Exploratory Data Analysis of 2017 Suicide Rates

Data Obtained from CDC - Wonder Platform
Including 1999 - 2017 Suicide Mortality Rates
Accessed at http://wonder.cdc.gov/ucd-icd10.html

US 2017 Data Interpretation

Total deaths : 43, 768

Males make up approximately 80% : 34, 836 deaths

White males are 92.6%

Black of African American males are 4.98%

Asian or Pacific Islander males are 1.74%

Alaskan or Native Americans males are 0.63%

Gender Distinction: Males and Females used vs Men & Women

US 2017 Data Interpretation Cont.

Total deaths : 43, 768

Females make up approximately 20% : 8,932 deaths

White females are 95.10%

Black of African American females are 2.54%

Asian or Pacific Islander females are 2.01%

Alaskan or Native Americans females are 0.63%

Gender Distinction: Males and Females used vs Men & Women

Categorical Methods Employed In Suicide By Males and Females Sorted Popular Rank

53.24% Firearms : 23,303

28.48% Suffocation: 12,466

14.01% Poisoning: 6,136

1.65% Fall : 722

1.23% Cutting or Piercing : 537

0.95% Other Classifiable : 418

0.40% Drowning : 176

0.02% Flame / Fire : 10

Hypothesis Testing Results:

Question: What is the likelihood Males would choose this over Females?

Null: There is an equal likelihood that Males and Females would choose Method One over Method Two (Distinction: In a dataset of Successful Attempts / Completed Suicides)

By Firearm vs Suffocation

With 99-100 % confidence that Males choose Firearm over Suffocation.

There is at least a 41.68% higher difference between Males choosing Firearms over Suffocation than Females.

Hypothesis Testing Results:

Question: What is the likelihood Males would choose this over Females?

Null: There is an equal likelihood that Males and Females would choose Method One over Method Two (Distinction: In a dataset of Successful Attempts / Completed Suicides)

By Fall vs Cutting/Piercing

With 95 % confidence that Males choose Cutting / Piercing rather than Falling.

There is at least a 22% lower difference between Males choosing Cutting/Piercing than Females.

Hypothesis Testing Results:

Question: What is the likelihood Males would choose this over Females?

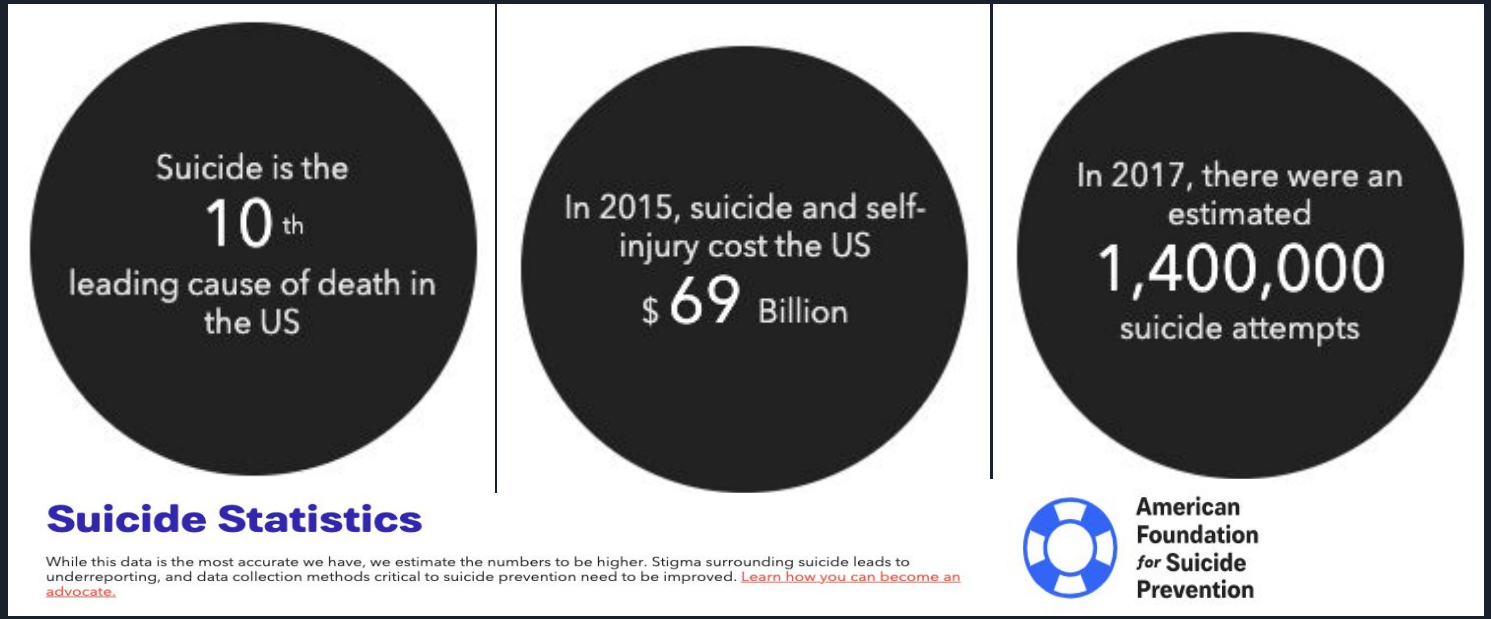
Null: There is an equal likelihood that Males and Females would choose Method One over Method Two (Distinction: In a dataset of Successful Attempts / Completed Suicides)

By Suffocation vs Poisoning

With 99-100 % confidence that Males choose Suffocation rather than Poisoning.

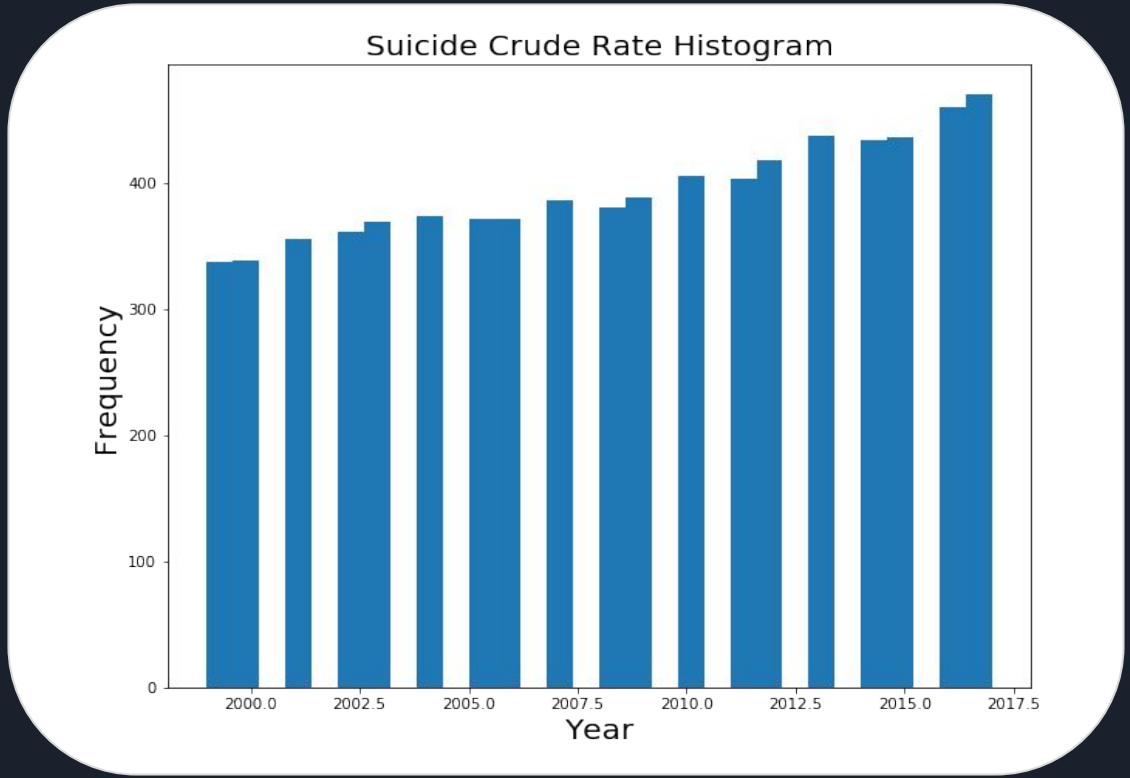
There is at least a 0-1% higher difference between Males choosing Suffocation than Females.

Trends Reported on External Resource Website (Outside Our Dataset)

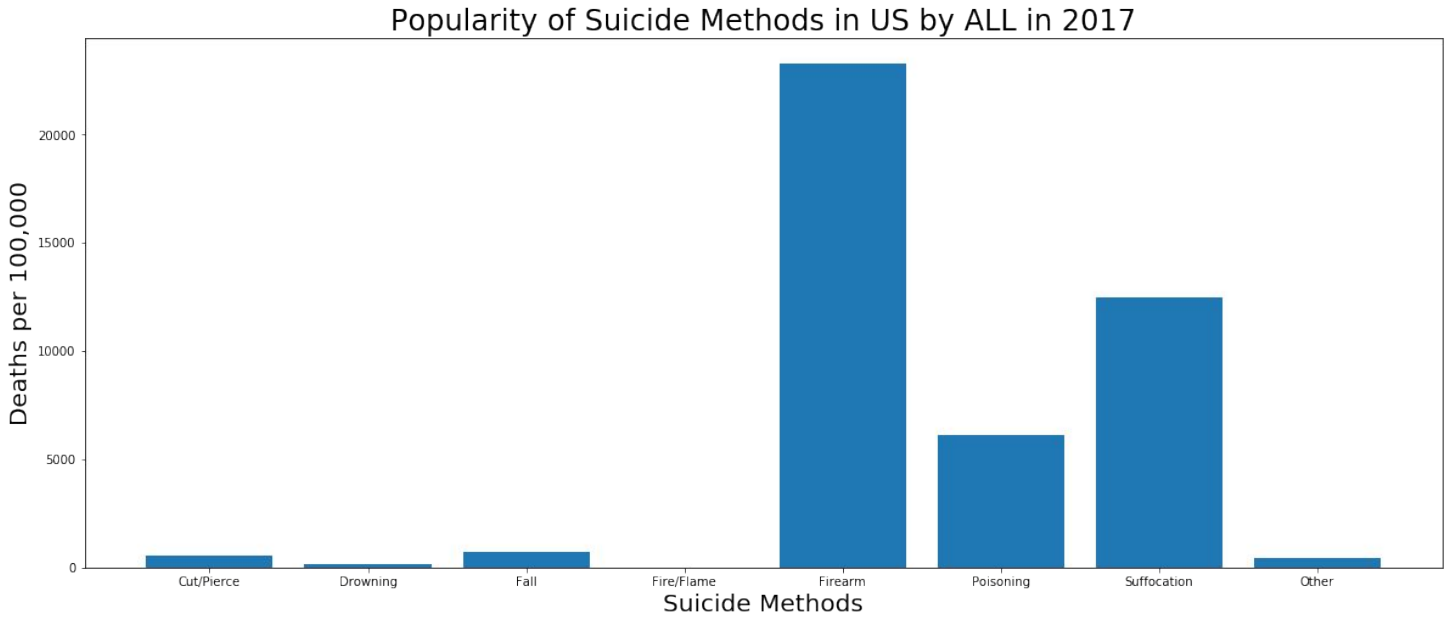


Data Visualization: Data Selection

Initial 1999 - 2017 dataset was selected from CDC Wonder Platform



Dataset Narrowed To 2017
With Focus on Method Popularity



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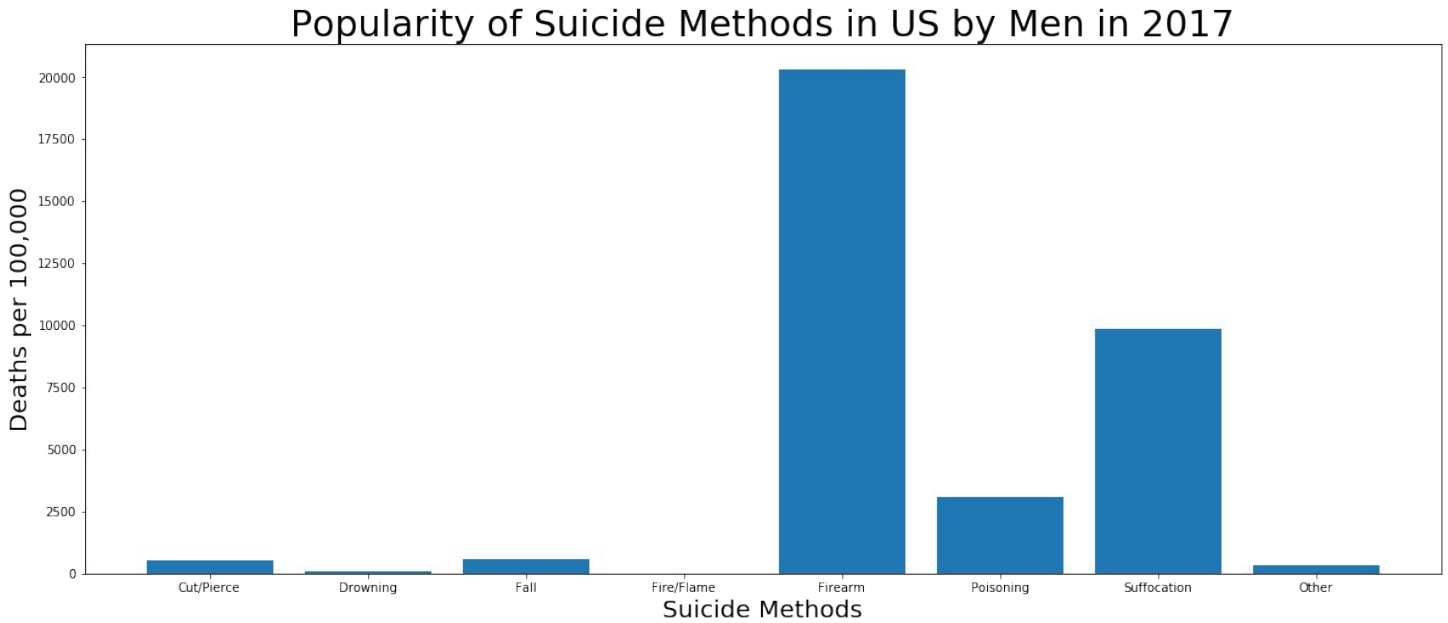

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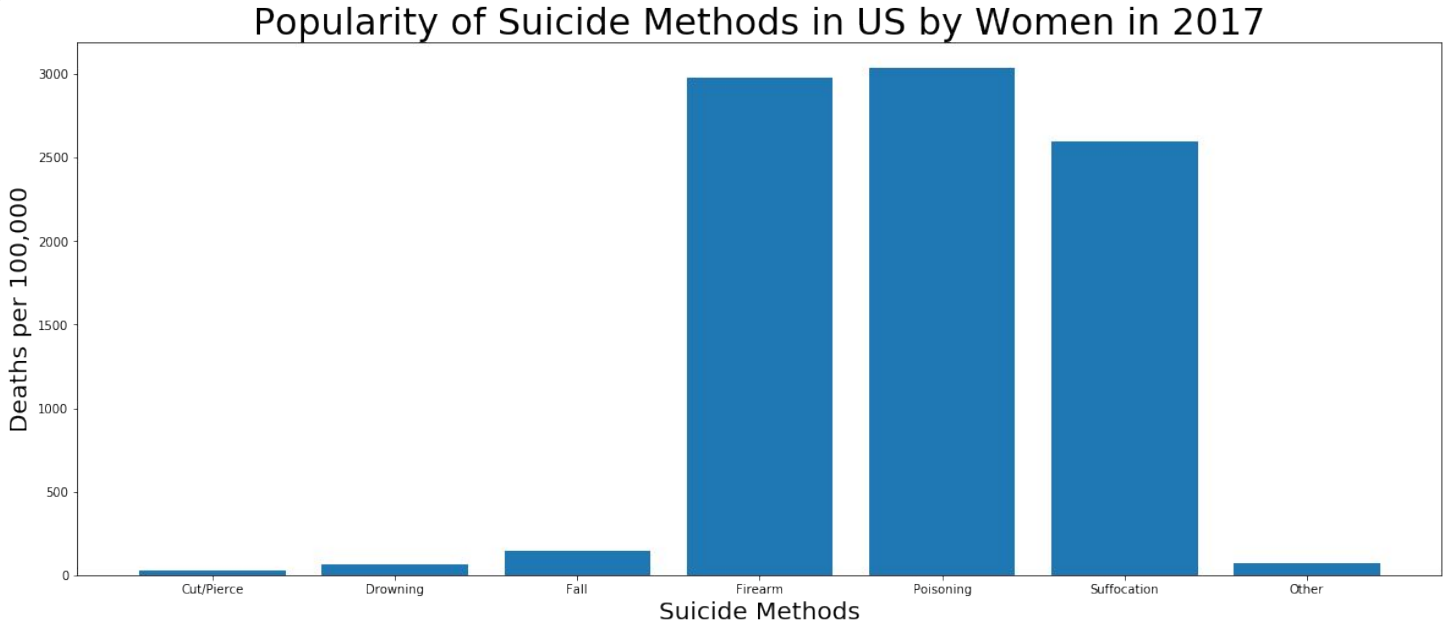

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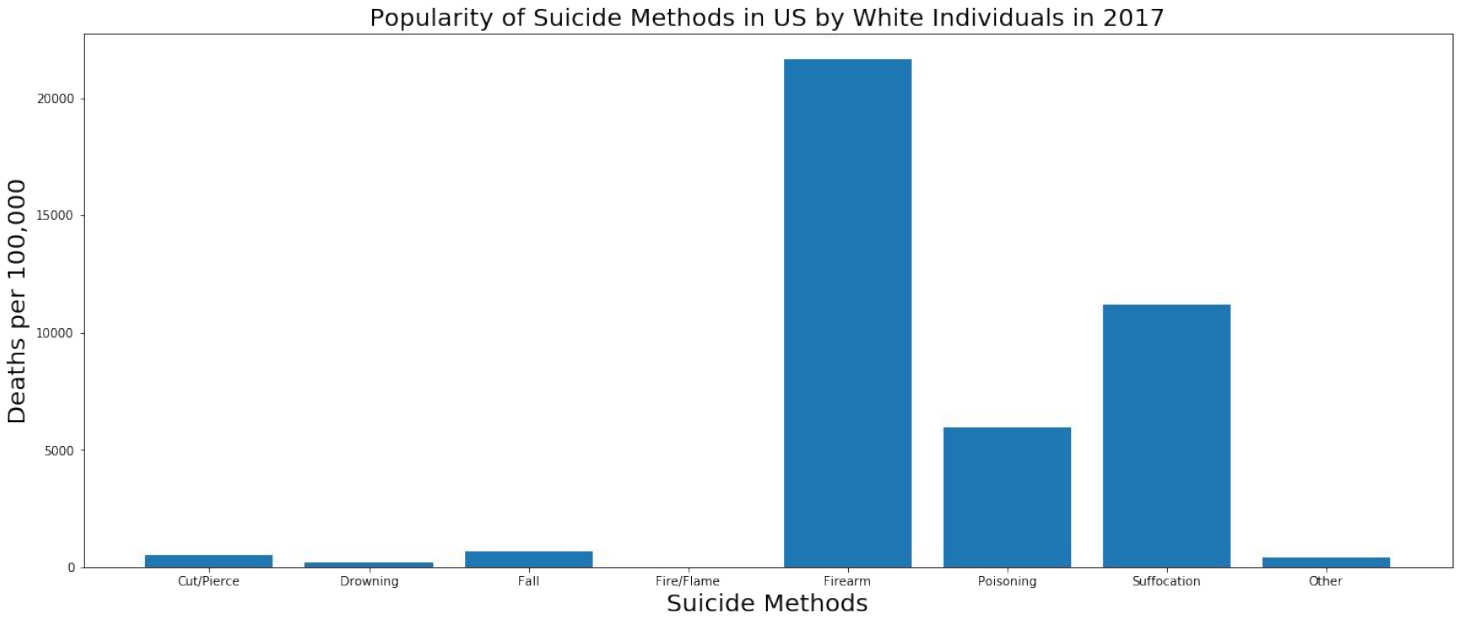

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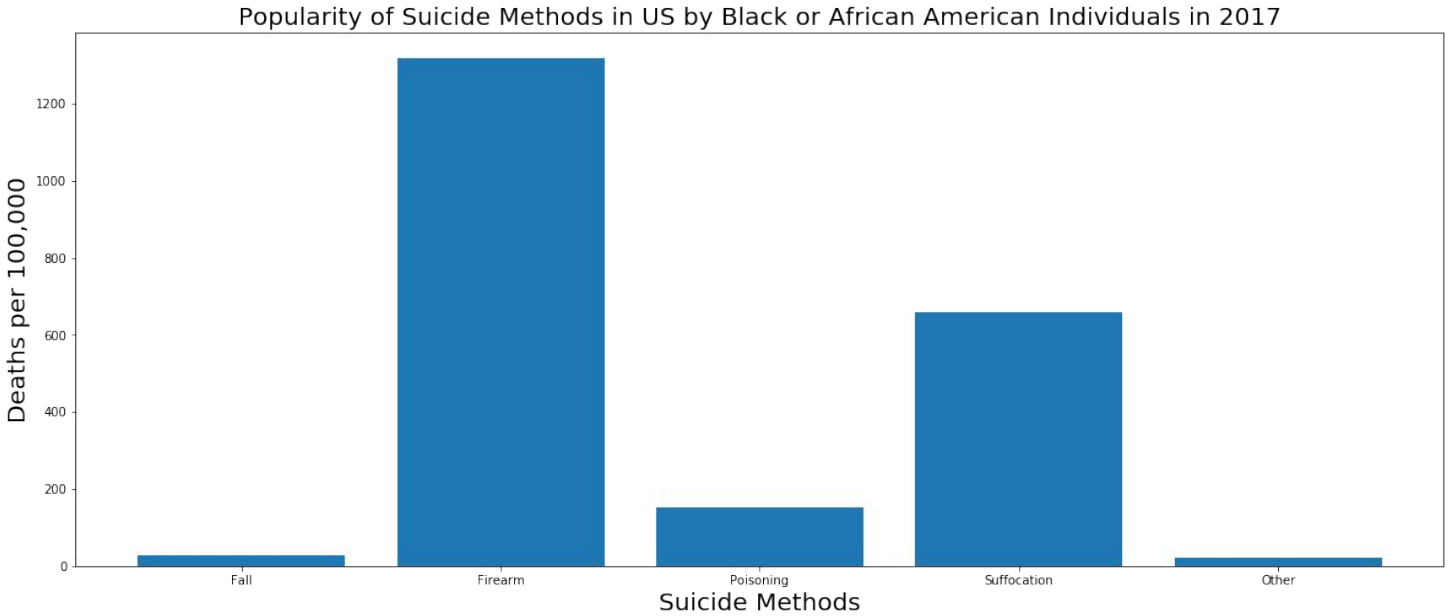

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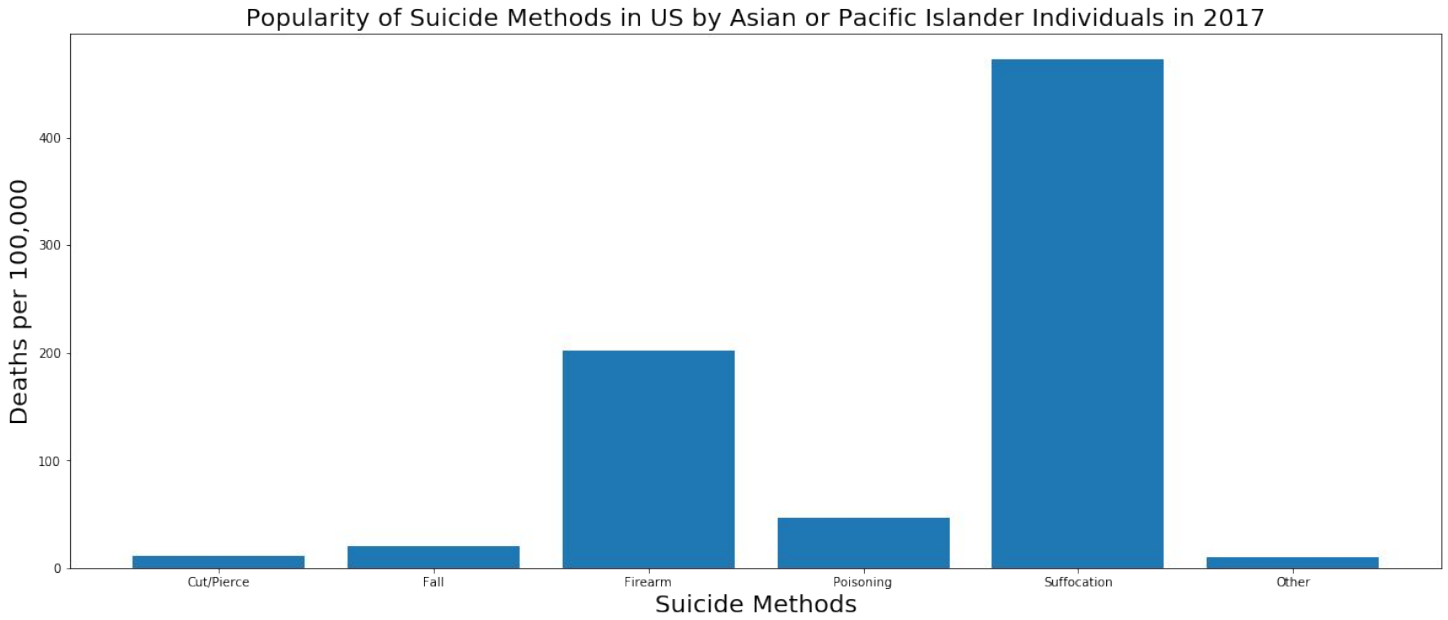

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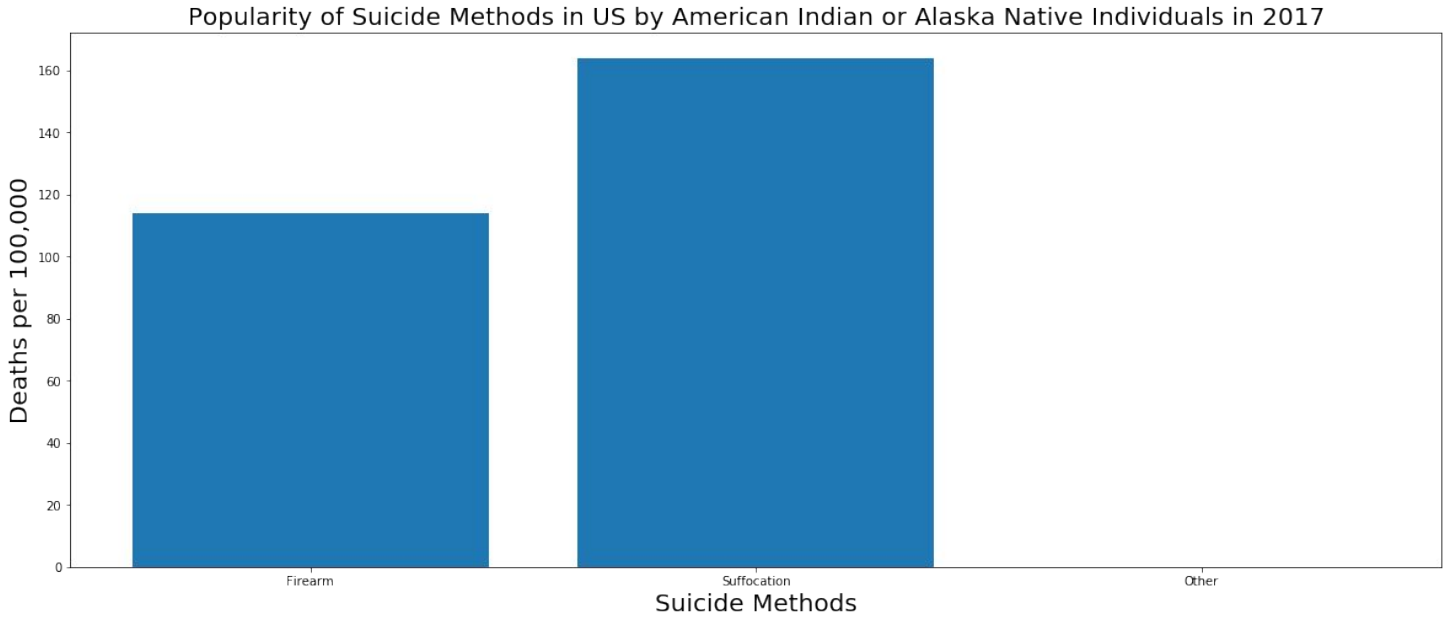

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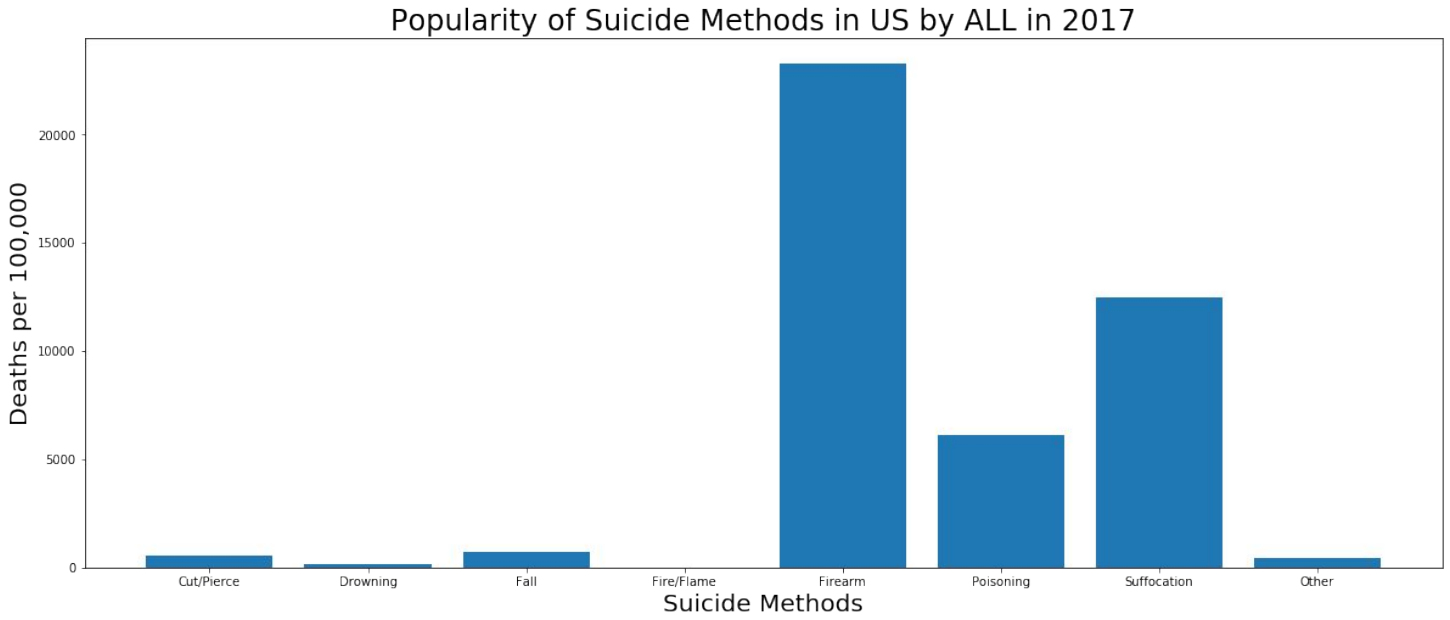

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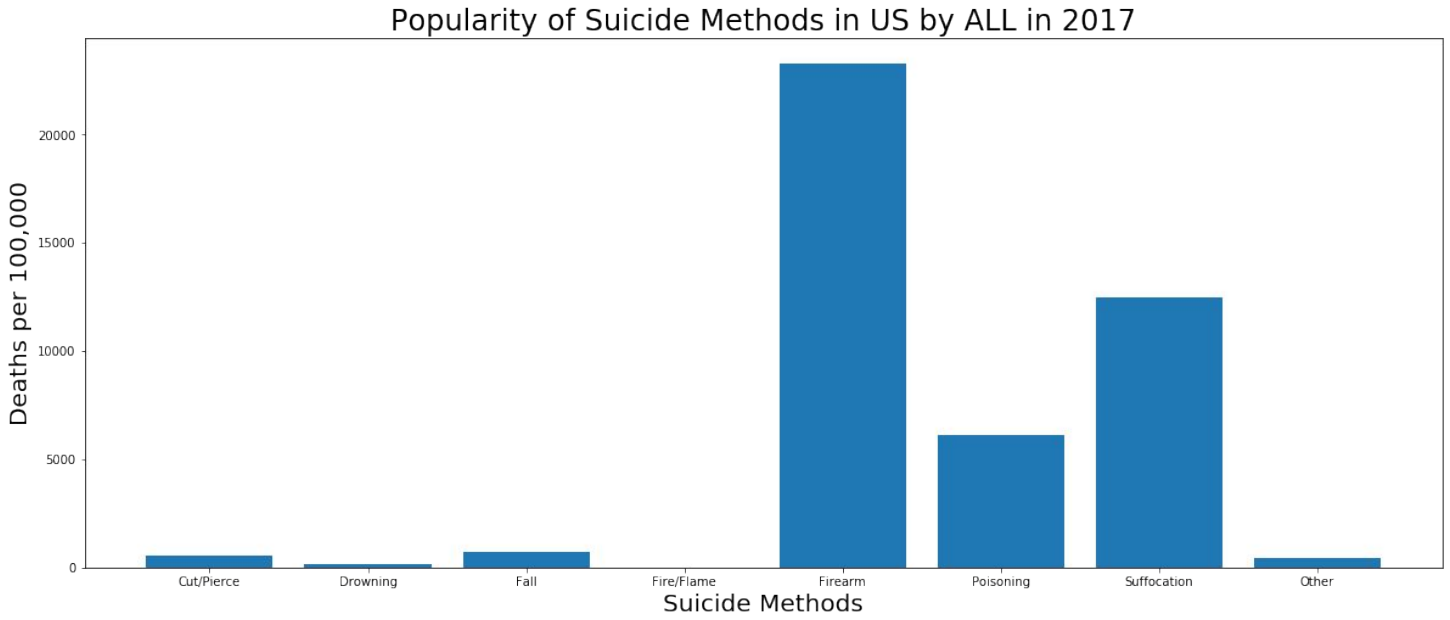

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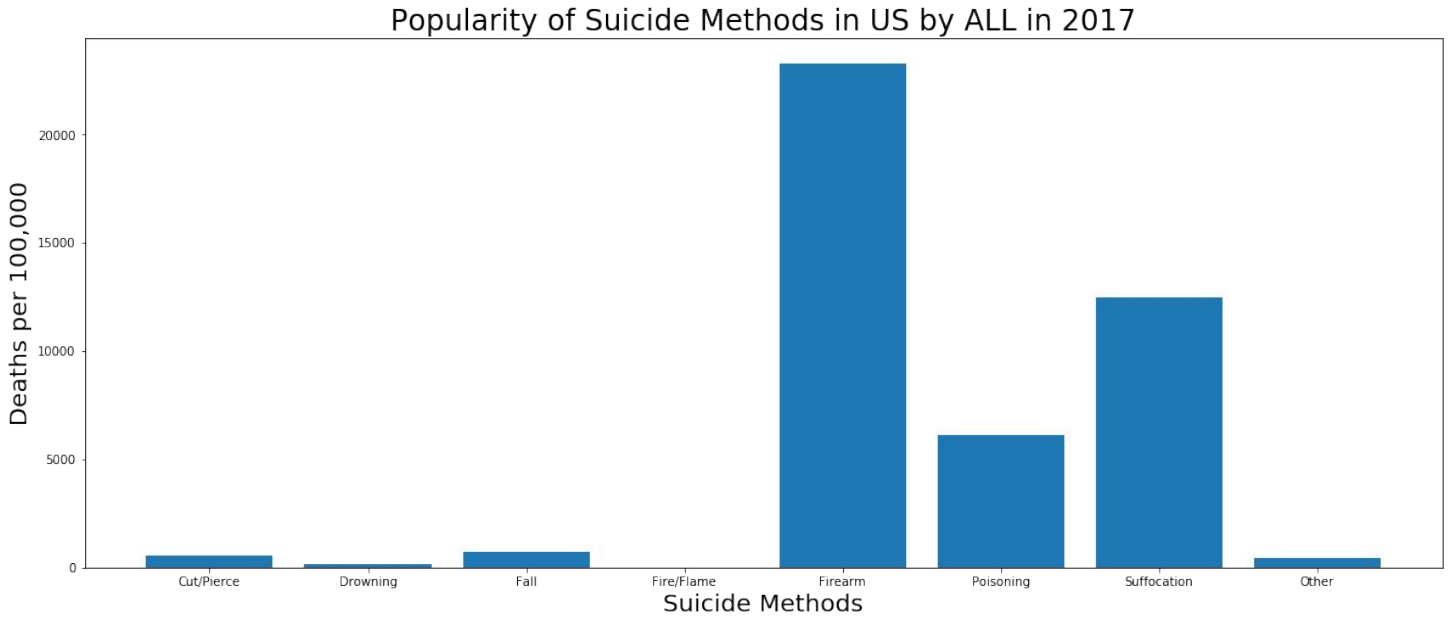

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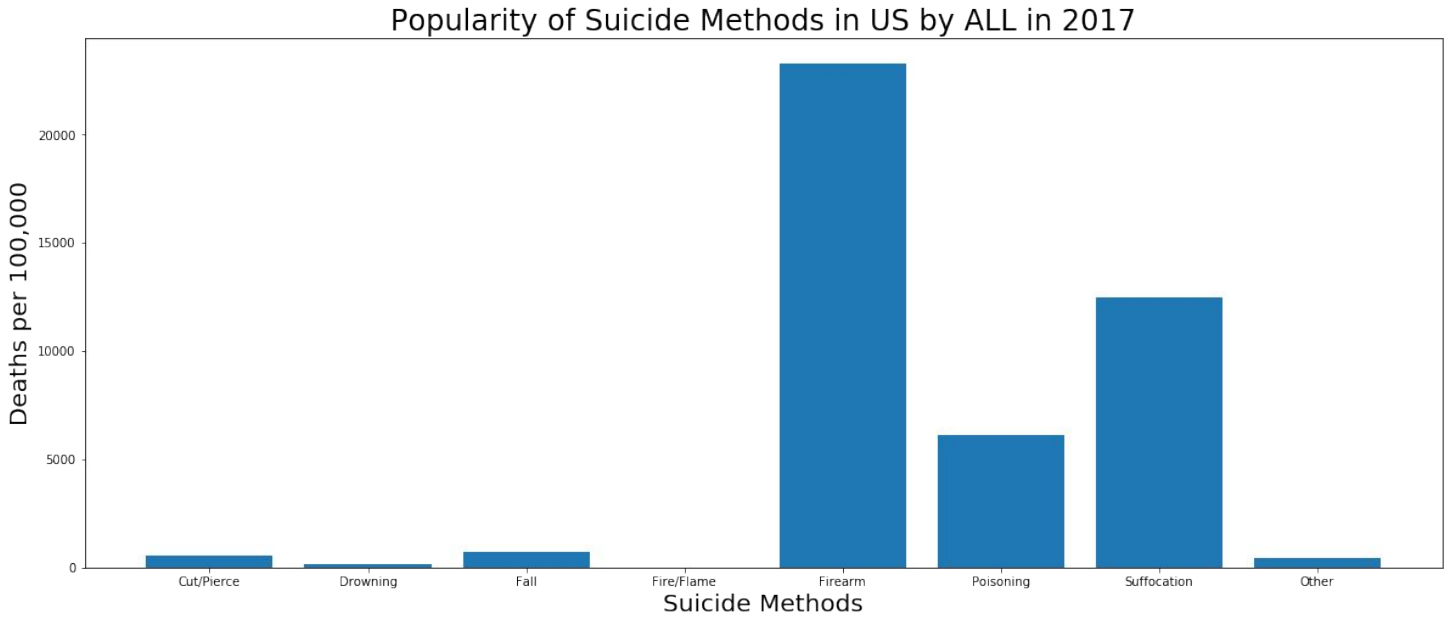

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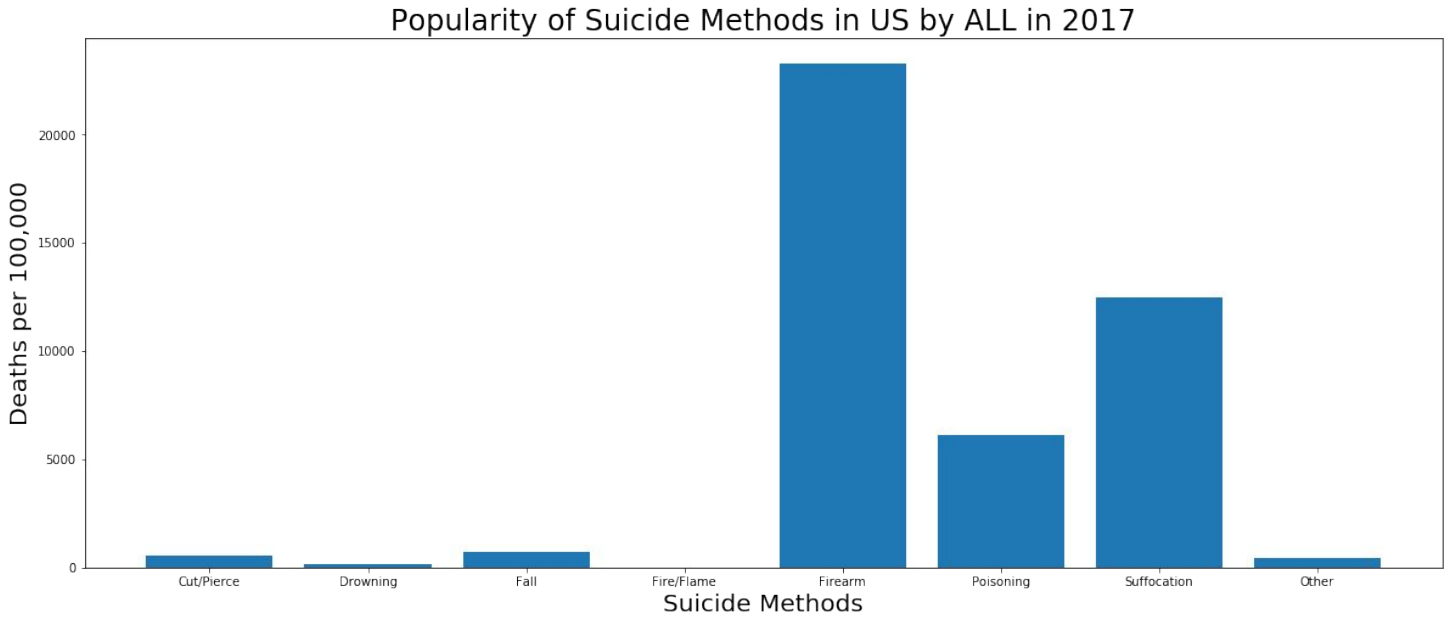


High Level Review Of Data Clean Up

#Drop all redundant Code Columns

#Shorten Injury Mechanism To Method, to describe method of suicide.

#Cleared the word ‘Unreliable’ in crude rate and replaced with 0

#Changed appropriate string and float columns to int32

Dropped All Redundant Code Columns

```
Data columns (total 14 columns):
Notes                                                62 non-null object
State                                                7504 non-null object
State Code                                           7504 non-null float64
Year                                                 7504 non-null float64
Year Code                                            7504 non-null float64
Gender                                               7504 non-null object
Gender Code                                          7504 non-null object
Race                                                 7504 non-null object
Race Code                                            7504 non-null object
Injury Mechanism & All Other Leading Causes          7504 non-null object
Injury Mechanism & All Other Leading Causes Code     7504 non-null object
Deaths                                               7504 non-null float64
Population                                           7504 non-null float64
Crude Rate                                           7504 non-null object
dtypes: float64(5), object(9)
```

Changed appropriate string and float columns to int32

	State	Year	Gender	Race	Injury Mechanism & All Other Leading Causes	Deaths	Population	Crude Rate
0	Alabama	1999.0	Female	White	Firearm	63.0	1640665.0	3.84
1	Alabama	1999.0	Female	White	Poisoning	19.0	1640665.0	Unreliable
2	Alabama	1999.0	Male	Black or African American	Firearm	41.0	539198.0	7.60
3	Alabama	1999.0	Male	White	Firearm	326.0	1570643.0	20.76
4	Alabama	1999.0	Male	White	Poisoning	36.0	1570643.0	2.29

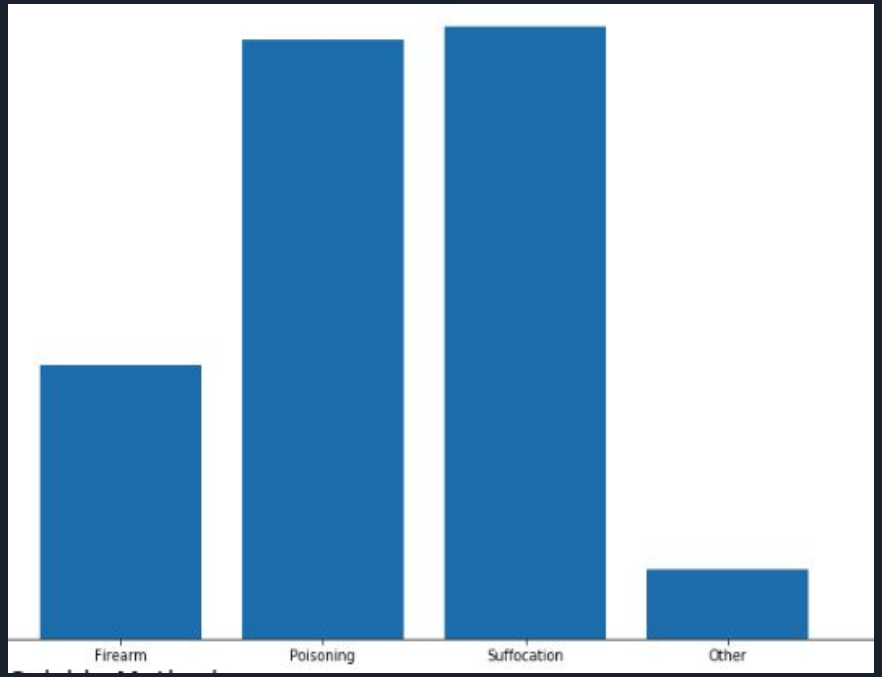
	State	Year	Gender	Race	Method	Deaths	Population	Crude Rate
0	Alabama	1999	Female	White	Firearm	63	1640665	3.839906
1	Alabama	1999	Female	White	Poisoning	19	1640665	1.158067
2	Alabama	1999	Male	Black or African American	Firearm	41	539198	7.603886
3	Alabama	1999	Male	White	Firearm	326	1570643	20.755831
4	Alabama	1999	Male	White	Poisoning	36	1570643	2.292055

‘Shortened Column ‘Injury Mechanism’ To ‘Method’

	State	Year	Gender	Race	Method	Deaths	Population	Crude Rate
0	Alabama	1999.0	Female	White	Firearm	63.0	1640665.0	3.84
1	Alabama	1999.0	Female	White	Poisoning	19.0	1640665.0	Unreliable
2	Alabama	1999.0	Male	Black or African American	Firearm	41.0	539198.0	7.60
3	Alabama	1999.0	Male	White	Firearm	326.0	1570643.0	20.76
4	Alabama	1999.0	Male	White	Poisoning	36.0	1570643.0	2.29

Combined Multiple Other Methods into single ‘Other’ Method

Method	Deaths
Cut/Pierce	537
Drowning	176
Fall	722
Fire/Flame	10
Firearm	23303
Other land transport	28
Other specified, classifiable Injury	368
Other specified, not elsewhere classified Injury	22
Poisoning	6136
Suffocation	12466



Recalculated Crude Rate: ‘Unreliable’ to float ‘0’ Then Recalculated Rates

Crude Rate
3.84
Unreliable
7.60
20.76
2.29

Crude Rate
3.84
0.00
7.60
20.76
2.29

Crude Rate
3.839906
1.158067
7.603886
20.755831
2.292055