

Comparison study of 1999-2019 suicide rate per 100,000 population between Native American and other races in the United States of America

Emma Quintana and Ning Wu

Department of Biological Sciences, Southeastern Oklahoma State University, Durant, Oklahoma 74701



The suicide rate in the USA has been on the rise, which affects specific age groups, genders, and race/ethnicity. Native American (NA) has been known to be on a higher level than that of the other races. This study focuses on the difference in suicide rates between NA and the other races at particular age groups and different genders. Twenty years (1999-2019) of suicide data were retrieved from the CDC database. Microsoft Excel and t-test were employed for data processing and statistical analysis. The results showed that the suicide rate per 100,000 population increased 38.1% nationally with male increased 34.5% and female increased 55%, respectively. However, male was 281.42% higher than female nationally. Among the age groups, NA was 44.48% higher than total nation in age group 10-39 with a significant difference ($P < 0.05$), while in age group 40-84, US total was 81.46% higher than NA with a very significant difference ($P < 0.01$). Crossing race comparison among NA, African American (AA), Hispanic (His), Asian or Pacific Islander (AP), and White (W) showed that NA and W were much higher than other races. However, NA showed 43.31% higher in the age group 10-34 than W ($P < 0.05$), while W showed 86.63% higher in the age group 35-84 than NA ($P < 0.01$). In addition, NA showed 99.09% and 89.62% higher in the age group 10-64 than His and AP, respectively ($P < 0.01$), while AP showed 31.68% higher than NA in the age group 65-84 ($P < 0.05$). There was no significant difference between NA and His in the age group 65-84. Further, NA was 94.07% higher than AA through all age groups. In summary, the suicide rate increased from 1999 to 2019 by about 38.10% with the increased rank as W>His>NA>AA>AP. The suicide rates ranked as W>NA>AP>His and AA. NA was the highest one in the age group 10-34, which should bring more attention to the community for further investigation. This study provides important information for suicide prevention and emphasizes the necessity of psychological/psychiatric services and family education for those affected age groups national wide, so that a reduction in suicide may positively impact the populations.

Introduction

According to the National Institute of Mental Health, suicide rate in the United States has been on the rise since 2001. The trend shows that the suicide epidemic affects varying demographics, including specific age groups, genders and race/ethnicity. The suicide rate in the Native American (NA) population has been known to be on the higher level than that of the other races in the US. This study, based on the US Center for Disease Control and Prevention (CDC) collected data from 1999 to 2019, focusses on the difference in suicide rates per 10,000 population between NA and the other races at particular age groups as well as different gender.

Materials and Methods

Database resources:

CDC WONDER Database: <https://wonder.cdc.gov/>

Data coverage:

1999 -2019 (20 years)

Data analysis:

- (1) Age groups:
- | | |
|-------------------|-------------------|
| 5 - 9 years old | 10 - 14 years old |
| 15 - 19 years old | 20 - 24 years old |
| 25 - 29 years old | 30 - 34 years old |
| 35 - 39 years old | 40 - 44 years old |
| 45 - 49 years old | 50 - 54 years old |
| 55 - 59 years old | 60 - 64 years old |
| 65 - 69 years old | 70 - 74 years old |
| 75 - 79 years old | 80 - 84 years old |

(2) Gender groups: Total Male Female

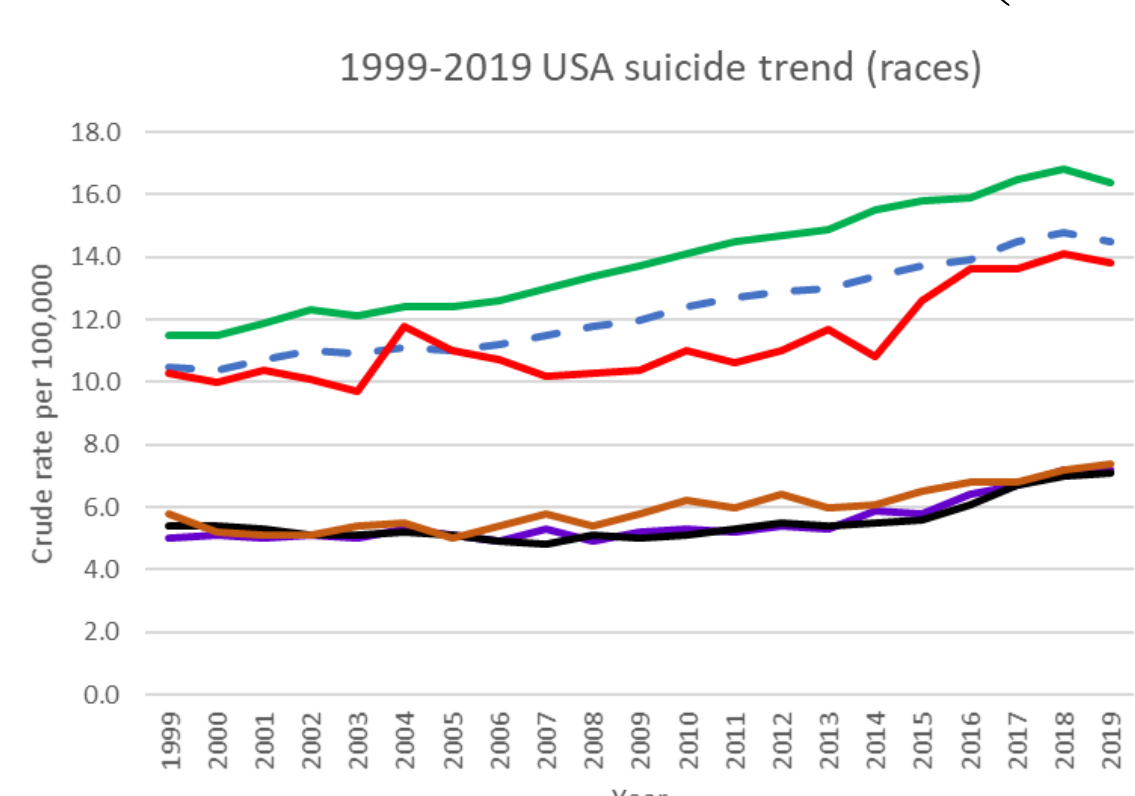
(3) Race groups: USA total (US) African American (AA)
Asian or Pacific Islander (AP) Hispanic (His)
Native American (NA) White (W)

Statistical analysis:

Microsoft excel (Microsoft): Student t-test

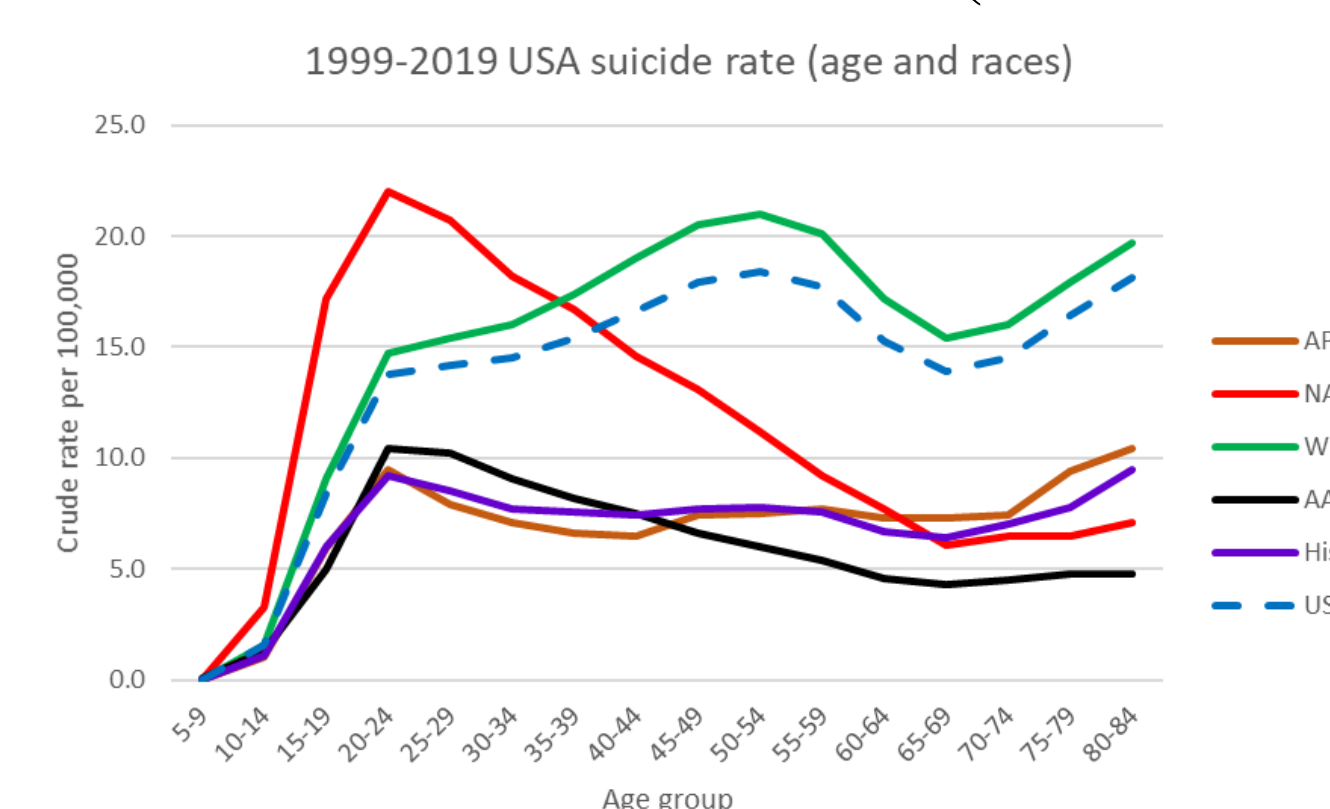
Results

1. 1999-2019 USA suicide trend (races):



Rank	Increased suicide rate		Average suicide cases per 100,000 population in 20 years	
	Race	%	Race	Average case
	US	38.10	US	12.3
1	His	44.00	W	13.9
2	W	42.61	NA	11.3
3	NA	33.98	AP	5.9
4	AA	31.48	His*	5.5
5	AP	27.59	AA*	5.5

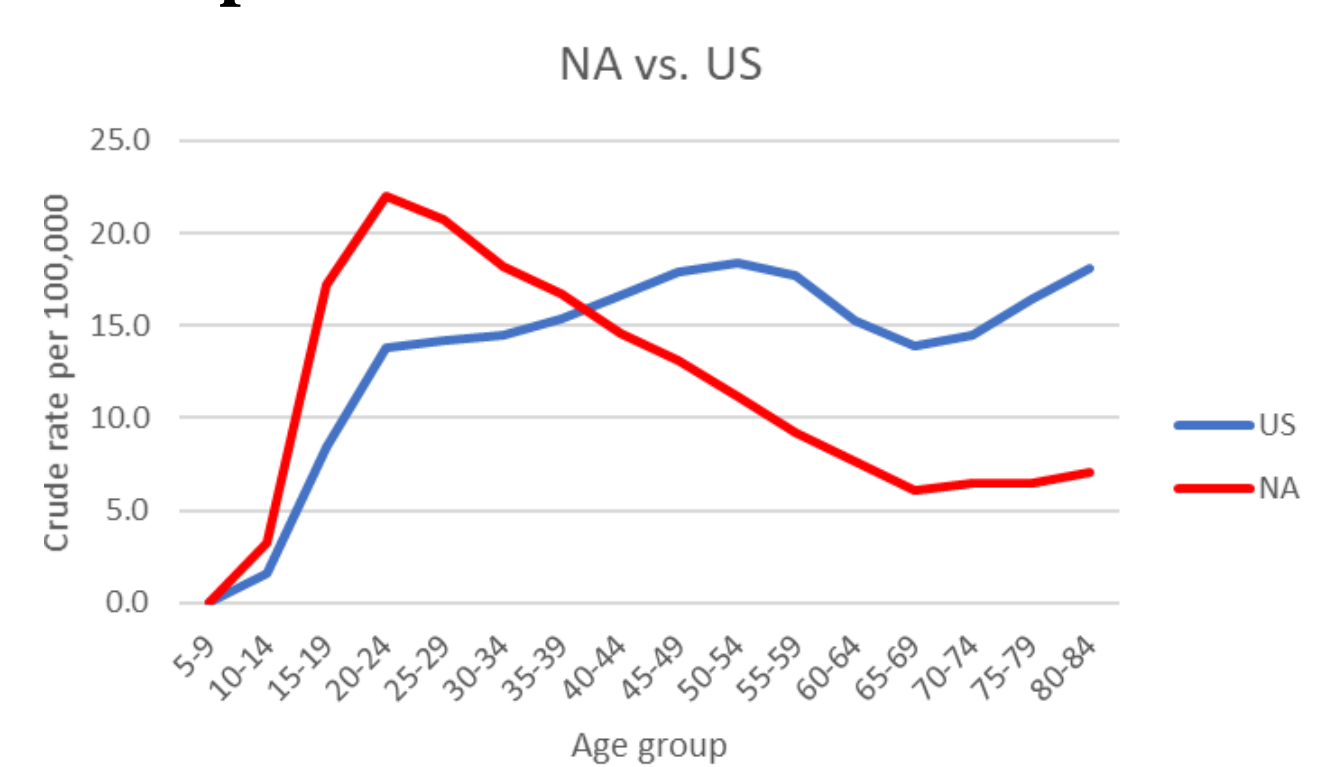
2. 1999-2019 USA suicide rate (races and age groups):



High suicide rate in different age groups:

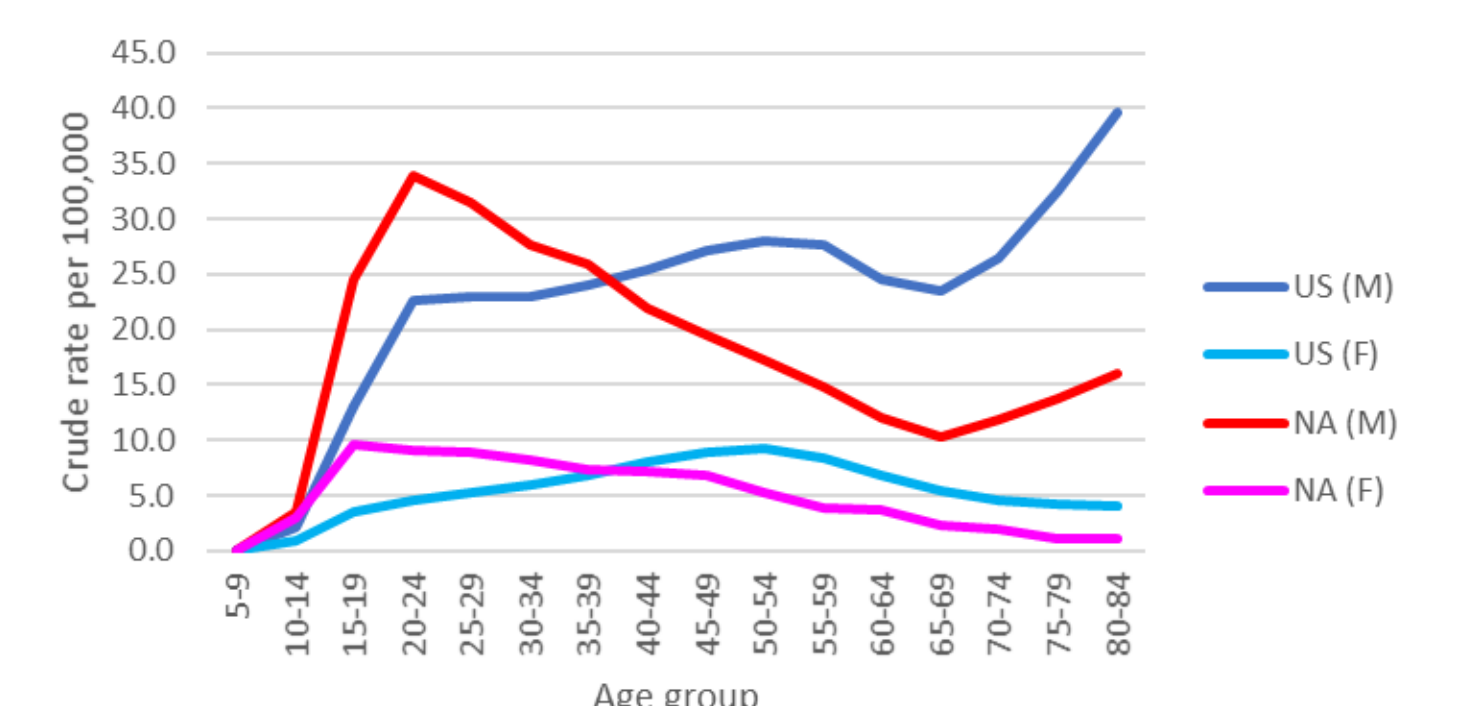
- AA: 20 – 44 years old
 AP: 20 – 29, 50 – 54, and 75 – 84 years old
 His: 20 – 34, 45 - 54, and 75 – 84 years old
 NA: 15 – 39 years old.
 W: 40 – 59 and 80 – 84 years old

3. Comparison of Native American to USA total population



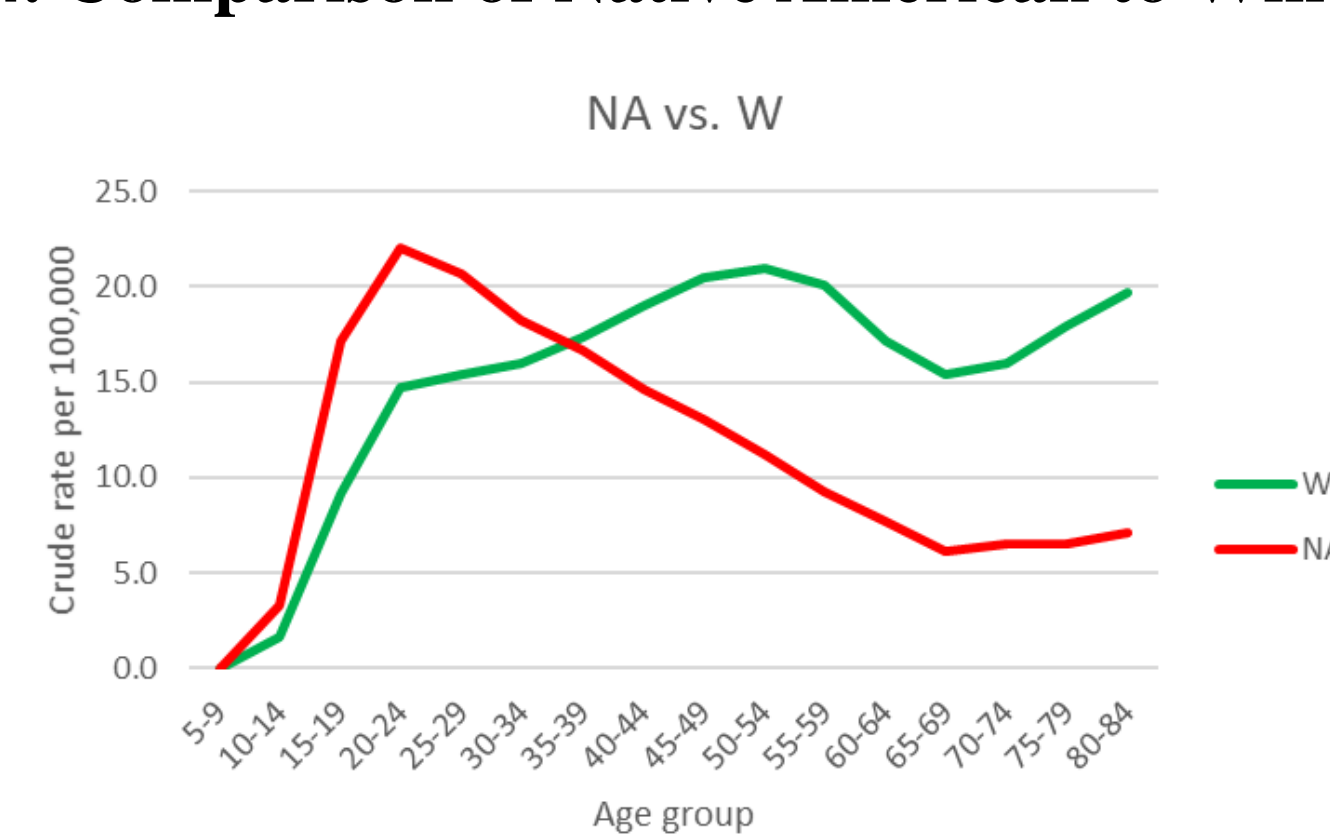
Suicide rate in age group 10 – 39 years old:
 NA is 44.48% higher than US ($P < 0.05$)
 NA (M) is 36.71% higher than US (M) ($P < 0.05$)
 NA (F) is 71.48% higher than US (F) ($P < 0.05$)

NA vs. US (gender)



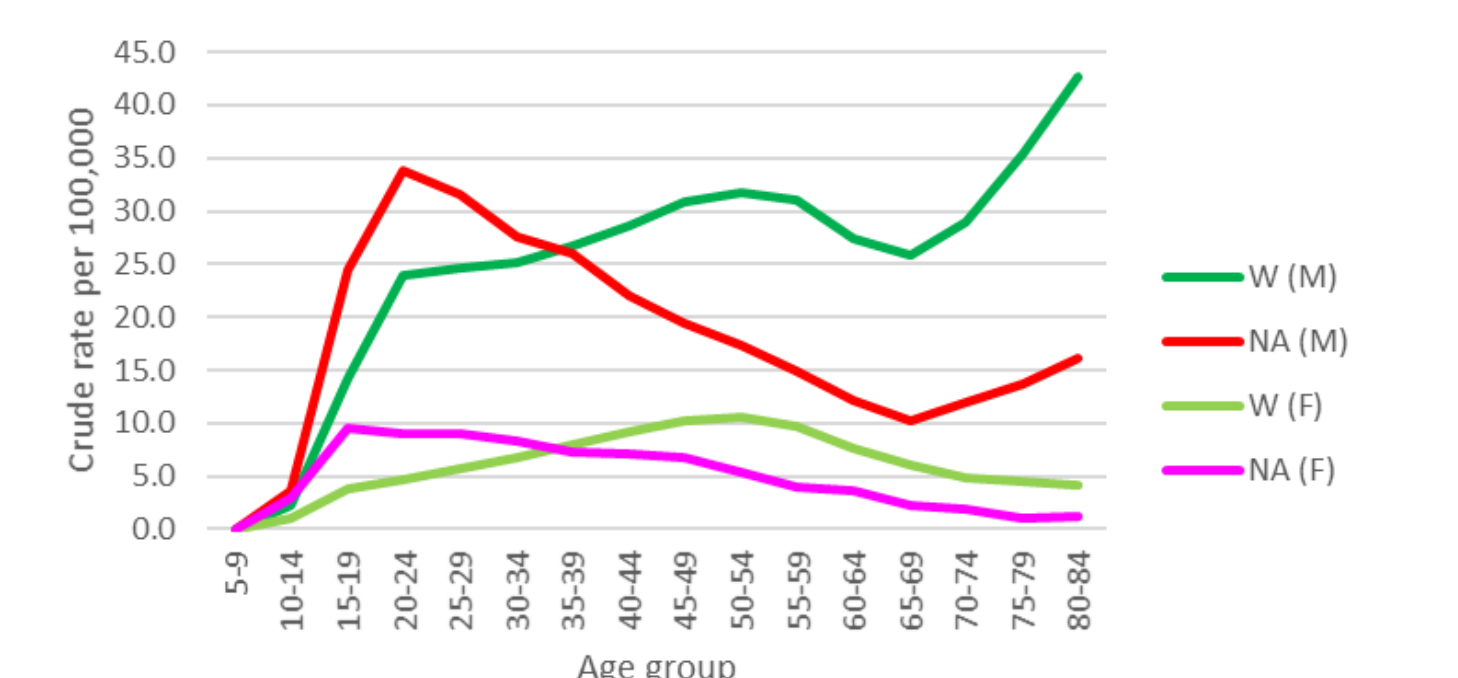
Suicide rate in age group 40 – 84 years old:
 W is 81.46% higher than NA ($P < 0.01$)
 W (M) is 85.05% higher than NA (M) ($P < 0.01$)
 W (F) is 78.46% higher than NA (F) ($P < 0.01$)

4. Comparison of Native American to White American



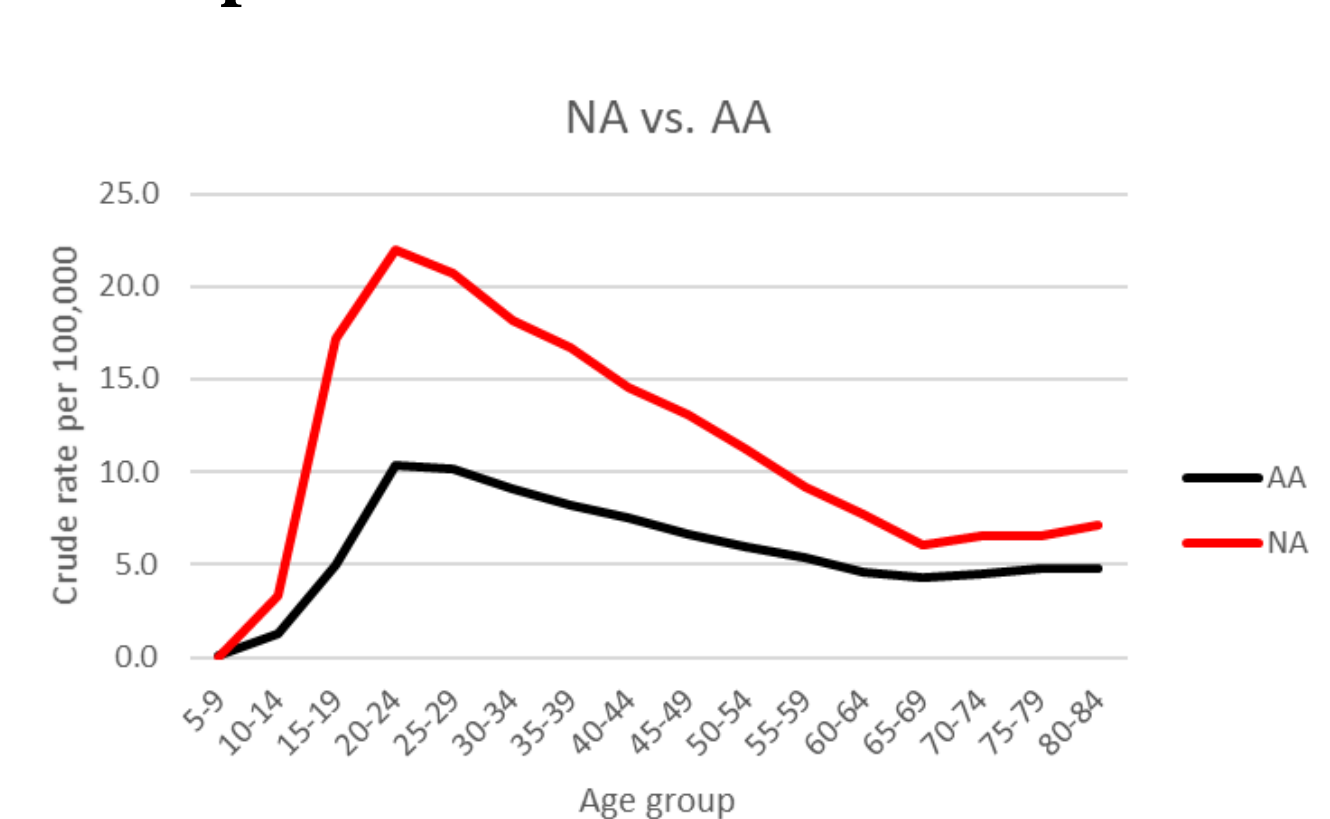
Suicide rate in age group 10 – 34 years old:
 NA is 43.31% higher than W ($P < 0.05$)
 NA (M) is 34.26% higher than W (M) ($P < 0.05$)
 NA (F) is 77.27% higher than W (F) ($P < 0.05$)

NA vs. W (gender)



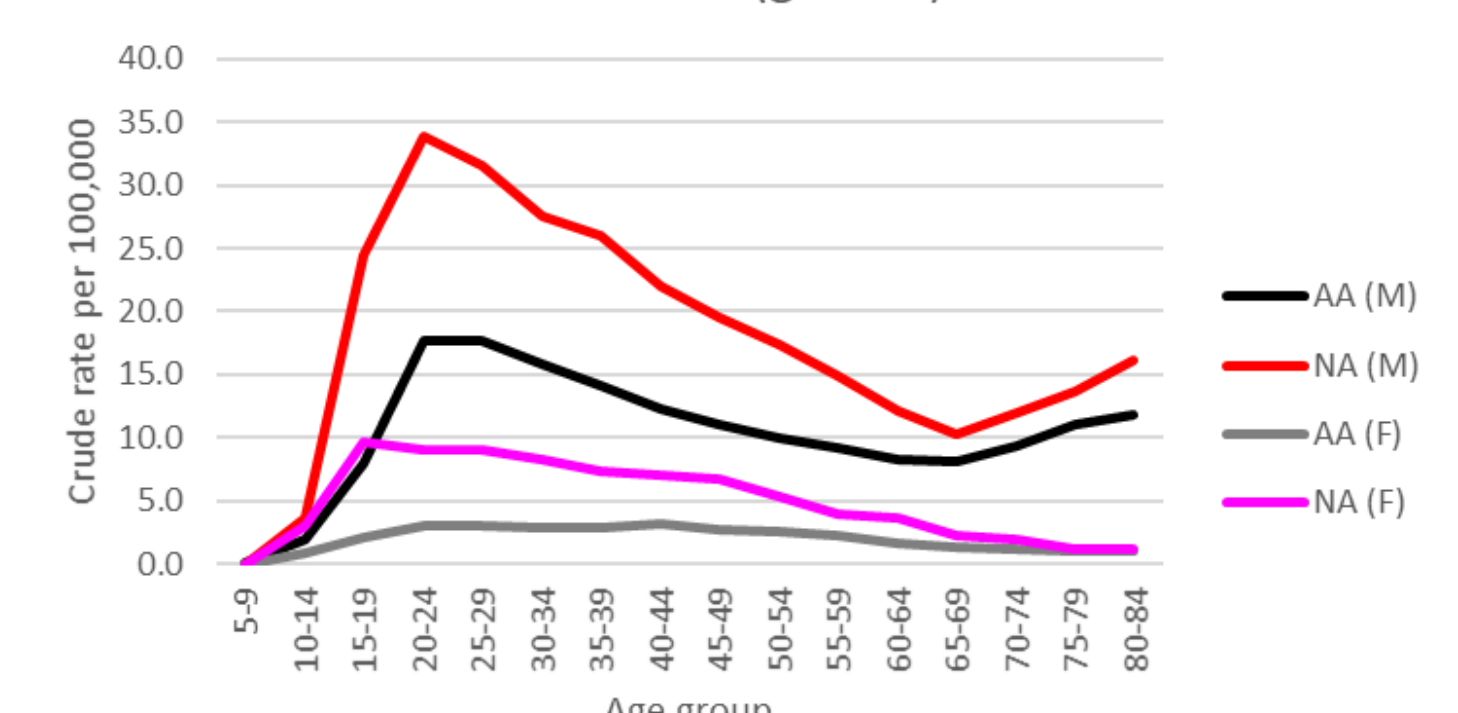
Suicide rate in age group 35 – 84 years old:
 W is 86.63% higher than NA ($P < 0.01$)
 W (M) is 88.64% higher than NA (M) ($P < 0.01$)
 W (F) is 84.80% higher than NA (F) ($P < 0.01$)

5. Comparison of Native American to African American

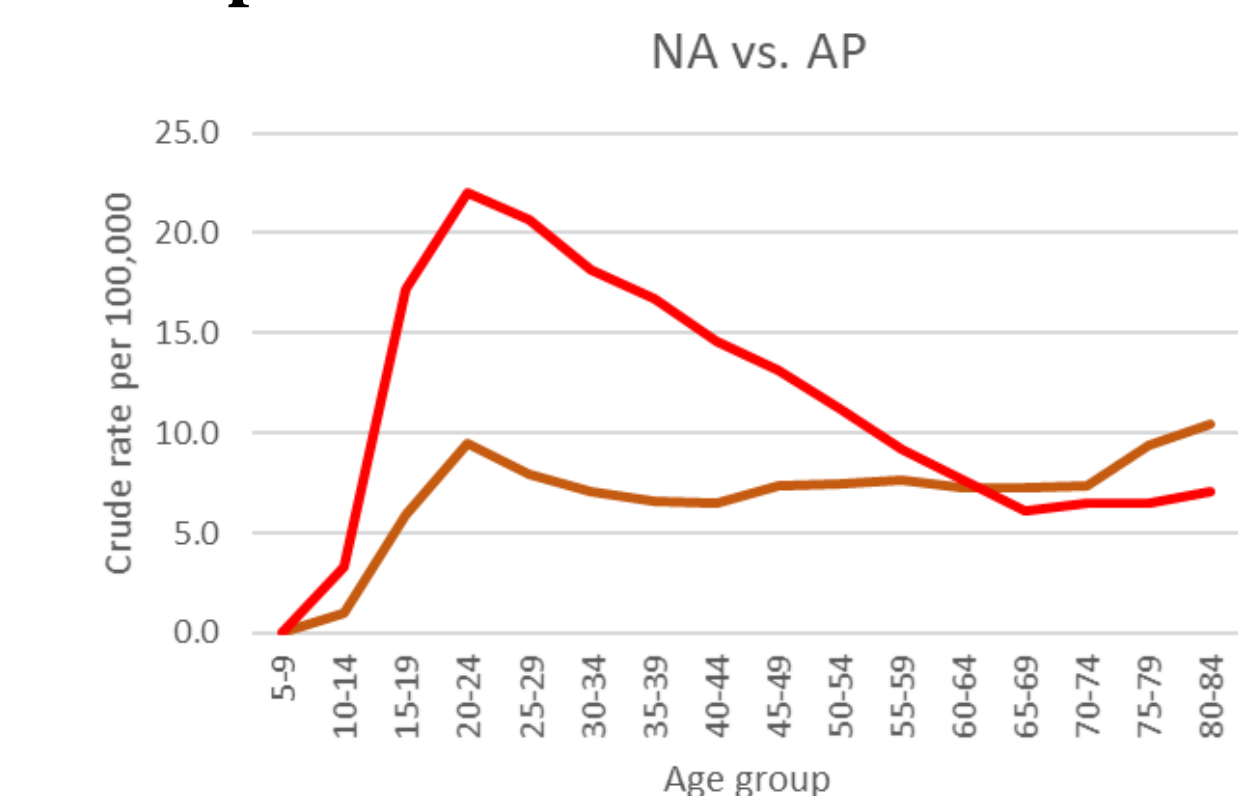


Suicide rate in all age groups: NA is 94.07% higher than AA ($P < 0.01$).
 NA (M) is 71.11% higher than AA (M) ($P < 0.01$). NA (F) is 151.06% higher than AA (F) ($P < 0.01$)

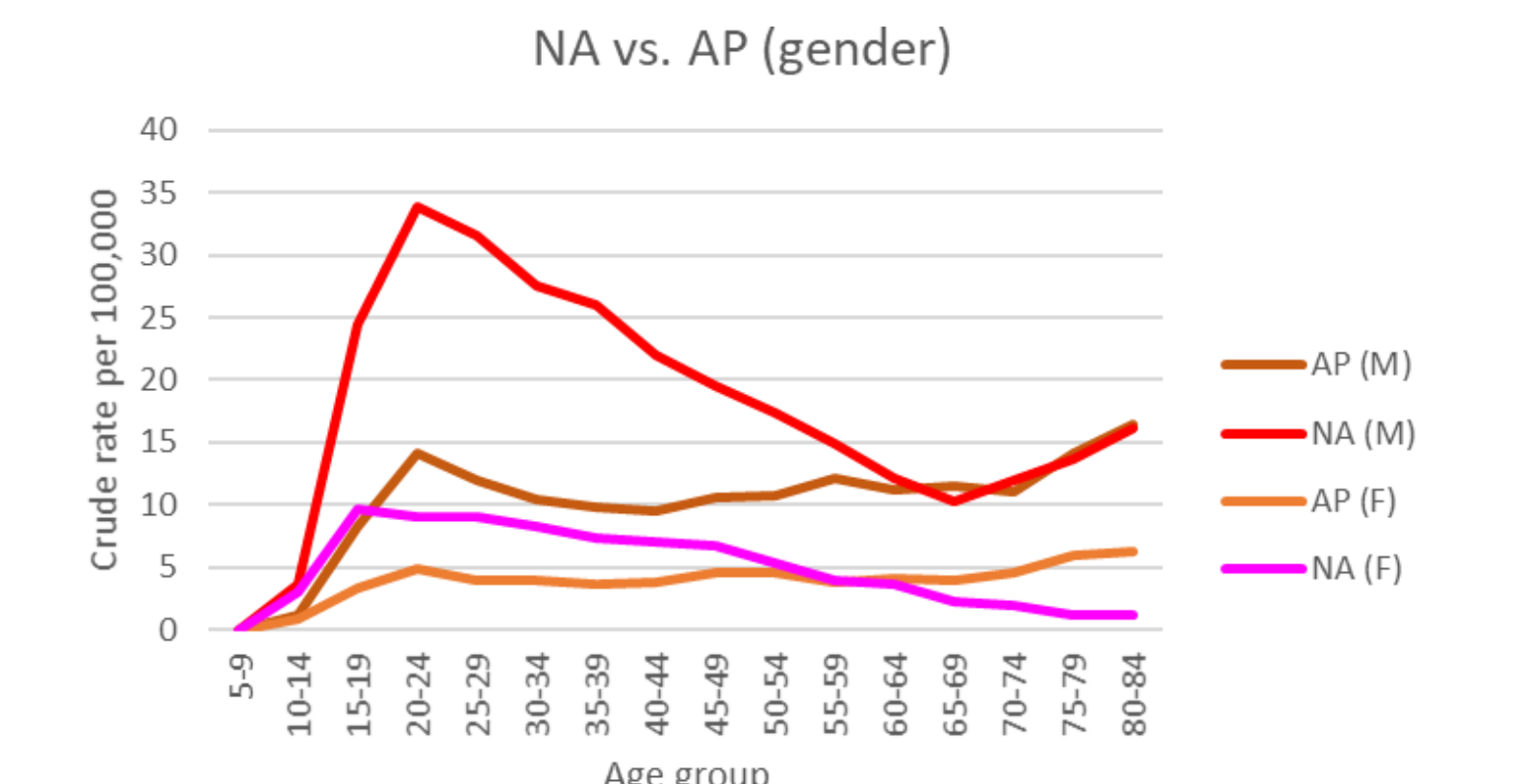
NA vs. AA (gender)



6. Comparison of Naïve American to Asian or Pacific Islander

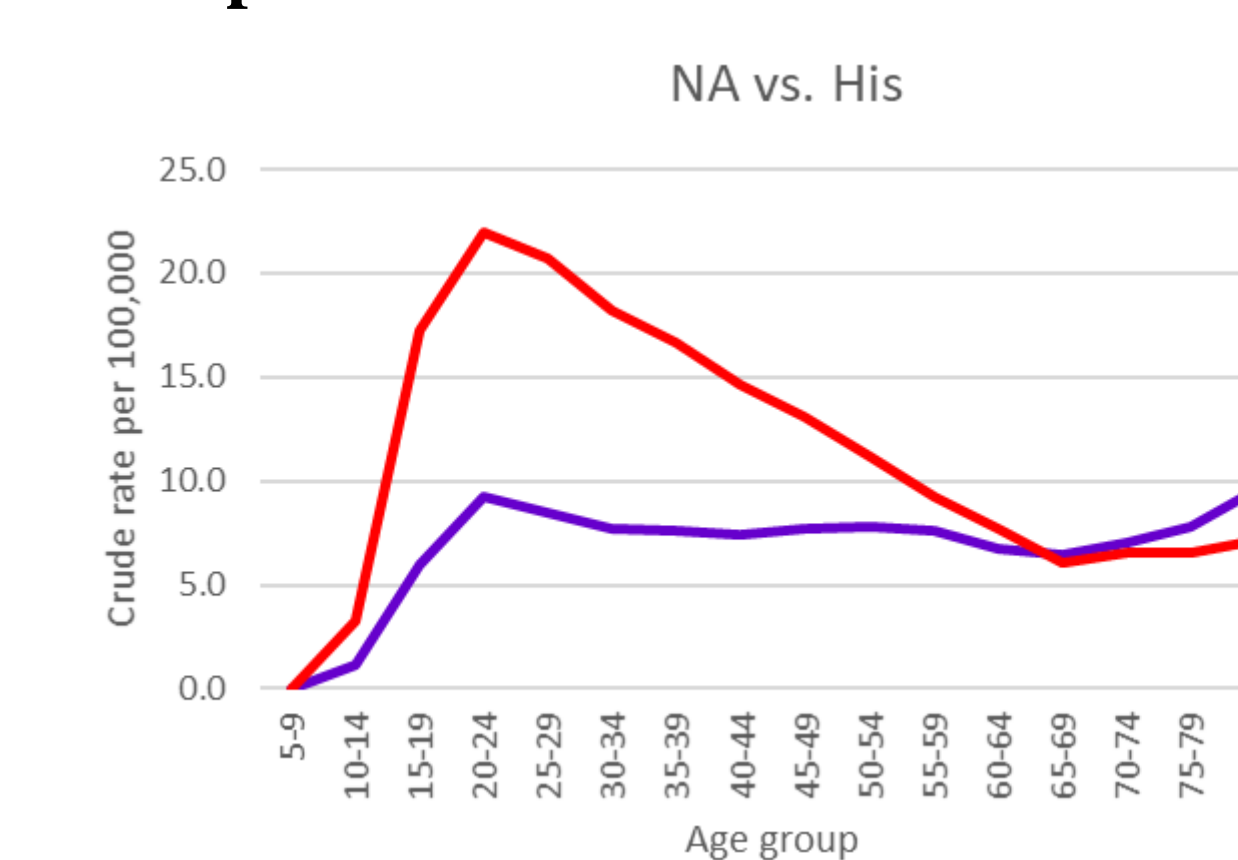


Suicide rate in age group 10 – 64 years old:
 NA is 89.62% higher than AP ($P < 0.01$)
 NA (M) is 111.73% higher than AP (M) ($P < 0.01$)
 NA (F) is 75.72% higher than AP (F) ($P < 0.01$)

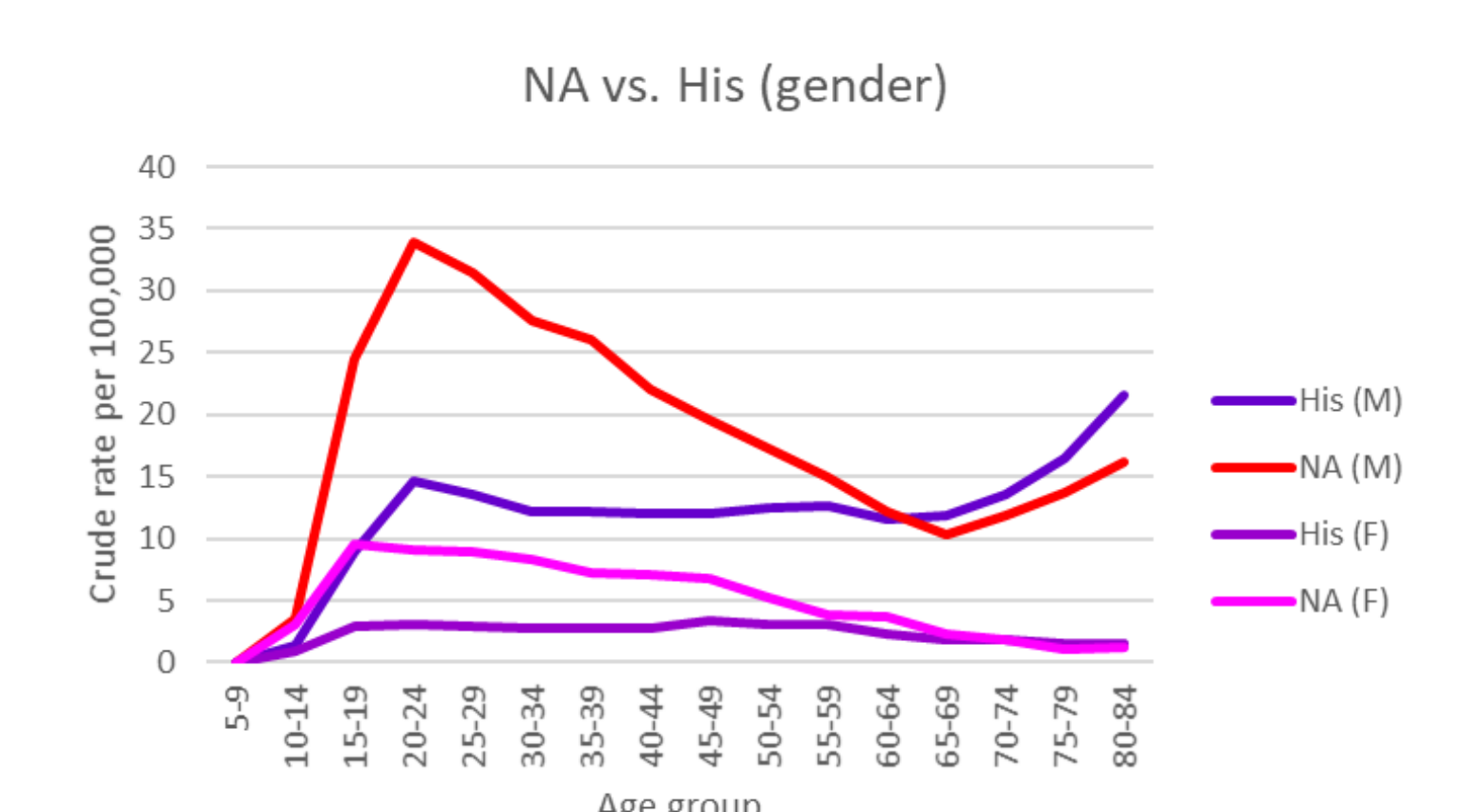


Suicide rate in age group 65 – 84 years old:
 AP is 31.68% higher than NA ($P < 0.05$)
 AP (M) shows no difference to NA (M)
 AP (F) is 219.19% higher than NA (F) ($P < 0.05$)

7. Comparison of Naïve American to Hispanic



Suicide rate in age group 10 – 64 years old:
 NA is 99.09% higher than His ($P < 0.01$)
 NA (M) is 89.20% higher than His (M) ($P < 0.01$)
 NA (F) is 146.13% higher than His (F) ($P < 0.01$)



Suicide rate in age group 65 – 84 years old:
 NA shows no difference to His
 NA (M) shows no difference to His (M)
 NA (F) shows no difference to His (F)

Summary

- In general, NA has the 2nd highest suicide rate and the 3rd suicide increasing trend in the USA.
- In the age group of 10-34 years old, NA has the highest suicide rate comparing to other races.
- In the older age groups (65 years old and above), NA suicide rate is significant lower than that in W and AP. However, there is no significant difference between NA and His.
- NA has higher suicide rate than that in AA within all age groups.
- The national highest suicide rate in NA young age group should bring more attentions from scientific and public communities. Further studies are needed to explore the possible cause(s) and develop the potential preventive methods..

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