229\* suicides among Salt Lake County residents. The age-adjusted rate was 21.8/100,000 (18.9/100,000 - 24.7/100,000). The rate of suicide has not significantly increased or decreased in the last five years. The rate of suicide was significantly higher among males, those who identified as non-Hispanic/Latino, those who had a high school diploma or GED, compared to those who had a higher level of education, those who had ever been in the armed forces, those who were not married (separated, divorced, widowed or never married), those who worked in a construction/extraction occupation, those who worked in the construction industry sector or those who lived in Kearns Health Small Area.

\* Data are provisional and subject to revision

## Technical Notes and Data Interpretation

- 2017 data are provisional and subject to revision. Suicides were identified 1) from all occurrent deaths in Salt Lake County in the Electronic Death Entry Network with any of the following terms in the immediate cause of death:

acute liver failure	combust	pois
anoxic brain	drug	self
asphyx	exsang	sharp force
blunt	gun	stab wound
carbon	hanging	thermal injury
cerebral anoxic injury	hypoxic encephalopathy	tox
co	incise	

and 2) with residence in Salt Lake County and 3) manner of death as suicide.

This method does not capture an estimated 10% of suicides among Salt Lake County residents who died outside of Utah or whose cause of death was pending as of 2/5/18 when the data were extracted for analysis.

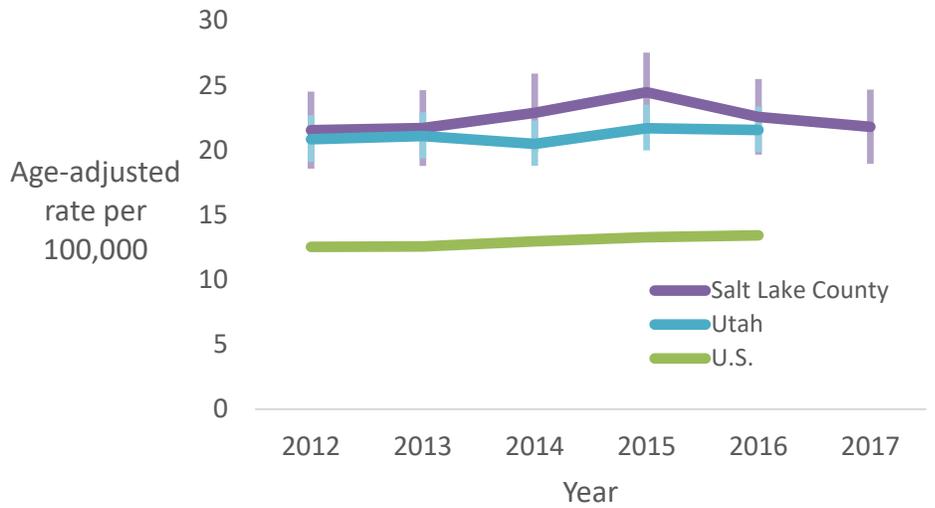
- Data on suicides that occurred in individuals aged <10 years are not presented.
- Unreliable: The relative standard error is 30-49% and the estimate is considered unreliable. Interpret data with caution.
- Suppressed: The frequency is 1-3 or the relative standard error is  $\geq 50\%$ .
- 2017 rates were calculated using 5-year population estimates from the 2016 American Community Survey (total, gender, age group, race, ethnicity, educational attainment, military history, marital status, mechanism of injury, geographic location), 5-year population estimates from the 2010 American Community Survey (occupation) and population estimates from 2015 Business Patterns, (industry), all from the US Census Bureau; thus, rates are slightly inflated.
- MMWR = Morbidity and Mortality Weekly Report, the week of the epidemiologic year to which the death is assigned for incidence reporting.
- Age-adjusted rates were adjusted to the 2000 U.S. standard population.
- Confidence intervals were calculated with a 95% confidence level using the mid-*p* exact test.
- Odds ratios are conditional maximum likelihood estimates of the common odds ratio, calculated using the mid-*p* exact test.
- Occupations were classified into 23 major groups according to the Bureau of Labor Statistics 2018 Standard Occupational Classification System.
- Industries were classified into 20 sectors according to the Bureau of Labor Statistics 2017 North American Industry Classification System.
- Utah Health Small Areas are [defined by the Utah Department of Health](#).

## Overall

The age-adjusted rate of suicide in Salt Lake County has not significantly increased or decreased in the last five years and is not significantly different from the rate in Utah.

It is significantly higher than the national rate.

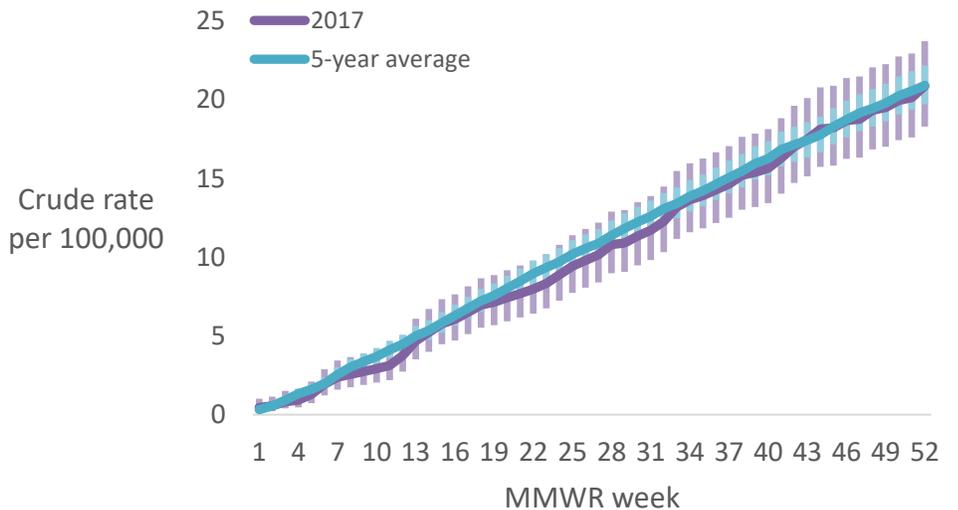
Rate of suicide, Salt Lake County, Utah and U.S., 2012-17



The cumulative incidence rate of suicide did not significantly increase or decrease over the course of 2017, compared to the historical 5-year average.

There is no apparent seasonality of suicide in Salt Lake County.

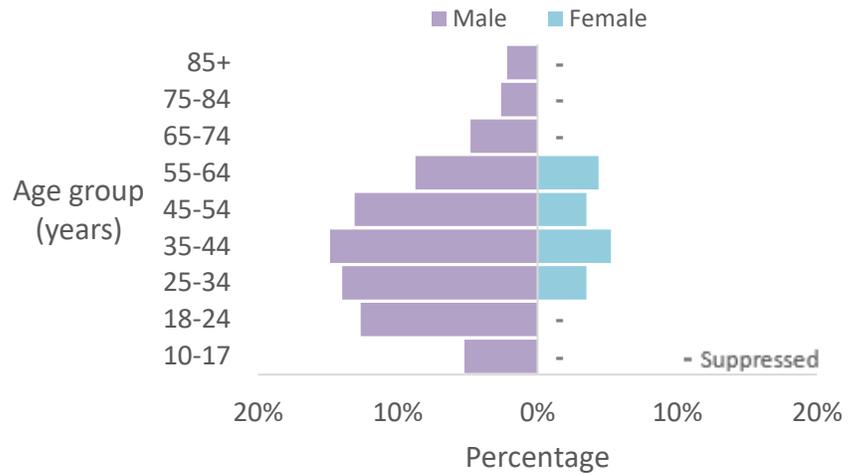
Cumulative incidence rate of suicide, Salt Lake County, 2017 and 5-year average



## Gender and Age

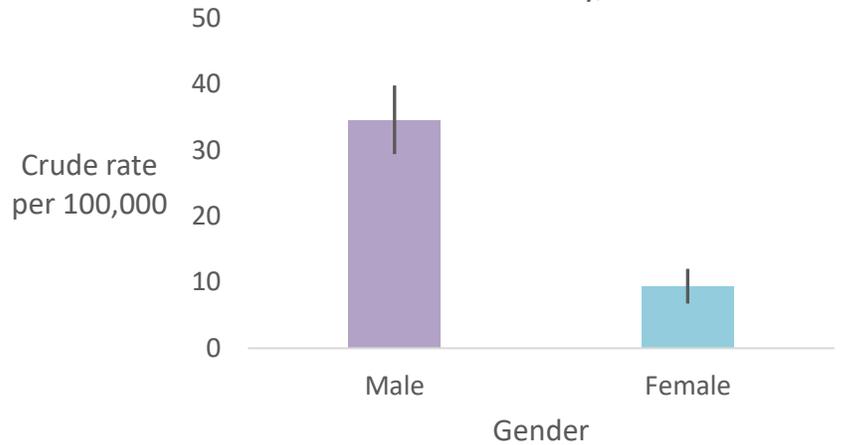
The age distribution of females skewed to a slightly older population than that of males; however, the mean age did not significantly differ between genders (41 years for males vs. 43 years for females).

Percentage of males and females who died from suicide, by age group, Salt Lake County, 2017



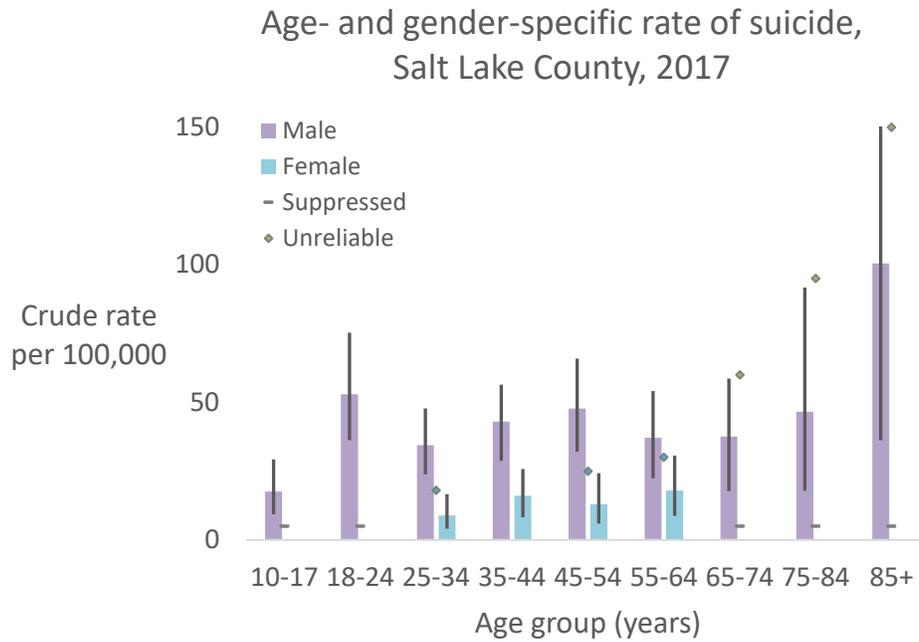
The rate of suicide among males was almost four times that of females.

Rate of suicide by gender, Salt Lake County, 2017



# GENDER AND AGE

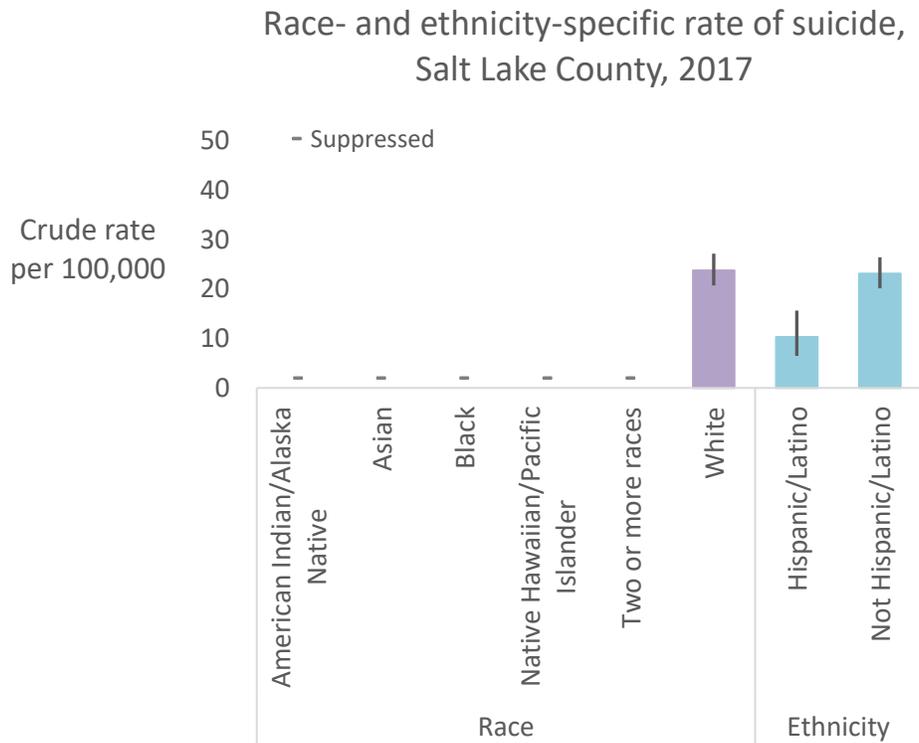
The rate of suicide was significantly higher among males than females across most age groups.



## Race and Ethnicity

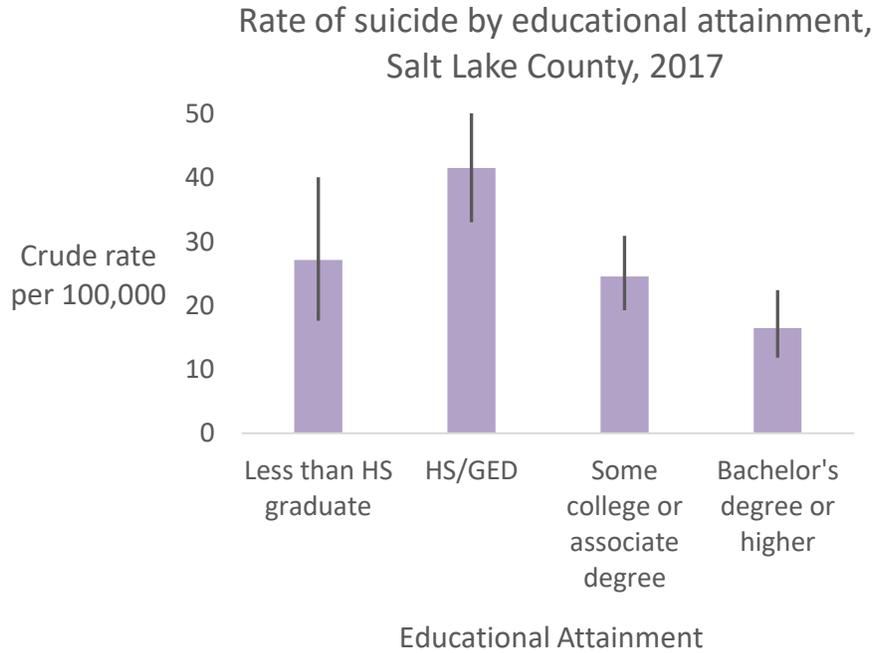
The rate of suicide was significantly higher among those who did not identify as Hispanic or Latino.

It was not possible to assess racial disparities due to unreliable estimates.



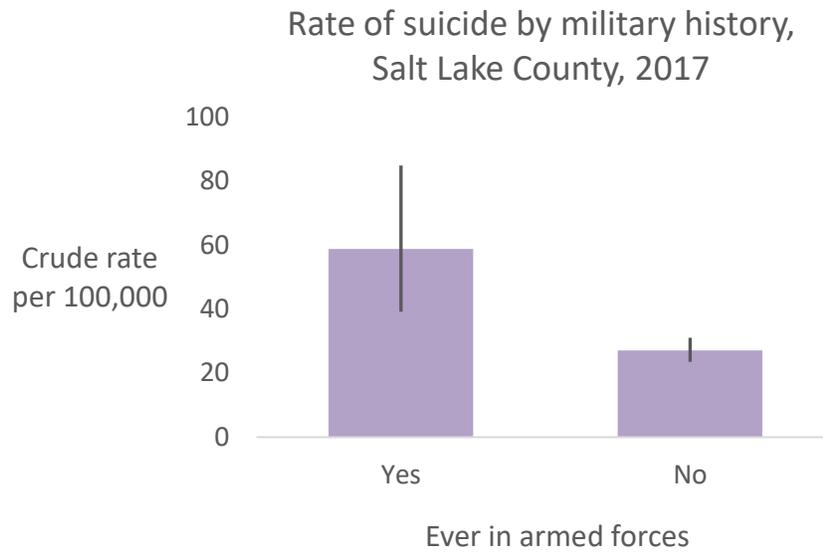
## Educational Attainment

The rate of suicide decreased with increasing educational attainment among adults aged 18+ years with at least a high school diploma or GED.



## Military History

The rate of suicide was significantly higher among those who had ever been in the armed forces.



## Marital Status

The rate of suicide was significantly lower among those who were married compared to those who were divorced, widowed or never married.



## Mechanism of Injury

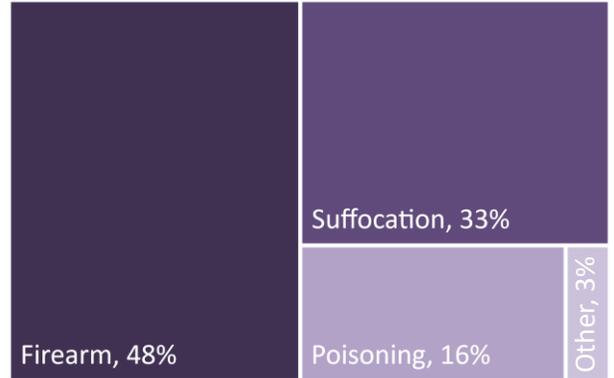
Most suicides (82%) were by firearm or suffocation. Among those who died by suffocation, most were hanging (86%).

More males died from suicide by firearm than females and more females died from suicide by poisoning than males.

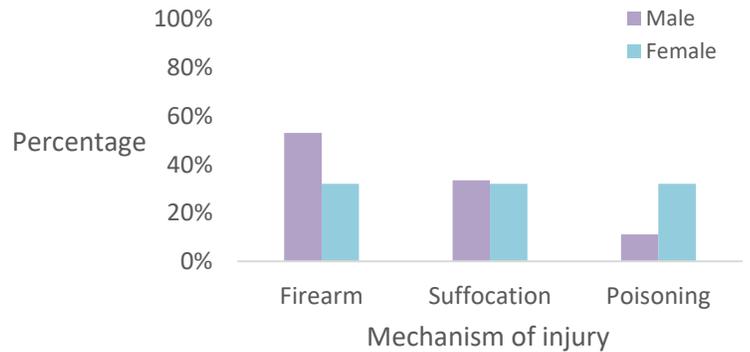
The rates of suicide by firearm and suffocation were significantly higher among males than females.

The rate of suicide by firearm or suffocation among males did not differ by age group (chart not shown; see Data Tables section, Table 2).

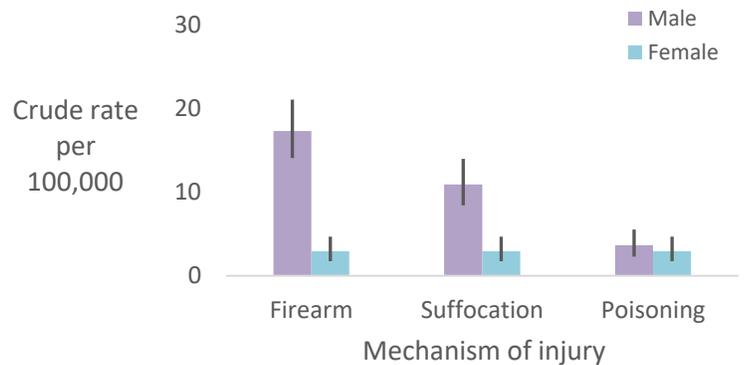
Percentage of suicides by mechanism of injury, Salt Lake County, 2017



Percentage of suicides by common mechanism of injury and gender, Salt Lake County, 2017



Rate of suicide by common mechanism of injury and gender, Salt Lake County, 2017

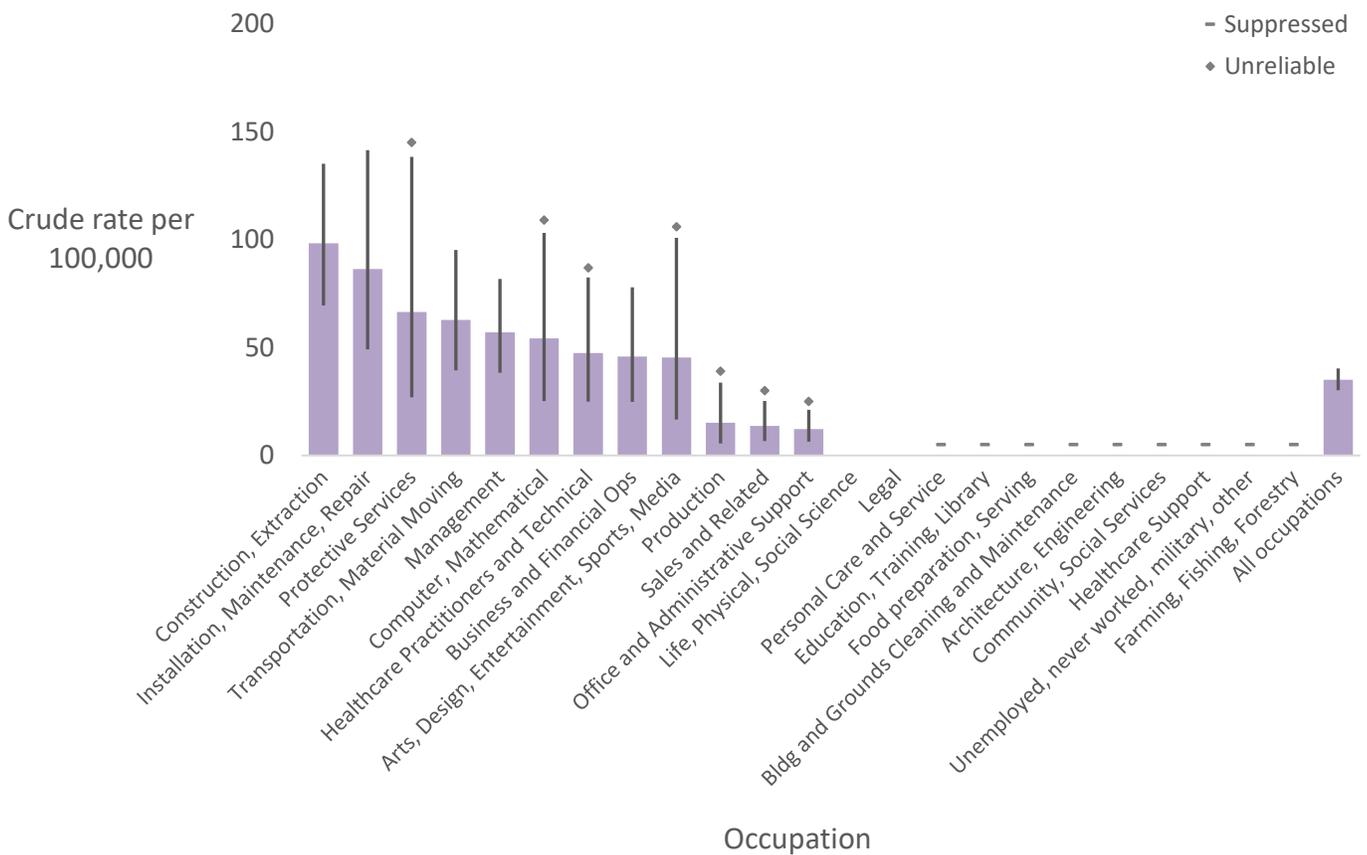


## Occupation

The rate of suicide was significantly higher among those who worked in construction/extraction occupations, e.g. construction worker, carpenter, electrician, laborer or plumber, compared to all occupations. Students, homemakers and those who were disabled, retired, institutionalized or worked in unknown occupations were excluded.

- 8% of all suicides were among grade school students
- 4% of all suicides were among college or university students
- 5% of all suicides were among homemakers

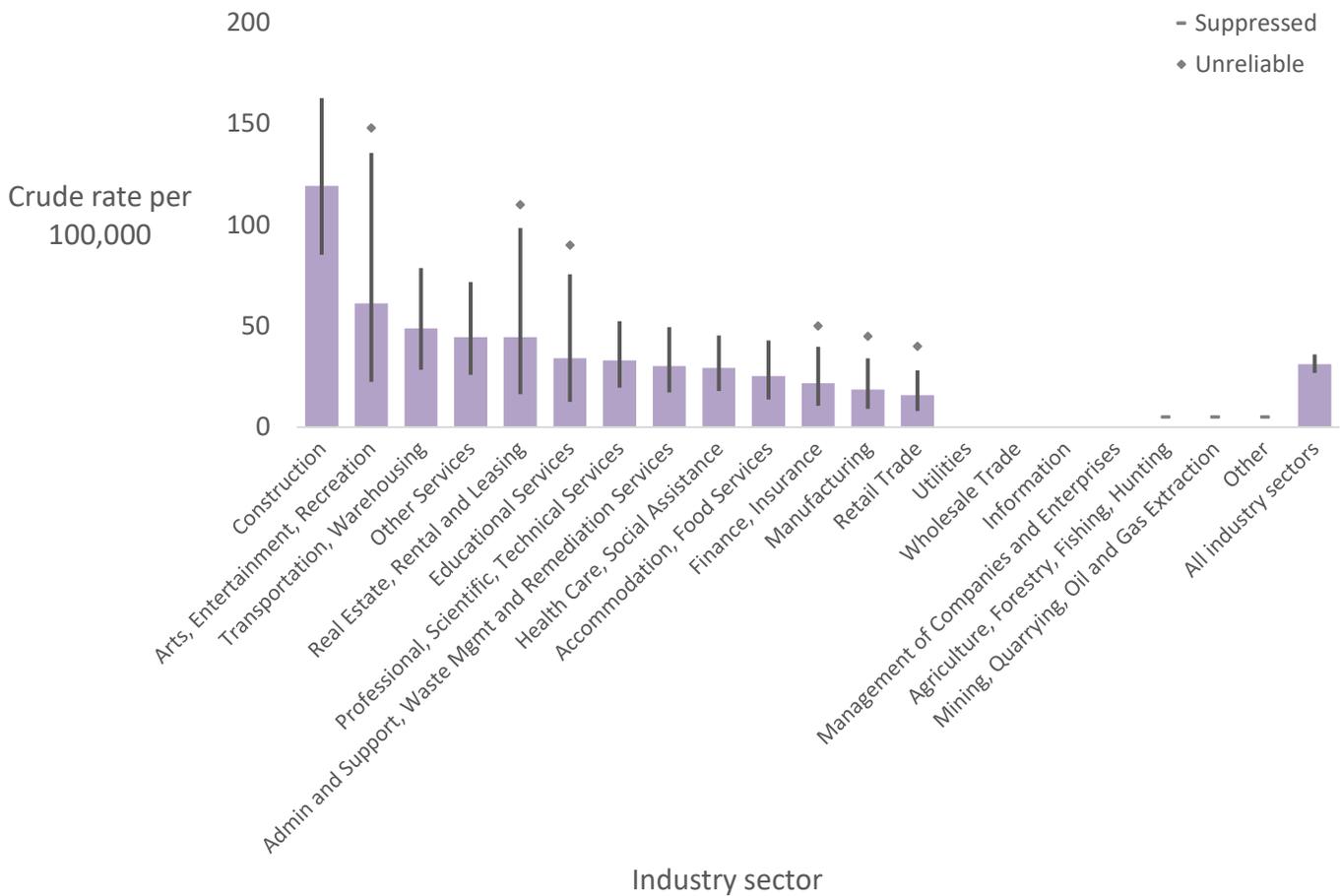
Rate of suicide by occupation, Salt Lake County, 2017



# Industry

The rate of suicide was significantly higher among those who worked in the construction industry sector compared to all industry sectors. Students, homemakers and those who never worked, were disabled or worked in an unknown industry or public administration were excluded.

Rate of suicide by industry sector, Salt Lake County, 2017

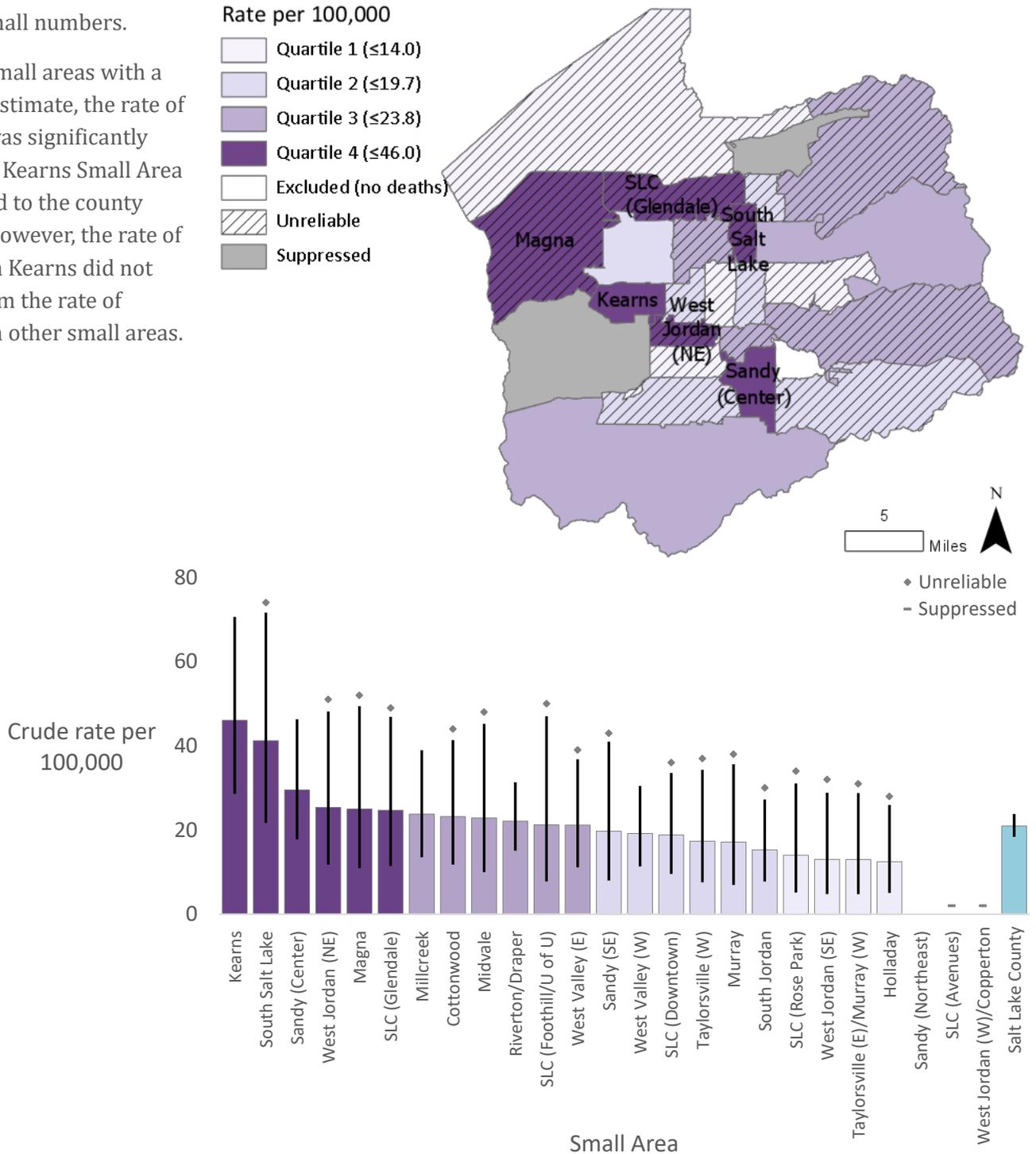


## Geographic Location

The rate of suicide in most small areas was unreliable due to small numbers.

Among small areas with a reliable estimate, the rate of suicide was significantly higher in Kearns Small Area compared to the county overall; however, the rate of suicide in Kearns did not differ from the rate of suicide in other small areas.

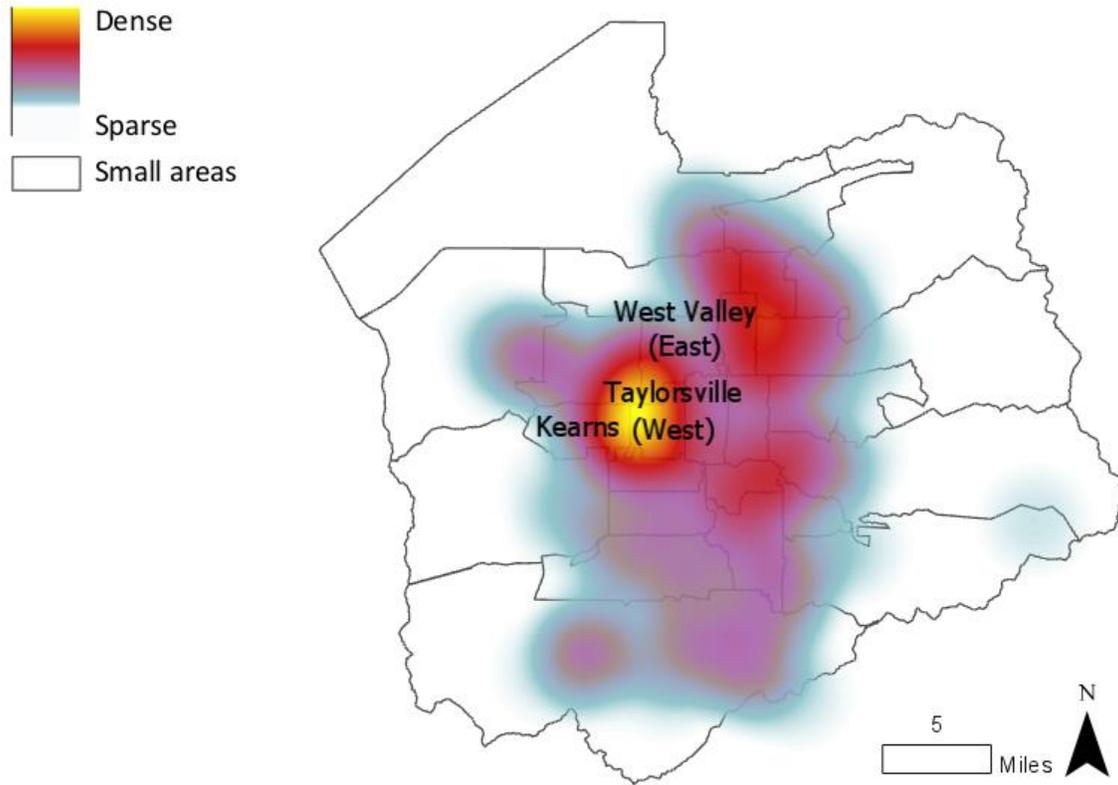
Rate of suicide by Small Area, Salt Lake County, 2017



# GEOGRAPHIC LOCATION

The highest density of suicides occurred in Kearns and Taylorsville Small Areas.

Heat map of suicides by small area, Salt Lake County, 2017



## Data Tables

Table 1. Frequency and age-adjusted rate of suicide in Salt Lake County, the state of Utah and the United States, 2012-2017.

	YEAR	FREQUENCY	AGE-ADJUSTED RATE PER 100,000	95% CONFIDENCE INTERVAL
<i>Salt Lake County</i>	<b>2012</b>	209	21.5	18.6-24.5
	<b>2013</b>	219	21.7	18.8-24.6
	<b>2014</b>	225	22.9	19.8-25.9
	<b>2015</b>	254	24.5	21.4-27.5
	<b>2016</b>	236	22.6	19.7-25.5
	<b>2017</b>	229	21.8	18.9-24.7
	<i>Utah</i>	<b>2012</b>	545	20.8
<b>2013</b>		570	21.1	19.4-22.9
<b>2014</b>		555	20.5	18.8-22.2
<b>2015</b>		609	21.7	20.0-23.5
<b>2016</b>		612	21.6	19.9-23.4
<b>2017</b>		—	—	—
<i>US</i>		<b>2012</b>	40,600	12.5
	<b>2013</b>	41,149	12.6	—
	<b>2014</b>	42,826	13.0	—
	<b>2015</b>	44,193	13.3	—
	<b>2016</b>	44,965	13.4	—
	<b>2017</b>	—	—	—

— not available

Table 2. Frequency, percentage and crude rate of suicide by gender, age group, race, ethnicity, educational attainment, military history, marital status, mechanism of injury, occupation and industry sector, Salt Lake County, 2017.

VARIABLE	FREQUENCY	PERCENTAGE*	CRUDE RATE PER 100,000	95% CONFIDENCE INTERVAL
<b>Total</b>	229	100%	21.0	18.4-23.8
<b>Gender</b>				
<i>Male</i>	179	72%	32.6	27.4-36.7
<i>Female</i>	50	28%	9.2	6.7-11.7
<b>Age group†</b>				
<b>10-17</b>	16	10%	8.7	5.1-13.8
<b>18-24</b>	33	13%	30.8	21.6-42.8
<b>25-34</b>	40	21%	21.9	15.9-29.6
<b>35-44</b>	46	17%	29.9	22.1-39.5
<b>45-54</b>	38	12%	30.5	21.9-41.4
<b>55-64</b>	30	14%	52.0	35.8-73.4
<b>65-74</b>	14	6%	22.5	12.8-36.9
<b>75-84</b>	6	4%	19.6‡	8.0-40.8
<b>85+</b>	6	3%	48.2‡	19.6-100.3

# DATA TABLES

VARIABLE	FREQUENCY	PERCENTAGE*	CRUDE RATE PER 100,000	95% CONFIDENCE INTERVAL
<b>Gender and age group†</b>				
<i>Males</i>				
10-17	12	5%	17.5	9.3-29.3
18-24	29	13%	53.0	36.2-75.3
25-34	32	14%	34.5	23.8-47.8
35-44	34	15%	43.0	28.7-56.4
45-54	30	13%	47.8	32.1-65.9
55-64	20	9%	37.1	22.4-54.1
65-74	11	5%	37.5‡	17.7-58.6
75-84	6	3%	46.6‡	17.9-91.7
85+	5	2%	100.4‡	36.2-219.1
<i>Females</i>				
10-17	—	—	—	—
18-24	—	—	—	—
25-34	8	3%	8.9‡	4.1-16.6
35-44	12	5%	16.0	8.2-25.8
45-54	8	3%	12.9‡	5.9-24.3
55-64	10	4%	17.9‡	8.7-30.6
65-74	—	—	—	—
75-84	—	—	—	—
85+	—	—	—	—
<b>Race</b>				
American Indian/Alaska Native	—	—	—	—
Asian	—	—	—	—
Black	—	—	—	—
Native Hawaiian/Pacific Islander	—	—	—	—
Two or more races	—	—	—	—
White	211	92%	23.8	20.8-27.2
<b>Ethnicity</b>				
Hispanic/Latino	20	9%	10.3	6.5-15.7
Not Hispanic/Latino	208	91%	23.1	20.2-26.5
<b>Educational attainment (among those aged 18+)</b>				
Less than high school graduate	23	11%	27.2	17.6-40.1
High school graduate/GED	78	38%	41.6	33.1-51.6
Some college or Associate degree	69	33%	24.6	19.3-30.9
Bachelor's degree or higher	38	18%	16.5	11.9-22.4
<b>Military history</b>				
Ever been in armed forces	26	11%	58.7	39.2-84.8
Never been in armed forces	200	87%	27.1	23.5-31.1

# DATA TABLES

VARIABLE	FREQUENCY	PERCENTAGE*	CRUDE RATE PER 100,000	95% CONFIDENCE INTERVAL
<b>Marital status</b>				
<i>Separated</i>	11	5%	66.2‡	32.1-106.1
<i>Divorced</i>	49	21%	56.2	39.5-69.3
<i>Widowed</i>	12	5%	37.0	19.4-61.0
<i>Never married</i>	96	42%	36.4	28.1-42.0
<i>Married</i>	60	26%	13.9	10.6-17.6
<b>Mechanism of injury</b>				
<i>Firearm</i>	111	48%	10.2	8.4-12.2
<i>Suffocation</i>	76	33%	7.0	5.5-8.7
<i>Poisoning</i>	36	16%	3.3	2.3-4.5
<i>Other</i>	6	3%	0.5‡	0.2-1.1
<b>Gender and mechanism of injury</b>				
<b>Males</b>				
<i>Firearm</i>	95	53%	17.3	14.1-21.1
<i>Suffocation</i>	60	34%	10.9	8.4-14.0
<i>Poisoning</i>	20	11%	3.6	2.3-5.5
<b>Females</b>				
<i>Firearm</i>	16	32%	2.9	1.7-4.7
<i>Suffocation</i>	16	32%	2.9	1.7-4.7
<i>Poisoning</i>	16	32%	2.9	1.7-4.7
<b>Males only, firearm and suffocation mechanisms only and age group</b>				
<b>Firearm</b>				
10-17	7	7%	10.2‡	4.5-20.2
18-24	15	16%	27.4	15.9-44.2
25-34	12	13%	12.9	7.0-22.0
35-44	16	17%	20.2	12.0-32.1
45-54	14	15%	22.3	12.7-36.5
55-64	11	12%	20.4‡	10.7-35.5
65-74	9	9%	30.7‡	15.0-56.4
75-84	6	6%	46.6‡	18.9-97.0
85+	5	5%	100.4‡	36.8-222.6
<b>Suffocation</b>				
10-17	5	8%	7.3‡	2.7-16.2
18-24	12	20%	21.9	11.9-37.3
25-34	15	25%	16.2	9.4-26.1
35-44	14	23%	17.7	10.1-29.0
45-54	8	13%	12.7‡	5.9-24.2
55-64	6	10%	11.1‡	4.5-23.2
65-74	0			
75-84	0			
85+	0			
<b>Occupation</b>				
<i>Construction, Extraction</i>	35	19%	98.2	69.5-135.1
<i>Installation, Maintenance, Repair</i>	14	8%	86.3	49.1-141.4

# DATA TABLES

VARIABLE	FREQUENCY	PERCENTAGE*	CRUDE RATE PER 100,000	95% CONFIDENCE INTERVAL
<i>Protective services</i>	6	3%	66.5‡	27.0-138.3
<i>Transportation, Material moving Management</i>	20	11%	62.7	39.4-95.2
<i>Computer, Mathematical</i>	27	15%	57.0	38.3-81.8
<i>Healthcare practitioners and Technical</i>	8	4%	54.3‡	25.2-103.1
<i>Business and financial operations</i>	11	6%	47.4‡	25.0-82.5
<i>Arts, Design, Entertainment, Sports, Media Production</i>	12	6%	45.8	24.8-77.9
<i>Sales and related</i>	5	3%	45.5‡	16.7-100.8
<i>Office and administrative support</i>	5	3%	15.2‡	5.6-33.8
<i>Life, Physical or Social science</i>	9	5%	13.8‡	6.7-25.3
<i>Legal</i>	11	6%	12.2‡	6.4-21.2
<i>Personal care and service</i>	0			
<i>Education, Training, Library</i>	—	—	—	—
<i>Food preparation, Serving</i>	—	—	—	—
<i>Building and grounds cleaning and maintenance</i>	—	—	—	—
<i>Architecture, Engineering</i>	—	—	—	—
<i>Community or Social services</i>	—	—	—	—
<i>Healthcare support</i>	—	—	—	—
<i>Farming, Fishing, Forestry</i>	—	—	—	—
<b>Industry Sector</b>				
<i>Construction</i>	37	21%	119.3	85.3-162.7
<i>Arts, Entertainment, Recreation</i>	5	3%	61.2‡	22.4-135.6
<i>Transportation, Warehousing</i>	15	8%	48.8	28.4-78.7
<i>Other Services</i>	15	8%	44.5	25.9-71.8
<i>Real Estate, rental and leasing</i>	5	3%	44.4‡	16.3-98.5
<i>Educational Services</i>	5	3%	34.1‡	12.5-75.6
<i>Professional, Scientific or Technical Services</i>	16	9%	33.0	19.5-52.4
<i>Admin and Support, Waste Management and Remediation Services</i>	14	8%	30.2	17.2-49.5
<i>Health Care, Social Assistance</i>	18	10%	29.2	17.9-45.3
<i>Accommodation, Food Services</i>	12	7%	25.2	13.7-42.9
<i>Finance, Insurance</i>	9	5%	21.7‡	10.6-39.8
<i>Manufacturing</i>	9	5%	18.5‡	9.0-34.0
<i>Retail trade</i>	10	6%	15.7‡	8.0-28.1
<i>Utilities</i>	0			
<i>Wholesale trade</i>	0			
<i>Information</i>	0			
<i>Management of companies and enterprises</i>	0			
<i>Agriculture, Forestry, Fishing, Hunting</i>	—	—	—	—
<i>Mining, Quarrying, Oil and Gas extraction</i>	—	—	—	—
<i>Other</i>	—	—	—	—

\* Percentages may not sum to 100% due to rounding and/or exclusion of unknown data

† Deaths among those aged <10 years not reported

‡ Unreliable

— Suppressed

# DATA TABLES

Table 3. Frequency, crude rate and percent rate change of suicide by Small Area, Salt Lake County, 2017.

SMALL AREA	FREQUENCY	CRUDE RATE PER 100,000	95% CONFIDENCE INTERVAL	PERCENT RATE CHANGE FROM 2016
<i>Salt Lake City (Rose Park)</i>	5	14.0 <sup>‡</sup>	5.1-31.1	67%
<i>Salt Lake City (Avenues)</i>	—	—	—	—
<i>Salt Lake City (Foothill/University of Utah)</i>	5	21.2 <sup>‡</sup>	7.8-47.0	400%
<i>Magna</i>	7	25.0 <sup>‡</sup>	10.9-49.4	17%
<i>Salt Lake City (Glendale)</i>	8	24.7 <sup>‡</sup>	11.5-46.9	0%
<i>West Valley (West)</i>	16	19.2	11.3-30.5	45%
<i>West Valley (East)</i>	11	21.2 <sup>‡</sup>	11.1-36.8	10%
<i>Salt Lake City (Downtown)</i>	10	18.8 <sup>‡</sup>	9.6-33.6	-29%
<i>South Salt Lake</i>	11	41.2 <sup>‡</sup>	21.7-71.6	120%
<i>Millcreek</i>	14	23.8	13.5-38.9	0%
<i>Holladay</i>	6	12.5 <sup>‡</sup>	5.1-25.9	-33%
<i>Cottonwood</i>	10	23.2 <sup>‡</sup>	11.8-41.3	-9%
<i>Kearns</i>	19	46.1	28.6-70.6	138%
<i>Taylorsville (East)/Murray (West)</i>	5	13.0 <sup>‡</sup>	4.8-28.8	-55%
<i>Taylorsville (West)</i>	7	17.3 <sup>‡</sup>	7.6-34.3	-13%
<i>Murray</i>	6	17.1 <sup>‡</sup>	6.9-35.6	-25%
<i>Midvale</i>	7	22.9 <sup>‡</sup>	10.0-45.2	-36%
<i>West Jordan (Northeast)</i>	8	25.4 <sup>‡</sup>	11.8-48.2	60%
<i>West Jordan (Southeast)</i>	5	13.0 <sup>‡</sup>	4.8-28.8	-29%
<i>West Jordan (West)/Copperton</i>	—	—	—	—
<i>South Jordan</i>	10	15.3 <sup>‡</sup>	7.8-27.2	11%
<i>Sandy (Center)</i>	17	29.5	17.8-46.3	113%
<i>Sandy (Northeast)</i>	0	—	—	-100%
<i>Sandy (Southeast)</i>	6	19.7 <sup>‡</sup>	8.0-41.0	100%
<i>Riverton/Draper</i>	29	22.1	15.1-31.3	32%

‡ Unreliable

— Suppressed