

Epidemiology of Youth Suicide and Suicidal Behavior



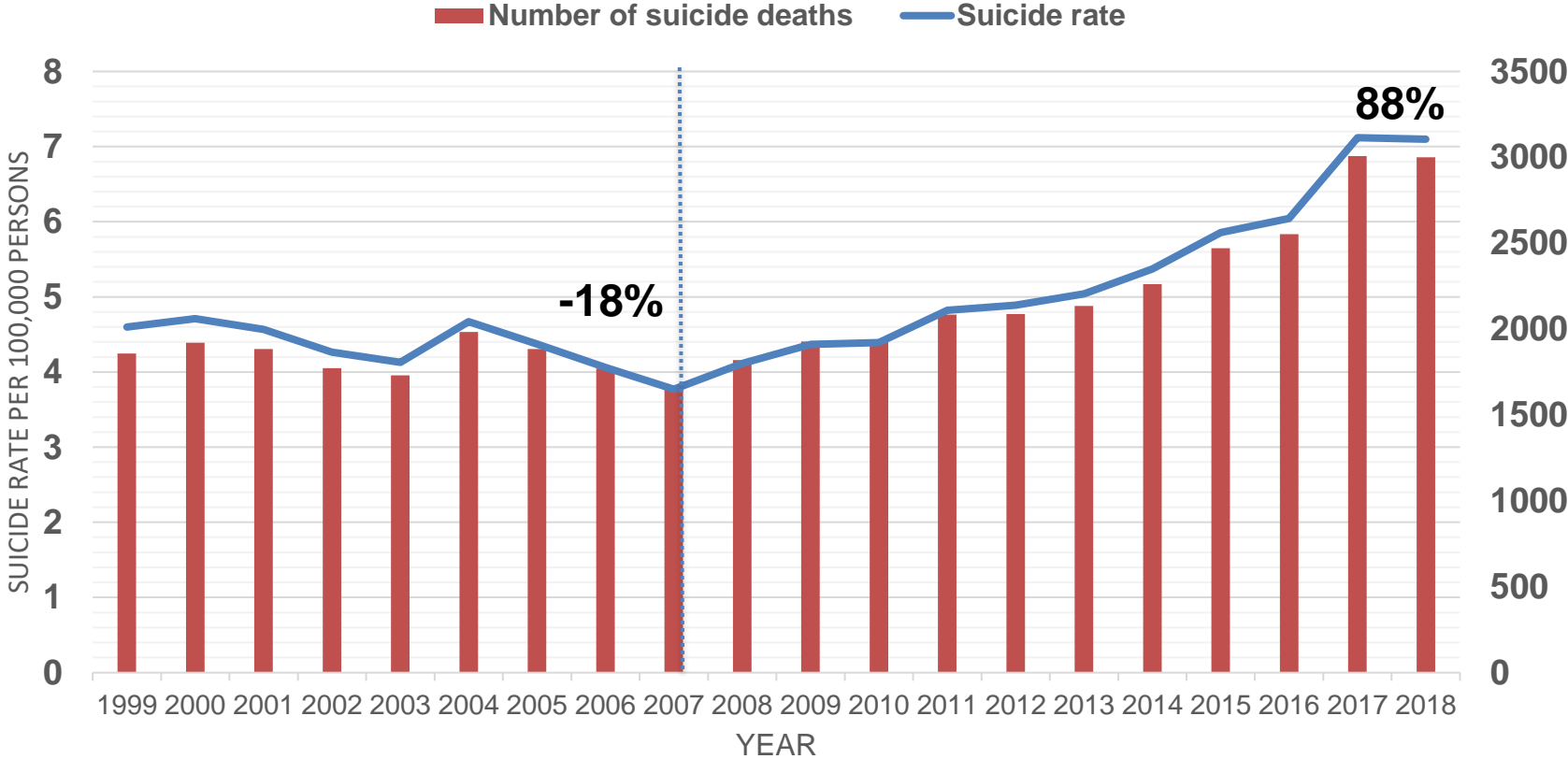
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Nationwide Foundation Chair of Innovation in Behavioral Health Research
Professor of Pediatrics, Psychiatry and Behavioral Health
The Ohio State University College of Medicine

Disclosures

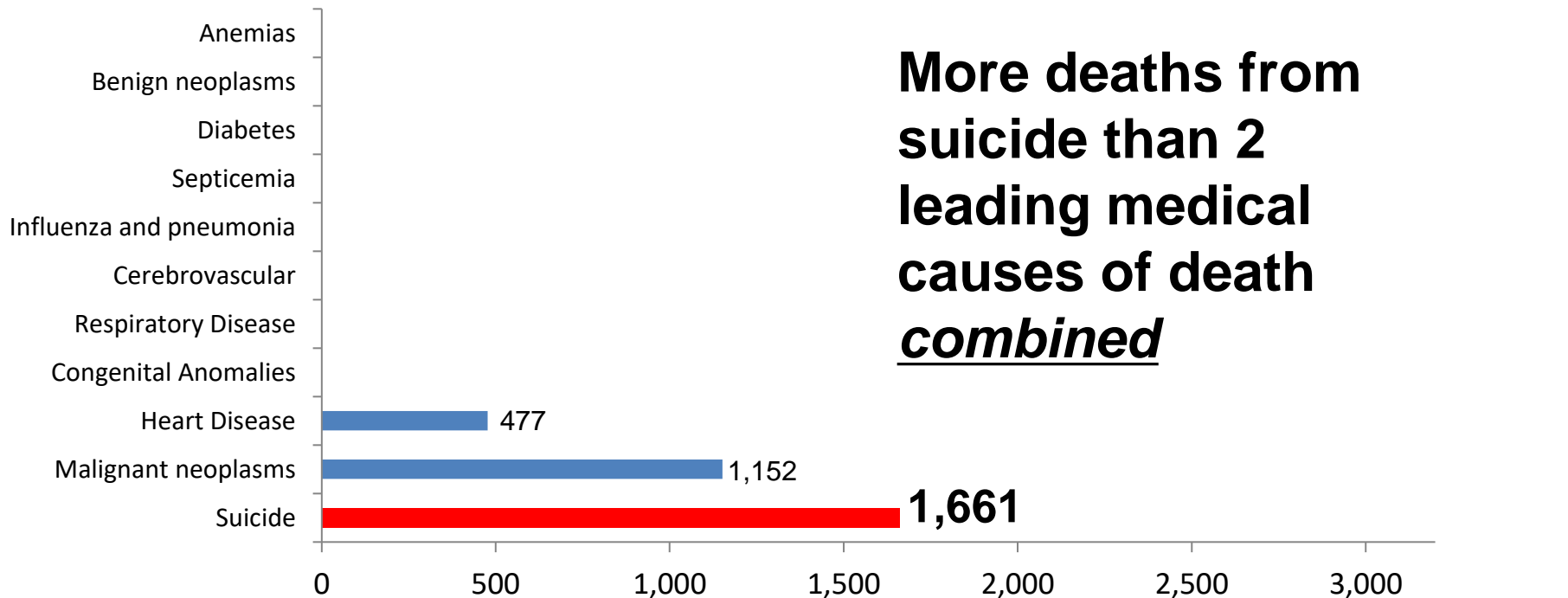
- I receive research grant funding from the National Institute of Mental Health (NIMH), the Centers for Disease Control and Prevention (CDC), and the Patient-Centered Outcomes Research Institute (PCORI)
- Scientific Advisory Board of Clarigent Health

Suicide Rates in US Youth Aged 10-19 Years, 1999 to 2018



The Problem of Youth Suicide*

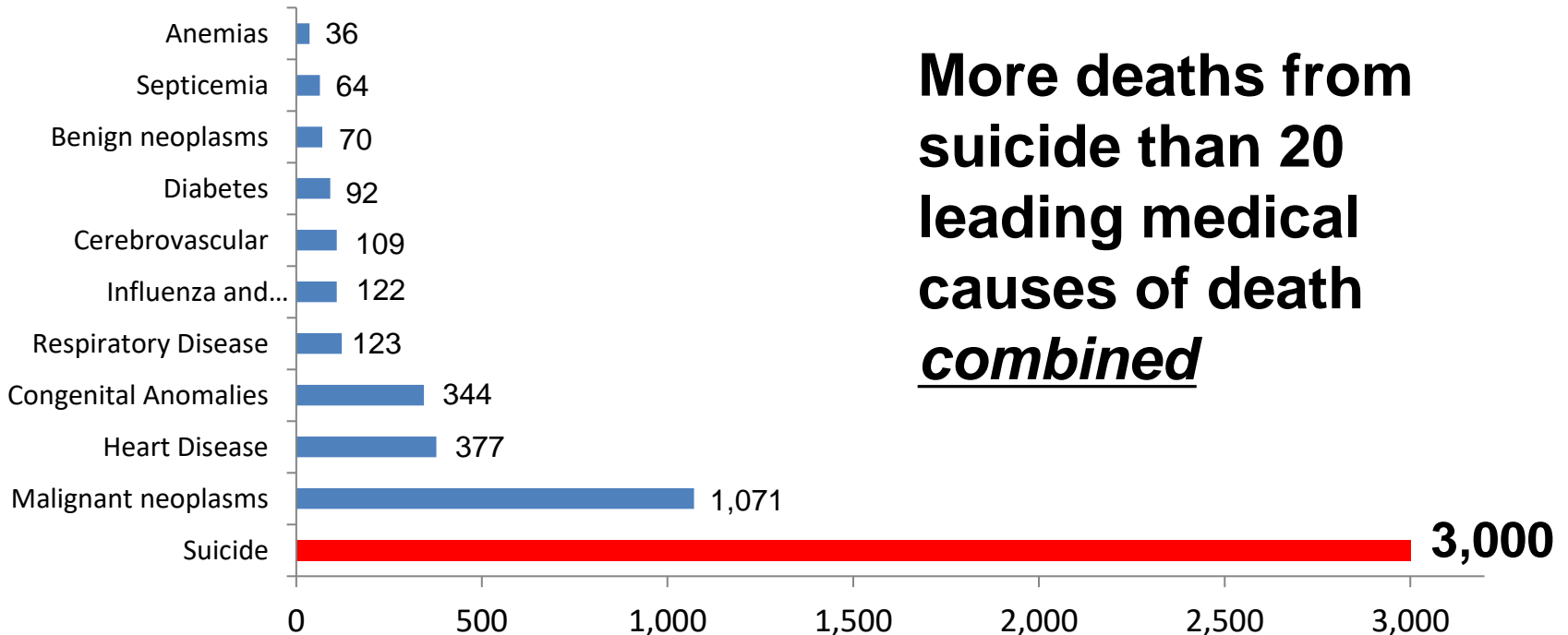
- In 2007, suicide was the 11th leading cause of death for all ages but the **3rd leading cause of death** for youth aged 10-19 years in the United States



*Source: CDC
WISQARS, 2018,
www.cdc.gov/injury/wisqars/index.html

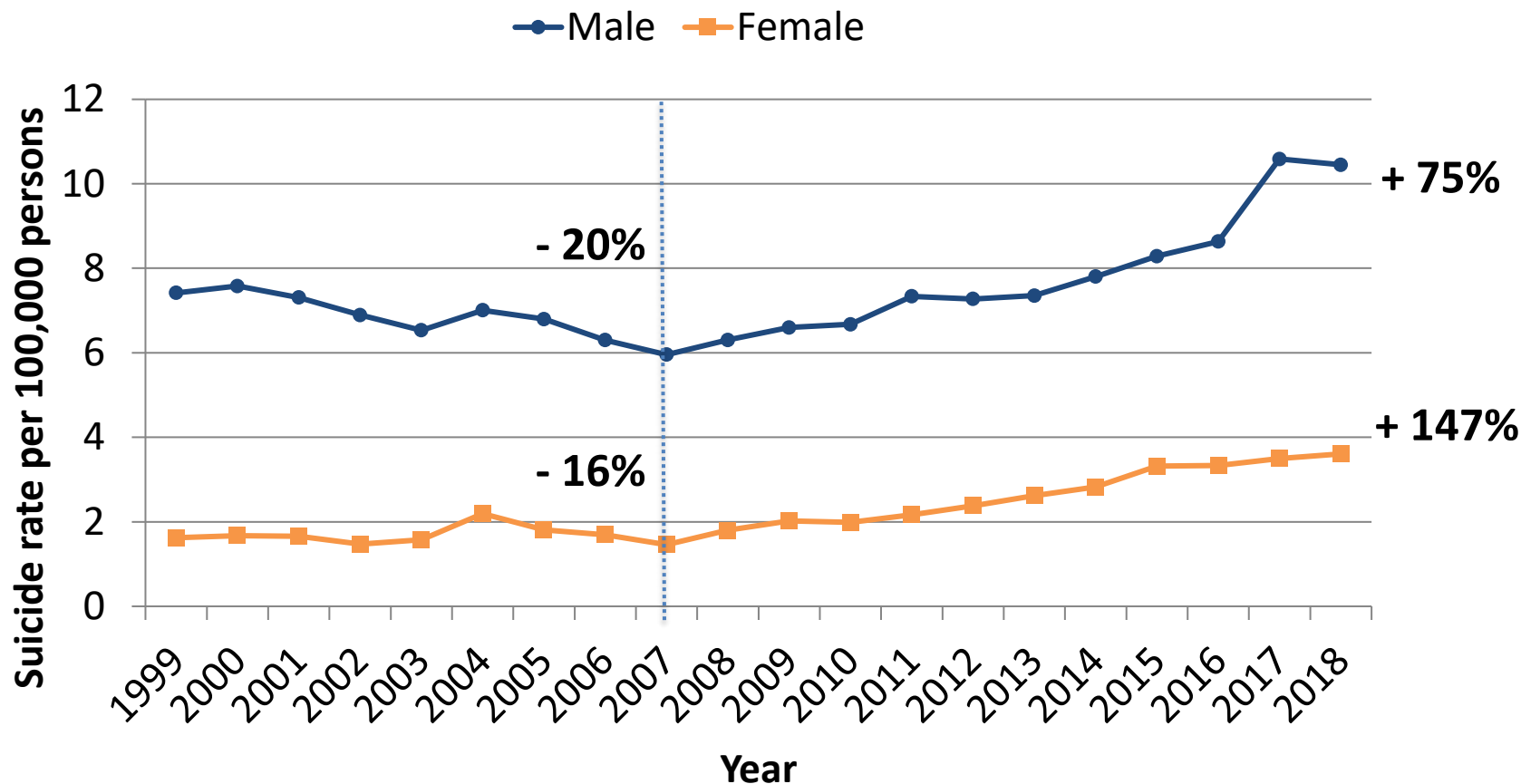
The Problem of Youth Suicide*

- In 2018, suicide was the 10th leading cause of death for all ages but the **2nd leading cause of death** for youth aged 10-19 years in the United States



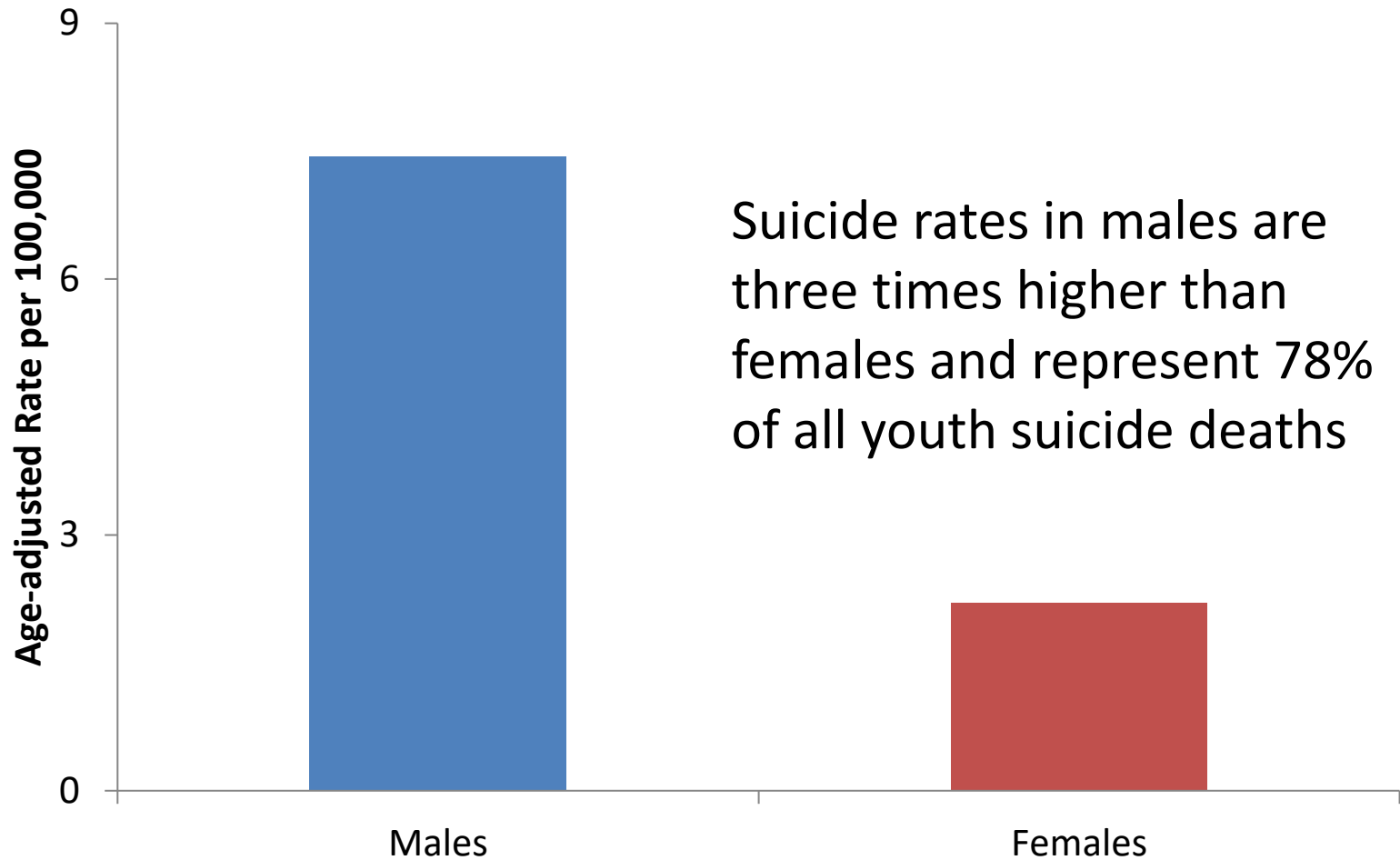
*Source: CDC
WISQARS, 2018,
www.cdc.gov/injury/wisqars/index.html

Youth Suicide Rate in the U.S., 1999-2018, 10-19 Years



Source: CDC WISQARS, 2016,
www.cdc.gov/injury/wisqars/index.html

Comparison of Suicide Rates in Males and Females Aged 10-19 Years in the US, 1999-2018



Source: Centers for Disease Control and Prevention; WISQARS; 2017

From: **Trends in Suicide Among Youth Aged 10 to 19 Years in the United States, 1975 to 2016**

JAMA Netw Open. 2019;2(5):e193886. doi:10.1001/jamanetworkopen.2019.3886

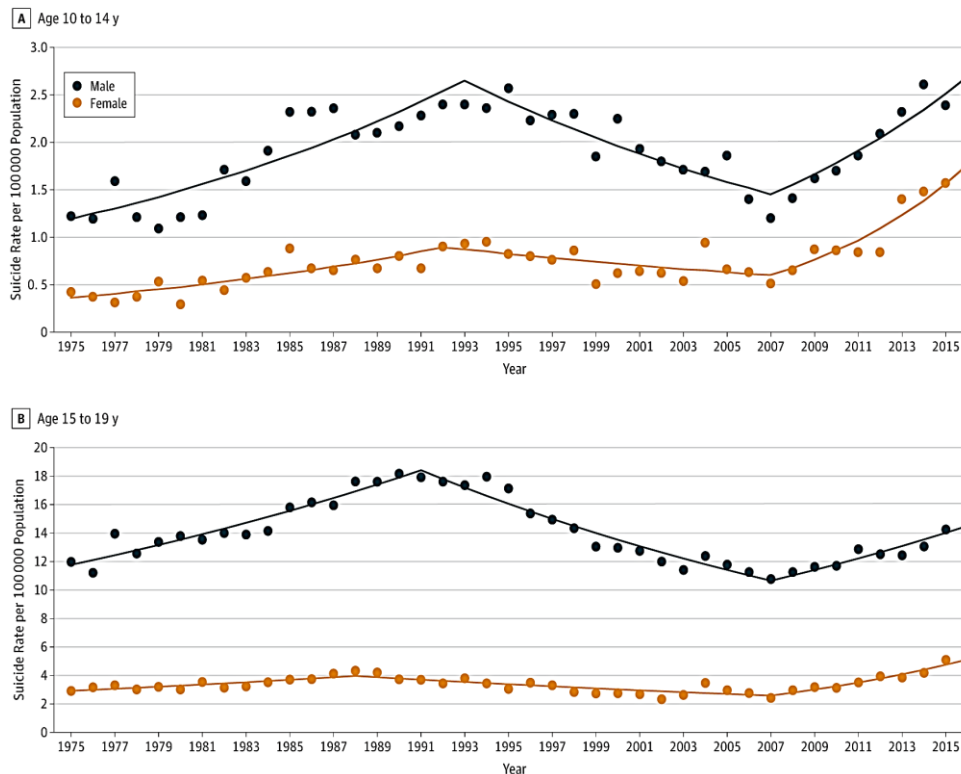


Figure Legend:

Suicide Trends Among Youth Aged 10 to 19 Years in the United States, 1975 to 2016. Suicide rate trends are displayed as linear segments connected at the joinpoint or year when the slope of each trend changes significantly. Data markers indicate observed rates and solid colored lines indicate model rates.

From: Trends in Suicide Among Youth Aged 10 to 19 Years in the United States, 1975 to 2016

JAMA Netw Open. 2019;2(5):e193886. doi:10.1001/jamanetworkopen.2019.3886

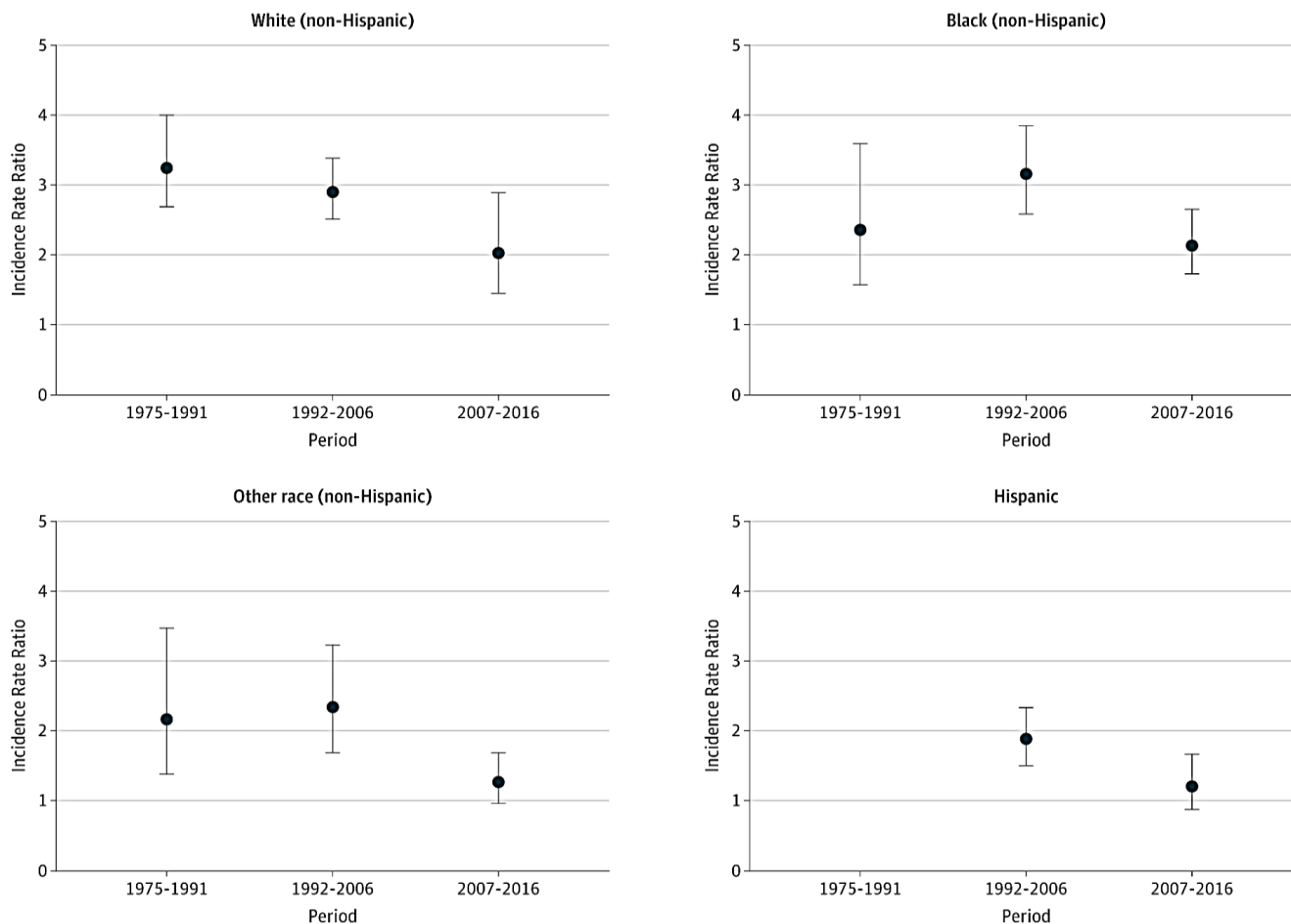
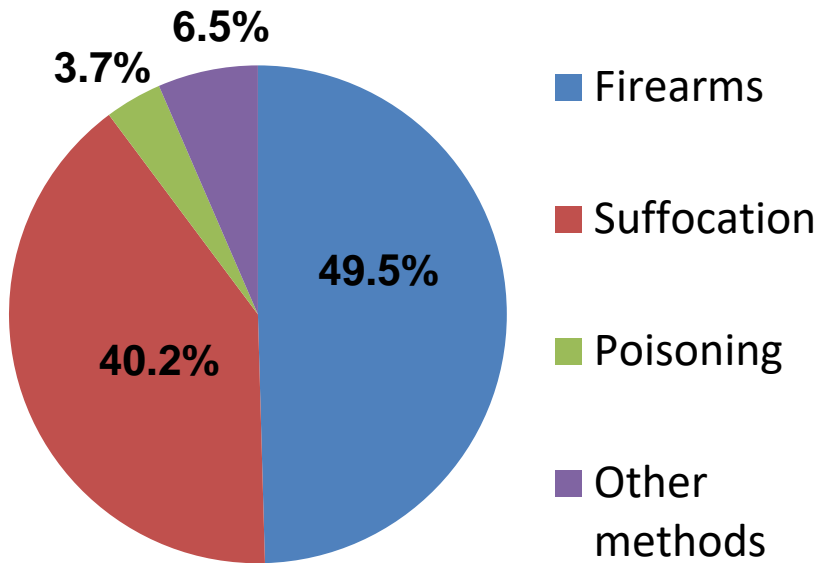


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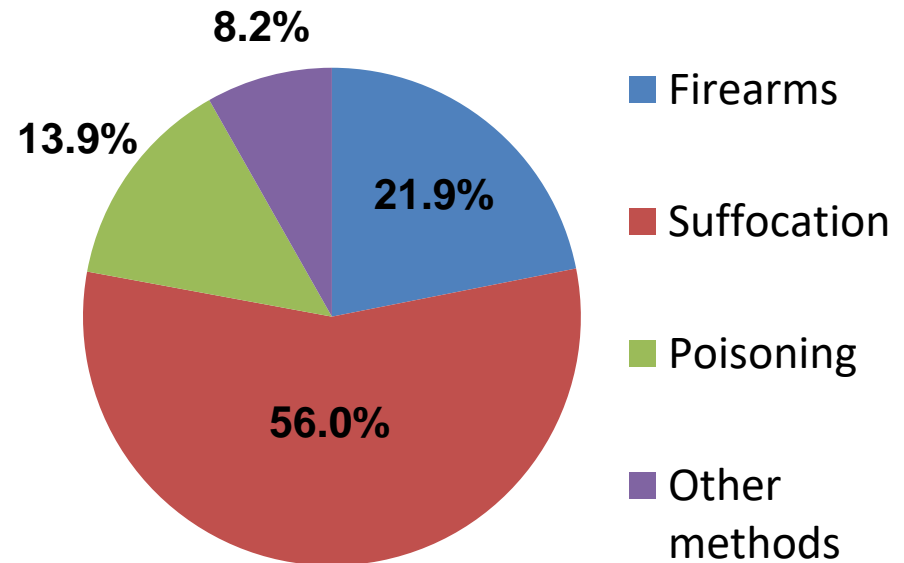
Male to Female Incidence Rate Ratios of Suicide Rates Among Youth Aged 10 to 14 Years in the United States, 1975 to 2016, by Race/Ethnicity. Circles indicate the estimated natural logarithm of the period-specific incidence rate ratio and vertical lines, the 95% confidence intervals. The reference group is female youth. Date of download: 2/26/2020

Suicide Deaths by Mechanism in Young People Aged 10-19 Years, 2014-2018

Males



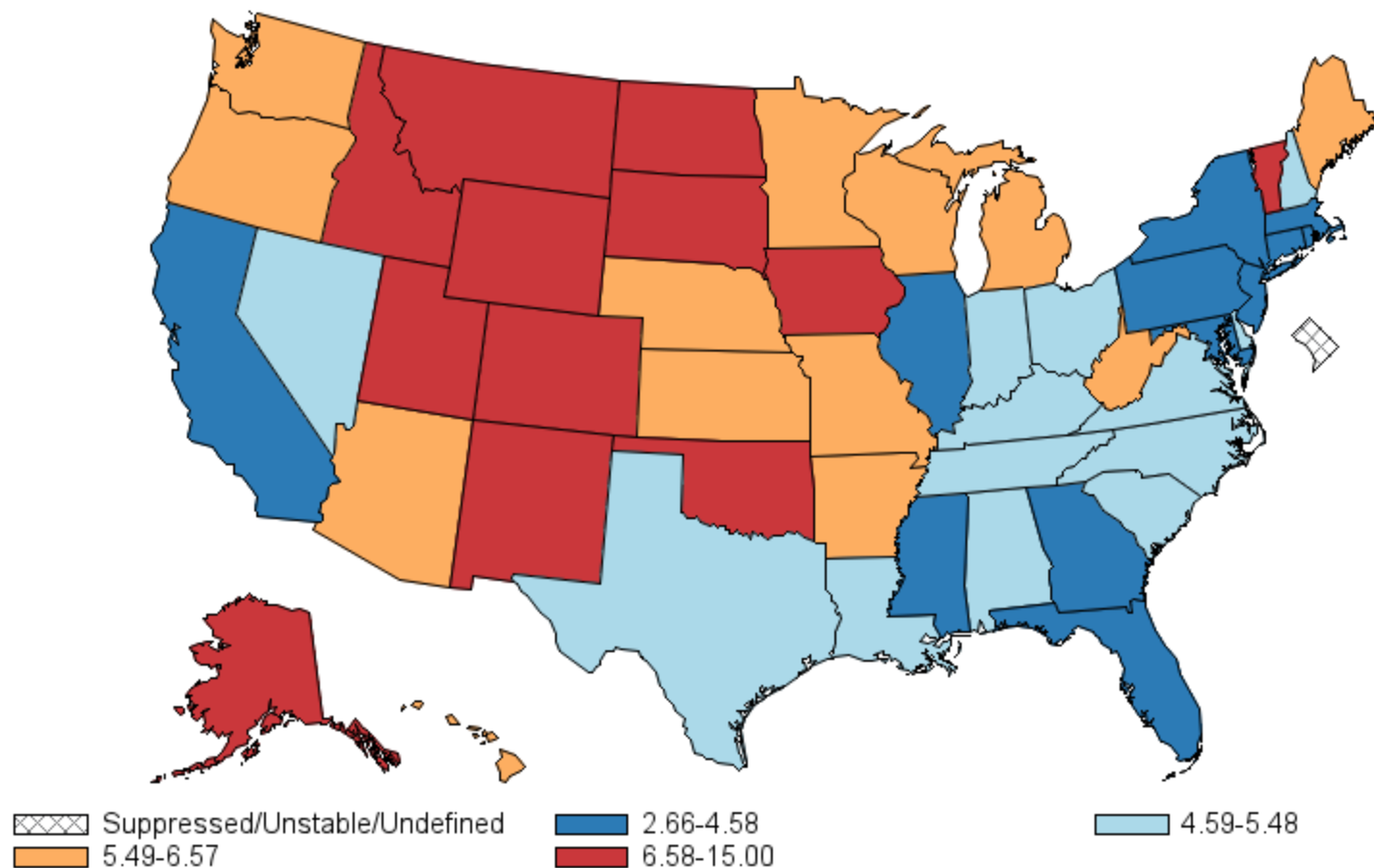
Females



Source: CDC, National Center for Health Statistics. Accessed at: http://webappa.cdc.gov/sasweb/ncipc/leadcaus10_us.html

2008-2014, United States Death Rates per 100,000 Population

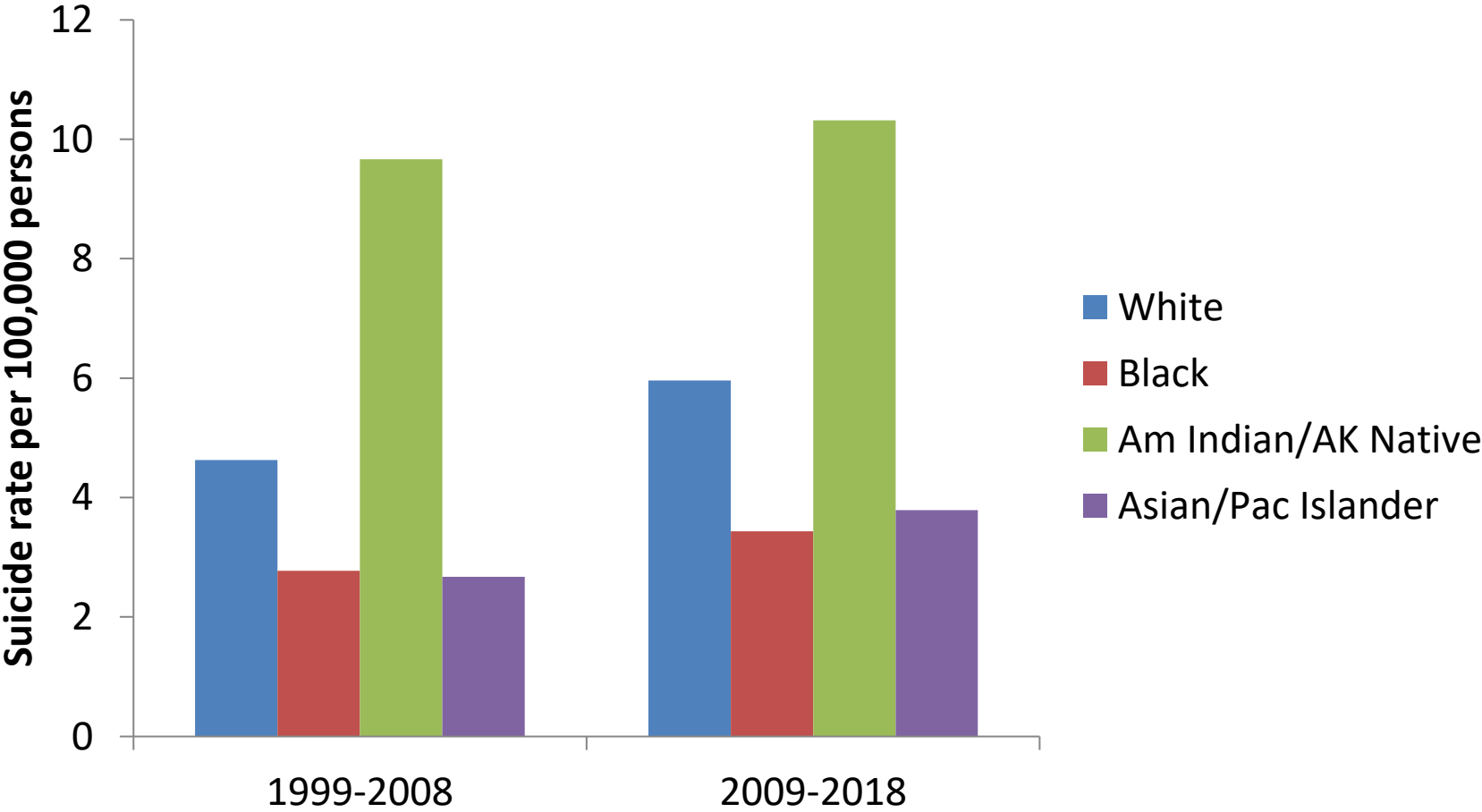
All Injury, Suicide, All Races, All Ethnicities, Both Sexes, Ages 10-19 Years
Annualized Crude Rate for United States: 4.80



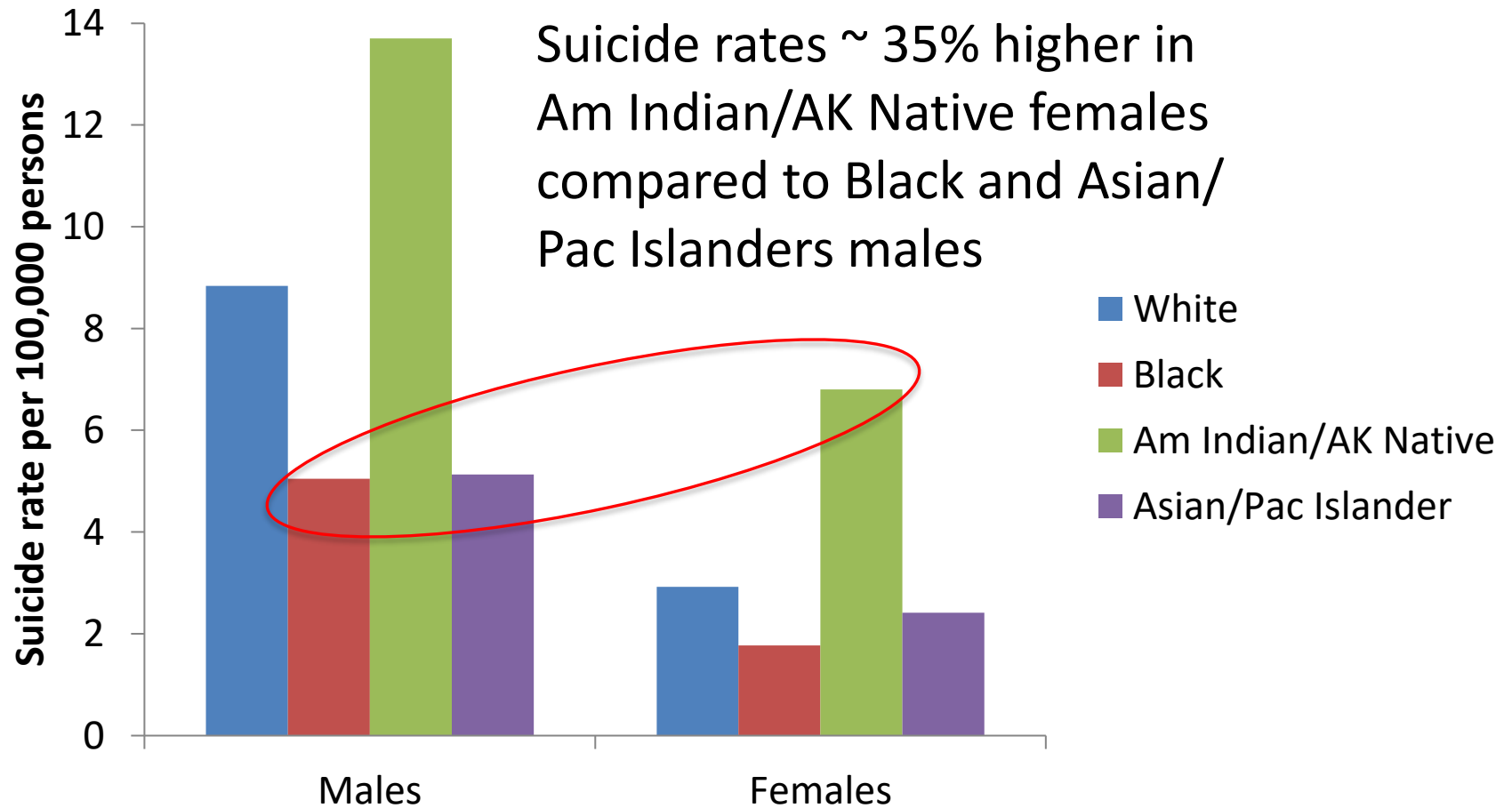
Reports for All Ages include those of unknown age.

* Rates based on 20 or fewer deaths may be unstable. States with these rates are cross-hatched in the map (see legend above). Such rates have an asterisk.

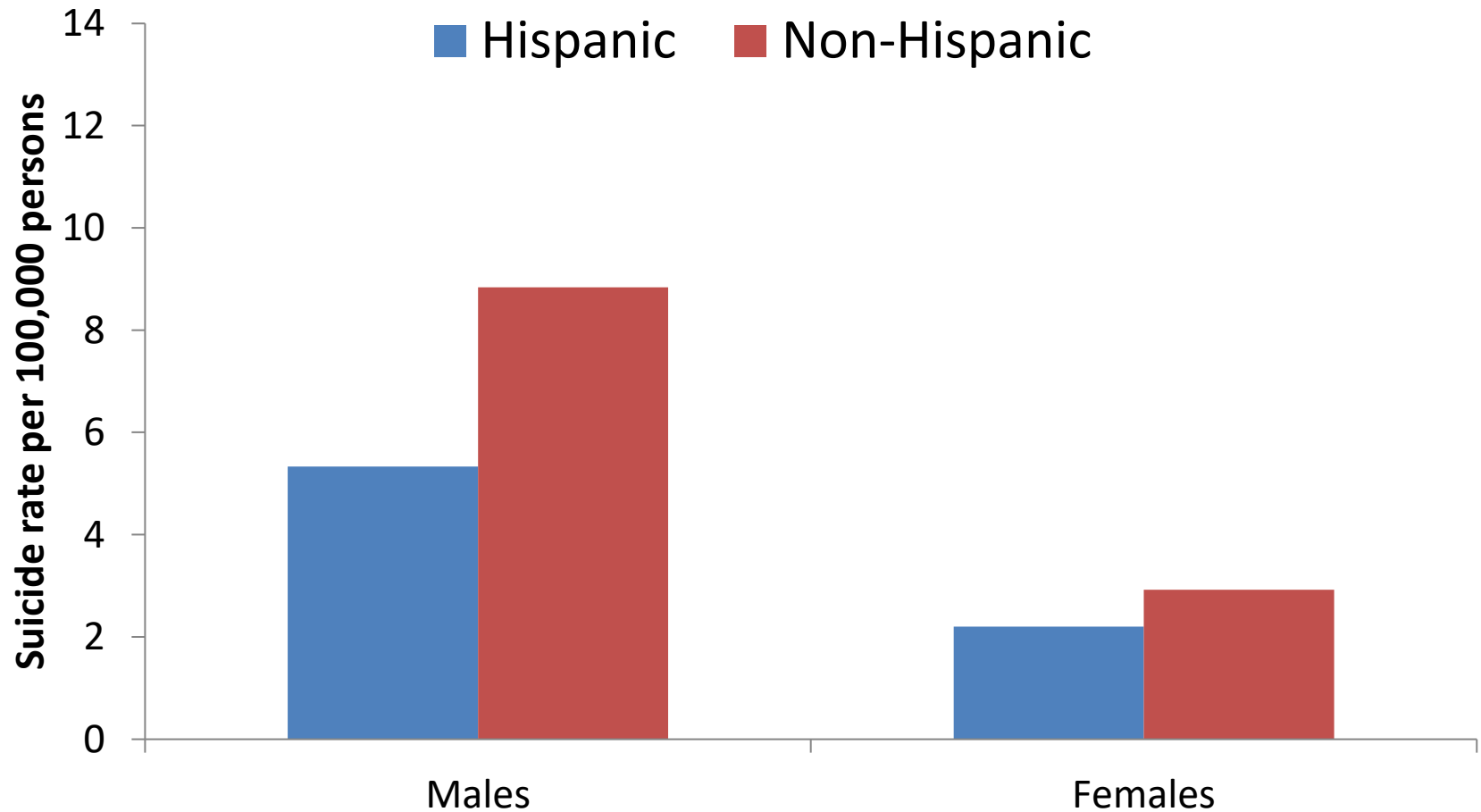
Suicide Rates in US Youth Aged 10-19 Years, 1999 to 2018, by Race



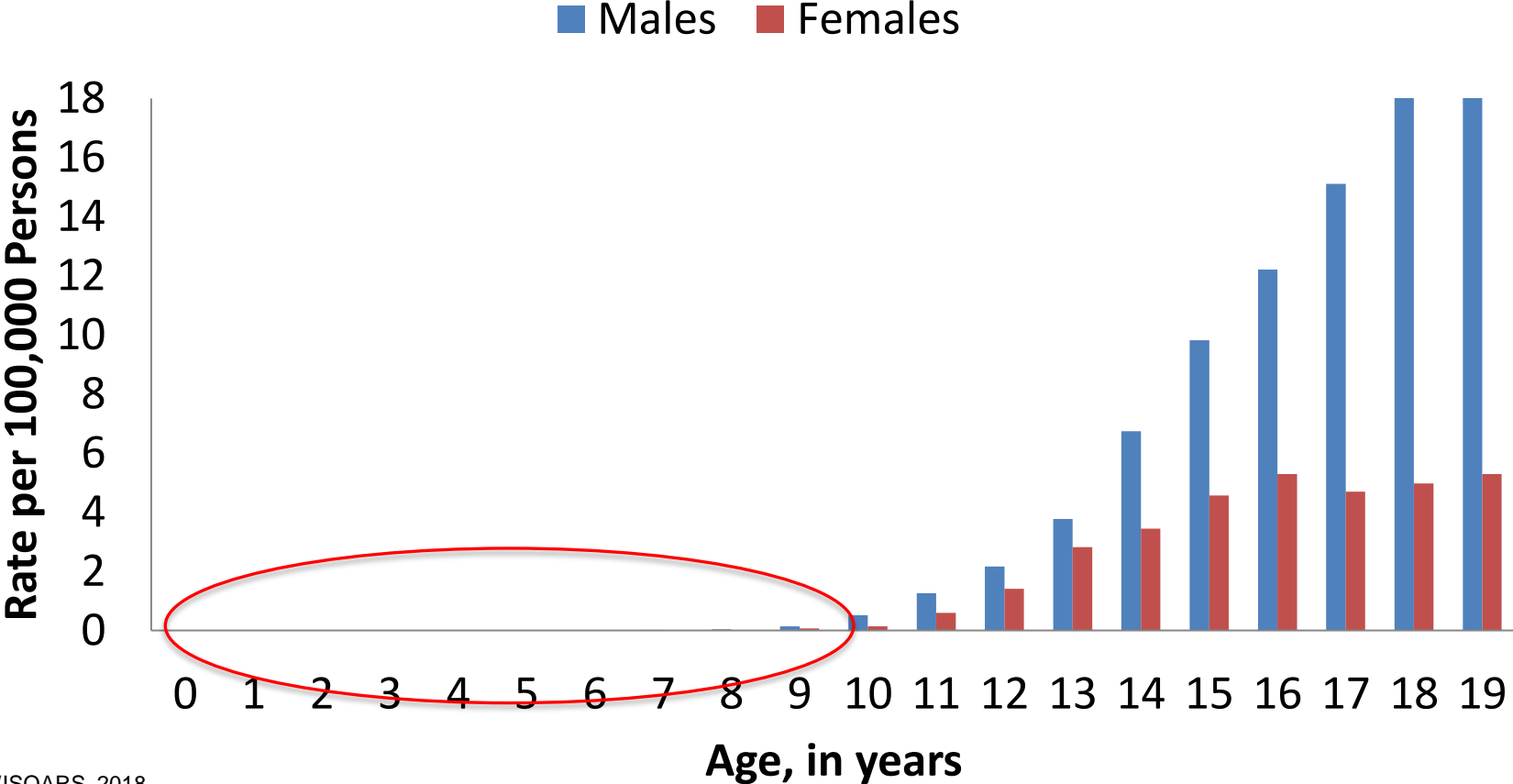
Suicide Rates in US Youth Aged 10-19 Years, 2009 to 2018, by Race



Suicide Rates in US Youth Aged 10-19 Years, 2009 to 2018, by Ethnicity



Suicide Rates by Age and Sex in US Youths, 2014-2018



*CDC WISQARS, 2018



Suicide in Younger Children

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Young Suicide Prompts Experts To Reflect On Awareness Programs

Listen to the Story

4:38 PM November 19, 2013

by Mandie Trimble
89.7 NPR News Reporter
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Franklin County Coroner Jane Gorniak said it's the youngest suicide she has seen in her career. An eight year old girl from Columbus died four days after hanging herself. It is an unusual case. Suicide among very young children is very low. But WOSU reports experts say there's a need to increase awareness among elementary-age kids.

It's incomprehensible. A child, not yet a teenager, takes his or her own life. But it happens on rare occasions.

Nationwide Children's Hospital researcher Jeff Bridge said fewer than 10 children under the age of 10 commit suicide each year in the U.S.

You might think children that young don't fully

The Ohio Department of Health statistics show youth suicide has increased since 2002. A young Columbus girl died recently after she hanged herself. The news prompted some experts to call for more awareness among elementary-age children. (Photo: Ohio Department of Health)

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How Indiana Students Fared On The Tests The Whole Country Cares About

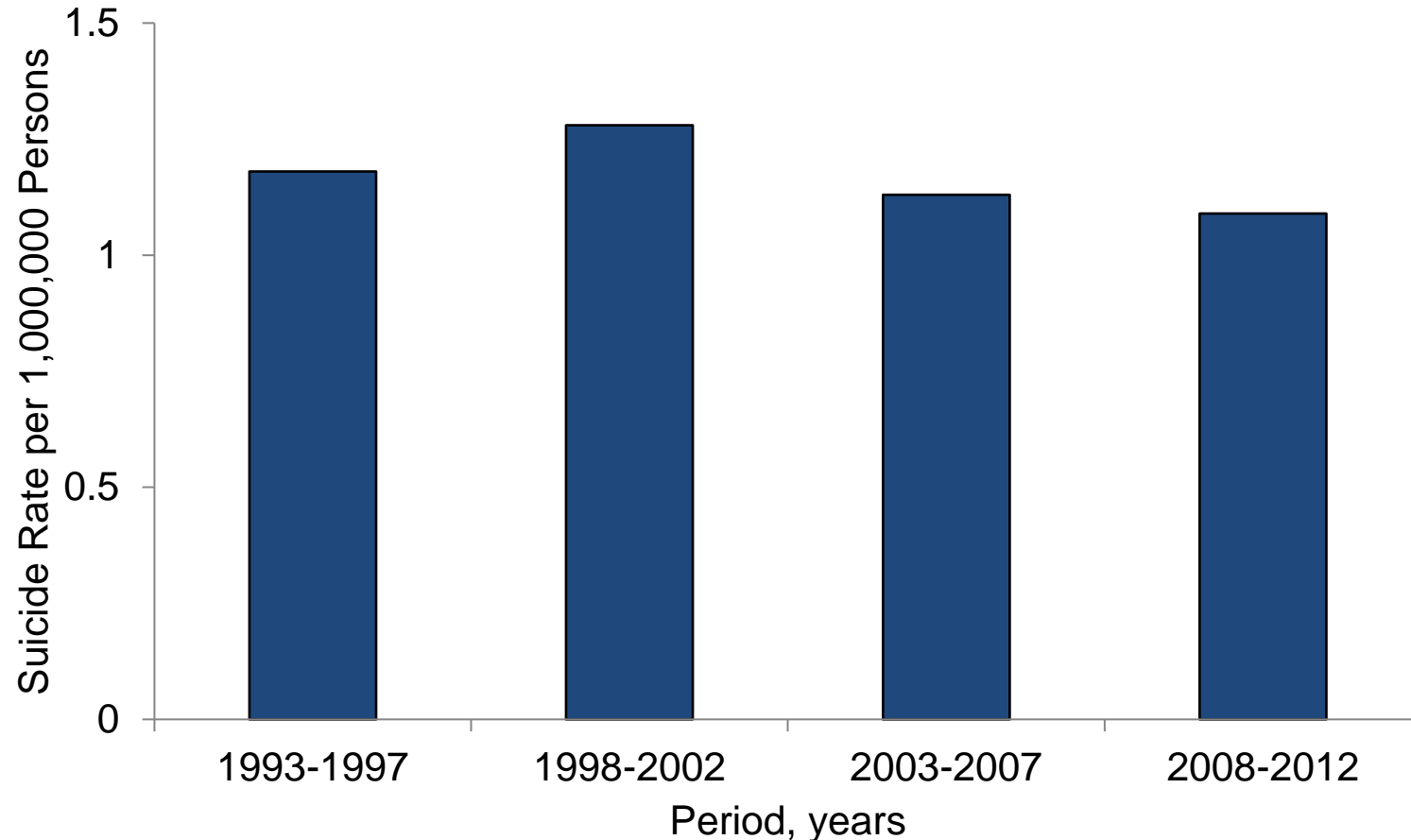
A Plague of Vicious Pigs Has 'Invaded' Oklahoma

Why It Could Get a Lot Harder to Find Ethanol-Free 'Pure Gasoline' in Oklahoma

Why Oklahoma's Attorney General is Using Coal to Fight the EPA

As Oklahoma's Oilfield Booms, State Tax Breaks Follow

Suicide Rates Among Children Aged 5 to 11 Years in the US: 1993-1997 to 2008-2012



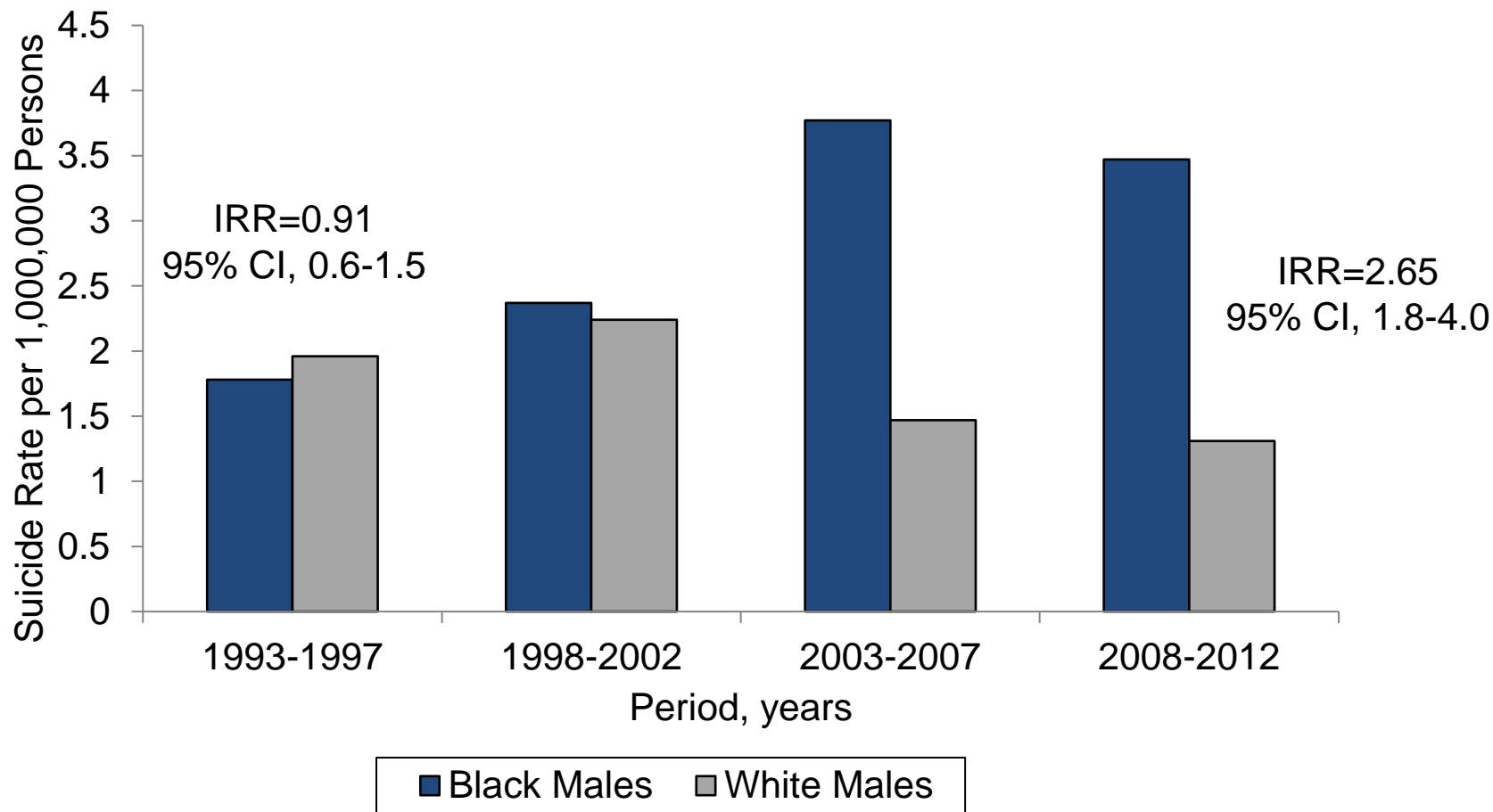
No significant change in the overall suicide rate between 1993-1997 and 2008-2012 (incidence rate ratio [IRR] = 0.96, 95% CI = 0.90-1.03)

No Significant Trends in Several Demographic Subgroups

	Period Trend IRR (95% CI), 1993-1997 to 2008-2012
Age	
5-9	1.01 (0.85 – 1.21)
10-11	0.95 (0.88 – 1.02)
Sex	
Male	0.93 (0.86 – 1.00)
Female	1.16 (0.98 – 1.39)
Ethnicity	
Hispanic	0.97 (0.80 – 1.16)
Non-Hispanic	0.98 (0.91 – 1.06)

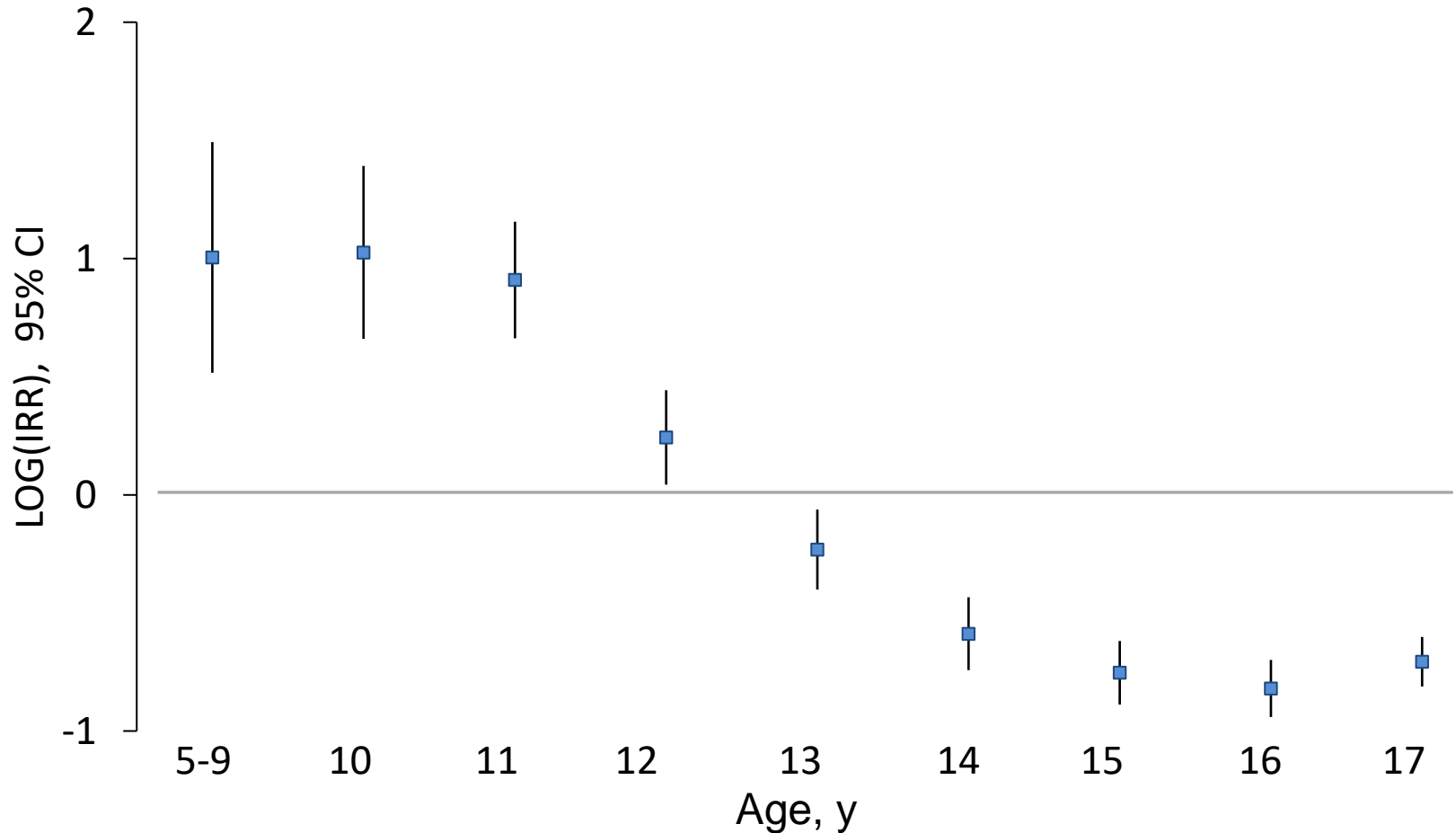
IRR indicates Incidence Rate Ratio; CI, confidence interval

Suicide Rates Among White and Black Males Aged 5-11 Years in the US: 1993-1997 to 2008-2012



Bridge et al., 2015

Comparison of Suicide Incidence Rates Between Black and White Youth in the U.S. From 2001 to 2015, by Age



Abbreviations: IRR, incidence rate ratio; LOG, natural logarithm. Blue squares indicate the estimated LOG of the age-specific IRR, vertical lines indicate 95% CI, and reference group is white youth. 95% CIs that do not include zero are considered statistically significant.

Suicide as Leading Cause of Death, 5-11-Year-Olds, 1999-2018, by Race

Black Youth

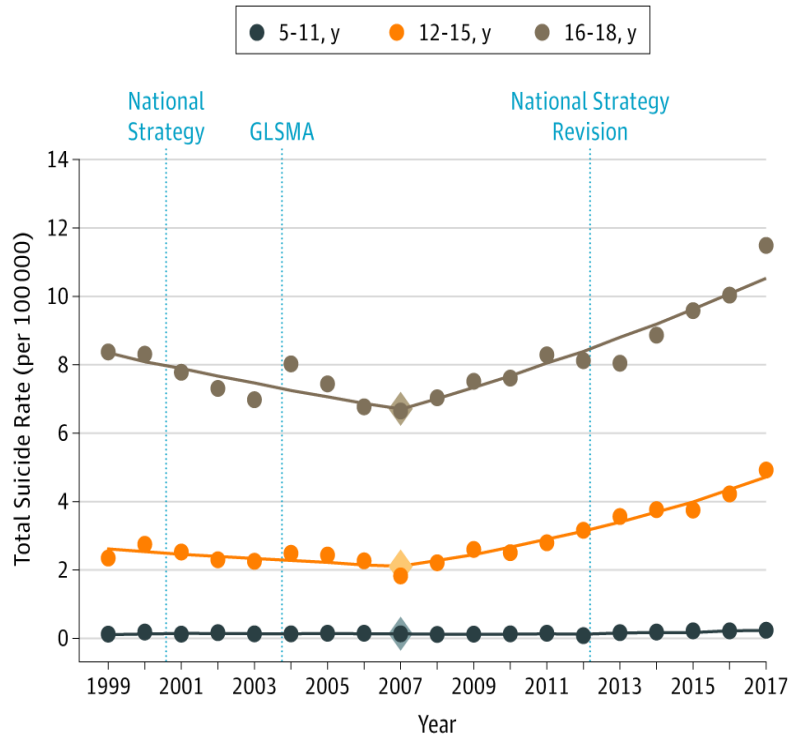
	1999	2009	2018
1	Unintentional Injury	Unintentional Injury	Unintentional Injury
2	Malignant Neoplasms	Malignant Neoplasms	Malignant Neoplasms
3	Homicide	Congenital Anomalies	Congenital Anomalies
4	Congenital Anomalies	Homicide	Homicide
5	Heart disease	Respiratory Disease	Influenza & Pneumonia
6	Respiratory Disease	Heart Disease	Heart Disease
7	HIV	Influenza & Pneumonia	Suicide (N=25)
8	Anemias	Benign Neoplasms	Influenza & Pneumonia
9	Benign Neoplasms	Septicemia	Cerebrovascular
10	Septicemia	Cerebrovascular	Septicemia
11	Cerebrovascular	Suicide (N=12)	Anemias
12	Influenza & Pneumonia	Anemias	Benign Neoplasms
13	Diseases of Appendix	Diabetes	Perinatal Period
14	Meningitis	Nephritis	Diabetes
15	Nephritis	Perinatal Period	Pneumonitis
16	Suicide (N=4)	Diseases of Appendix	Acute Bronchitis

White Youth

	1999	2009	2018
1	Unintentional Injury	Unintentional Injury	Unintentional Injury
2	Malignant Neoplasms	Malignant Neoplasms	Malignant Neoplasms
3	Congenital Anomalies	Congenital Anomalies	Congenital Anomalies
4	Homicide	Homicide	Homicide
5	Heart disease	Influenza & Pneumonia	Influenza & Pneumonia
6	Benign neoplasms	Heart Disease	Heart Disease
7	Influenza & Pneumonia	Benign Neoplasms	Suicide (N=47)
8	Septicemia	Cerebrovascular	Cerebrovascular
9	Respiratory Disease	Respiratory Disease	Septicemia
10	Cerebrovascular	Septicemia	Respiratory Disease
11	Perinatal period	Suicide (N=27)	Benign Neoplasms
12	Suicide (N=16)	Anemias	Perinatal Period
13	Nephritis	Diabetes	Diabetes
14	HIV	Perinatal Period	Meningitis
15	Meningitis	Meningitis	Anemias
16	Meningococcal Infection	Diseases of Appendix	Nephritis

From: Trends in US Suicide Deaths, 1999 to 2017, in the Context of Suicide Prevention Legislation

JAMA Pediatr. 2020;174(5):499-500. doi:10.1001/jamapediatrics.2019.6066



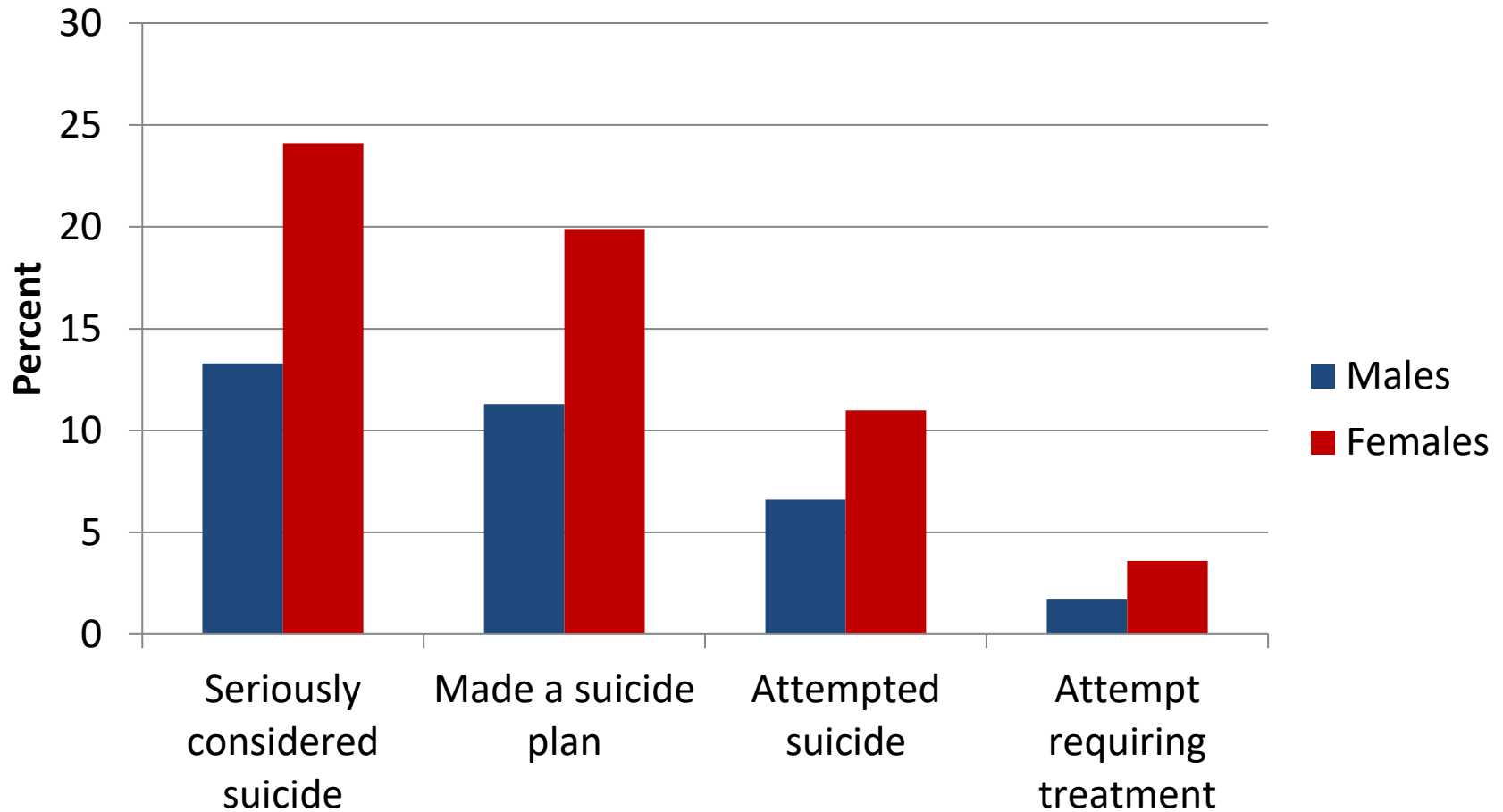
Age, y	APC (95% CI)	P Value
5-11		
1999-2012	-1.27 (-3.5 to 1.1)	.26
2012-2017	14.69 (3.8 to 26.7)	.01
12-15		
1999-2007	-2.79 (-4.6 to -0.9)	.007
2007-2017	8.47 (7.0 to 9.9)	<.001
16-18		
1999-2007	-2.72 (-4.4 to -1.0)	.004
2007-2017	4.65 (3.4 to 6.0)	<.001

APC=14.69

Figure Legend:

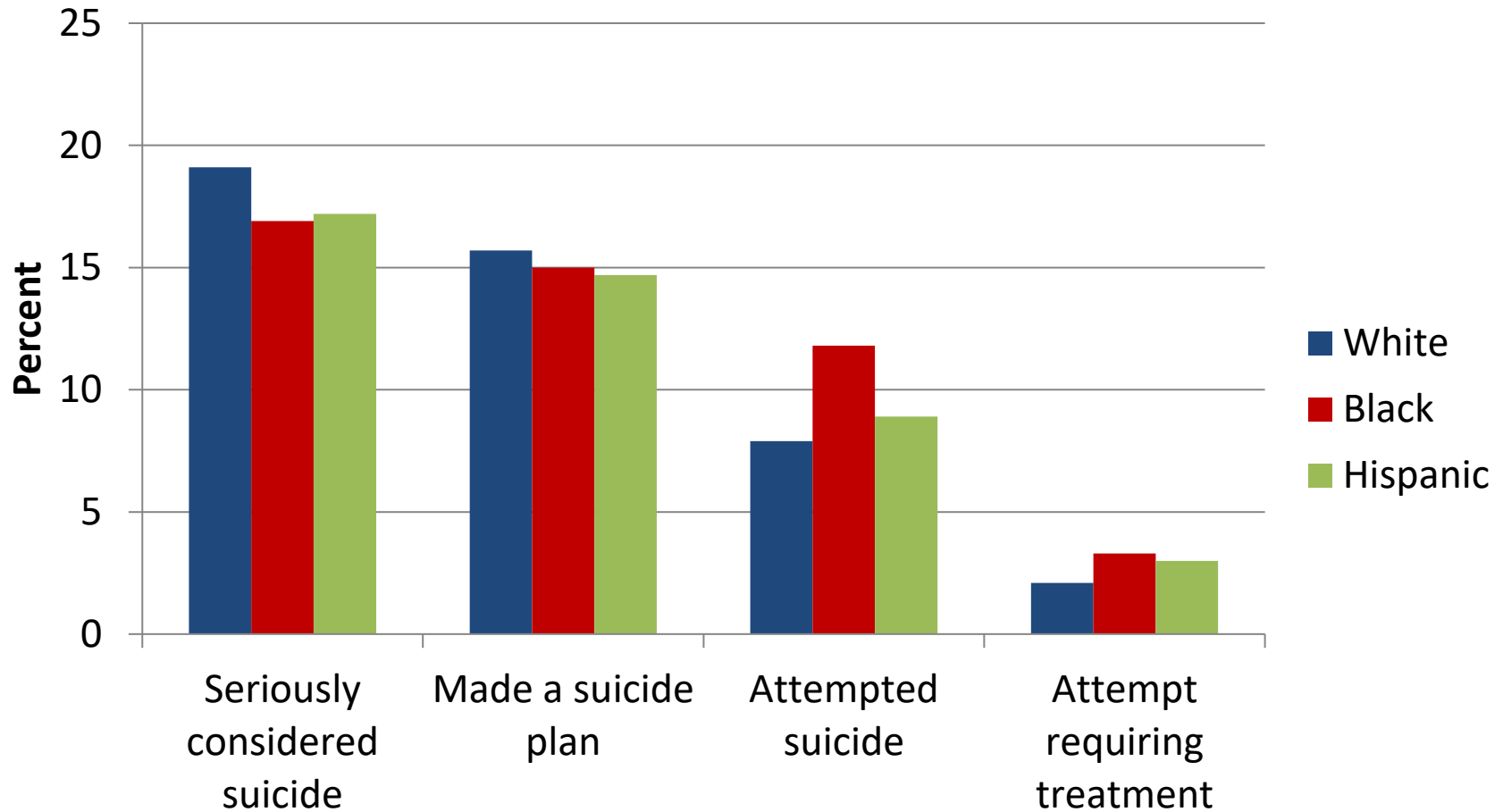
Suicide Rates of Children Ages 5 to 18 Years, Stratified by Age Group, United States, 1999-2017. Figures were prepared with data from the US Centers for Disease Control and Prevention. GLSMA indicates the Garrett Lee Smith Memorial Act.

Percentage of U.S. High School Students Reporting Suicidal Thoughts and Behavior in the Past 12 Months, by Sex, 2019



Source: Youth Risk Behavior Surveillance-US, 2019; USDHHS, CDC.

Percentage of U.S. High School Students Reporting Suicidal Thoughts and Behavior in the Past 12 Months, by Race/Ethnicity, 2019



Source: Youth Risk Behavior Surveillance-US, 2019; USDHHS, CDC.

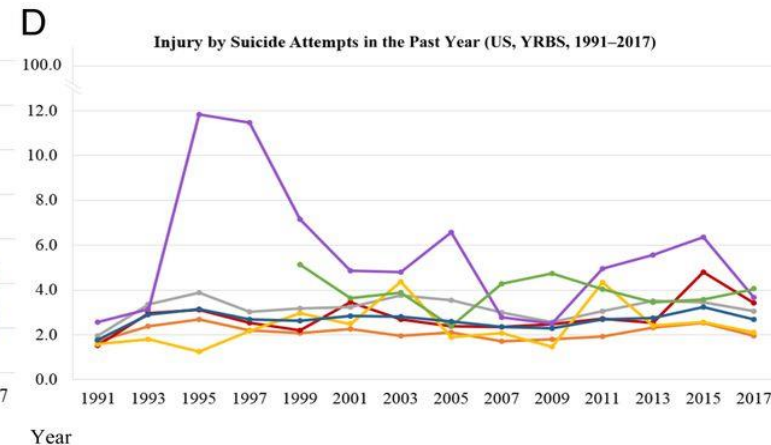
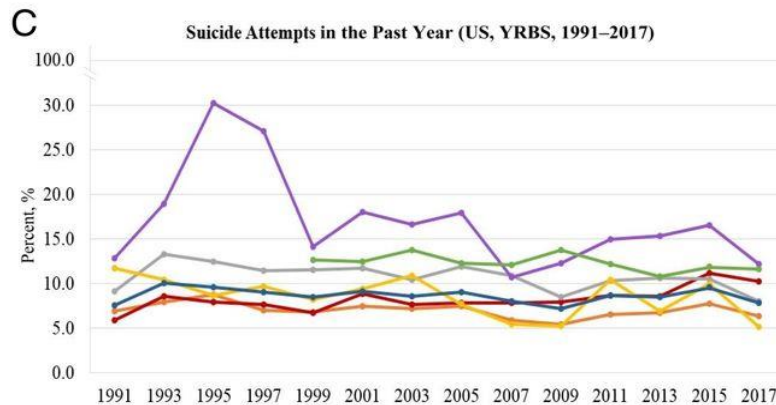
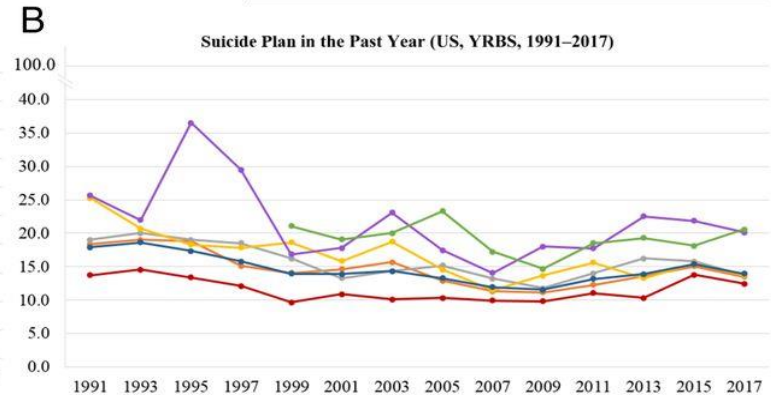
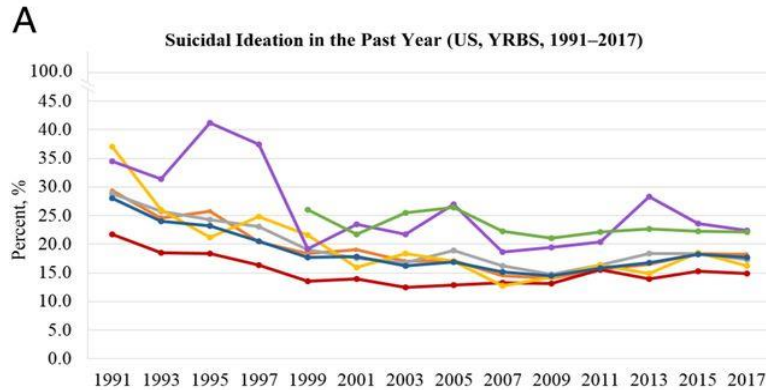
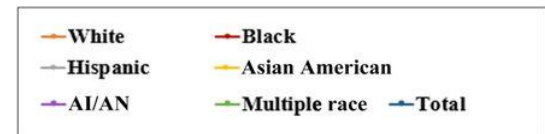


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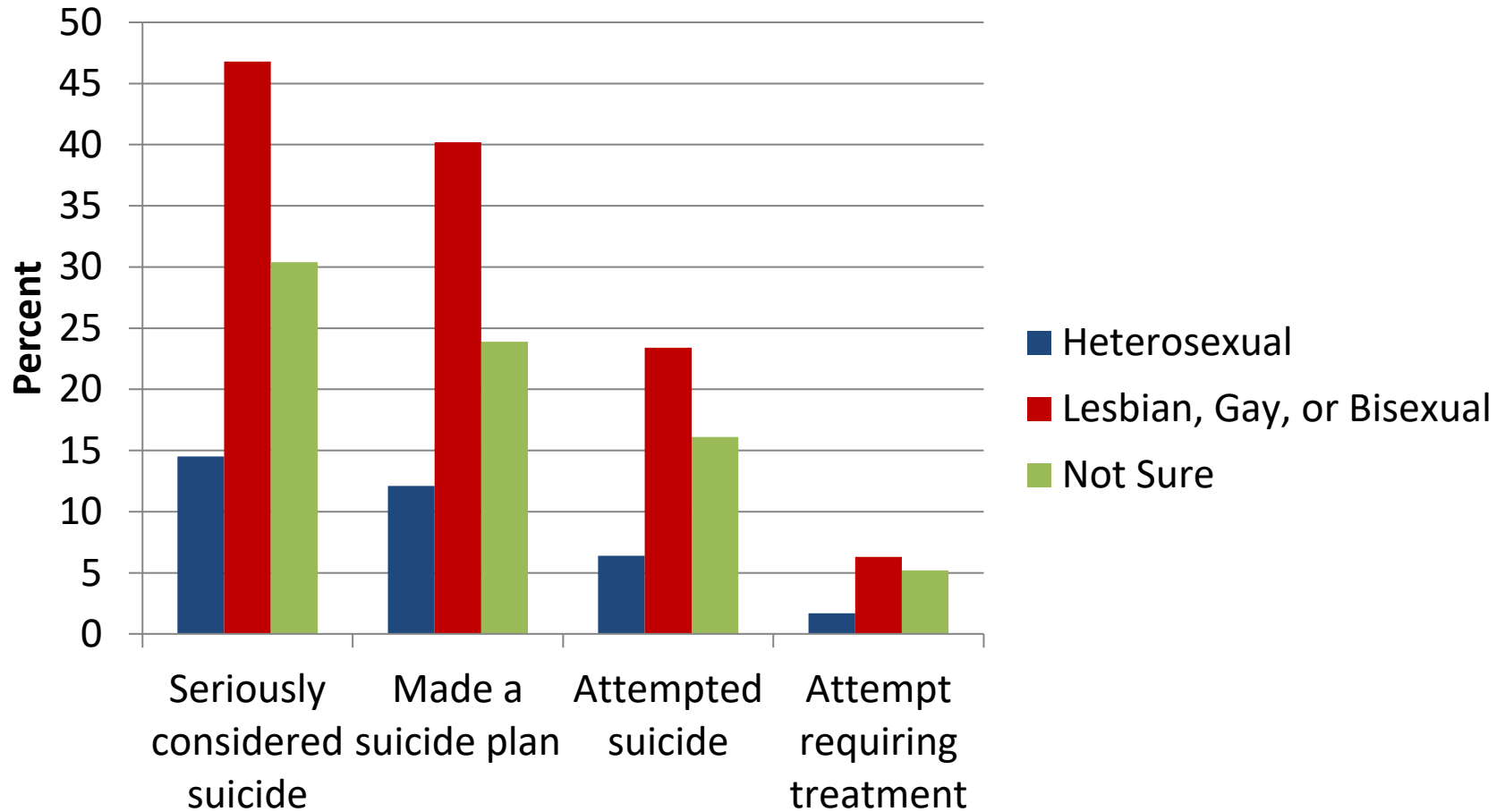
Trends of Suicidal Behaviors Among High School Students in the United States: 1991-2017

[Michael A Lindsey](#)^{1,2}, [Arielle H Sheftall](#)^{3,4,5,6}, [Yunyu Xiao](#)^{7,2}, [Sean Joe](#)⁸

Pediatrics 2019 Nov;144(5):e20191187. doi: 10.1542/peds.2019-1187. Epub 2019 Oct 14.



Percentage of U.S. High School Students Reporting Suicidal Thoughts and Behavior in the Past 12 Months, by Sexual Identity, 2019

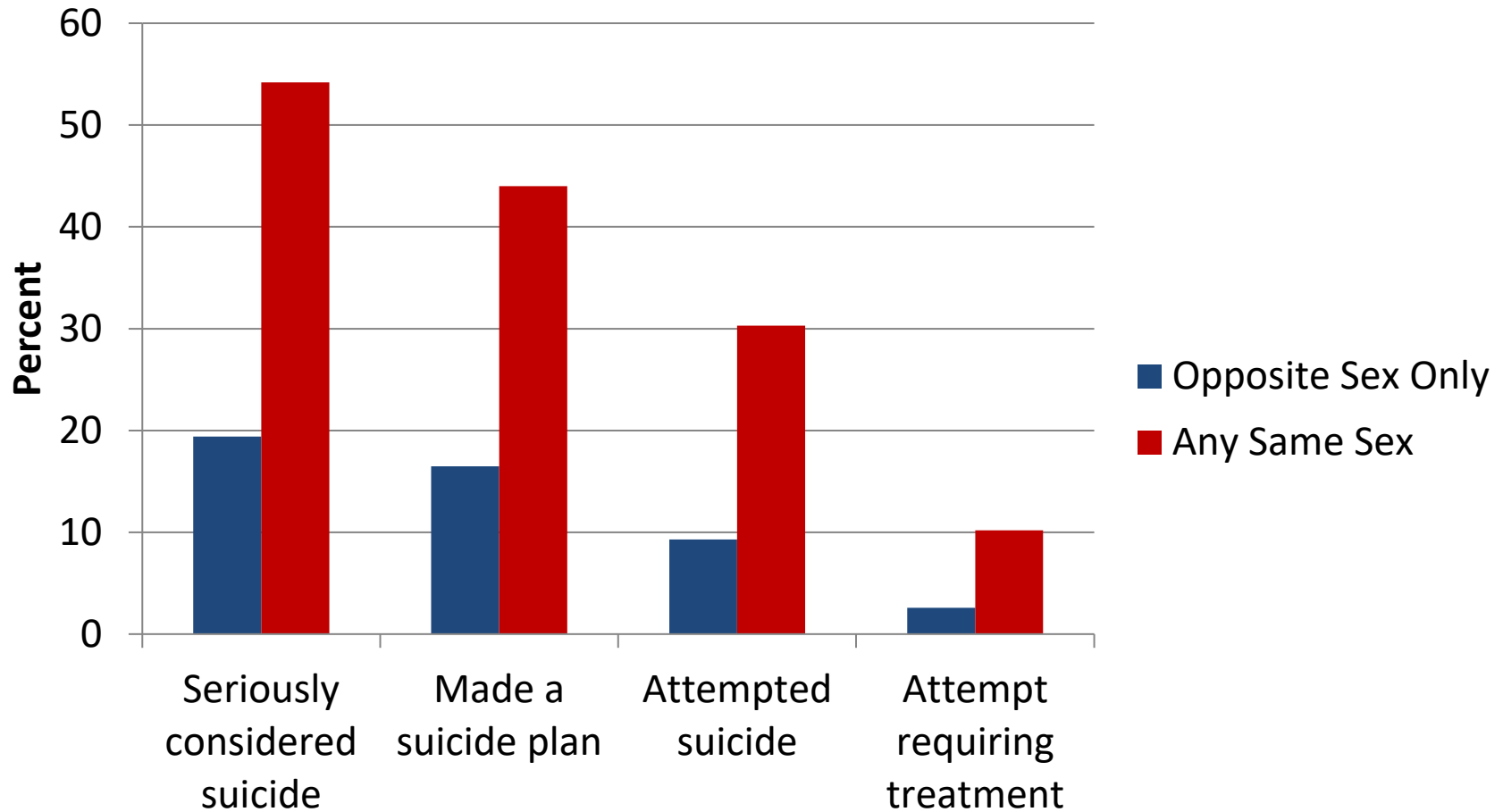


Source: Youth Risk Behavior Surveillance-US, 2019; USDHHS, CDC.



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Percentage of U.S. High School Students Reporting Suicidal Thoughts and Behavior in the Past 12 Months, by Sex of Sexual Contacts, 2019



Source: Youth Risk Behavior Surveillance-US, 2019; USDHHS, CDC.

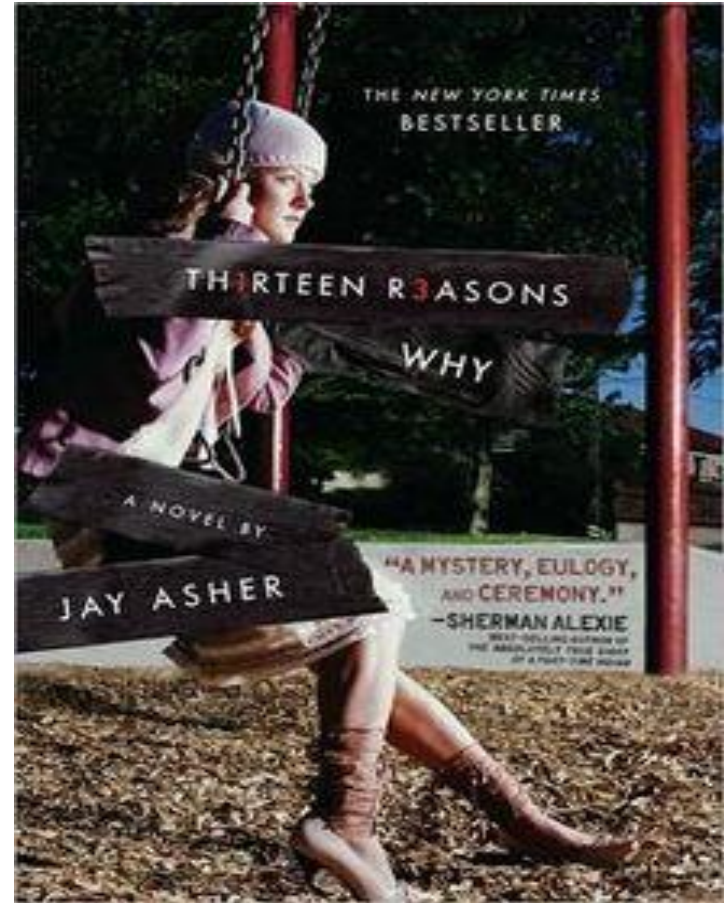
Association between Release of *13 Reasons Why* and Suicide in US Youth

Overview

- Identify specific ways that *13 Reasons Why* deviates from best practices in media depiction of suicide and why this matters
- Describe several recent studies that have examined associations between the release of Season 1 of *13 Reasons Why* and suicide/suicidal behavior
- Highlight recommendations for improving media content while reducing suicide risk

Thirteen Reasons Why - Wikipedia

“Thirteen Reasons Why is a young adult novel written in 2007 by Jay Asher. It is the story of a young high school student as she descends into despair brought on by betrayal and bullying, culminating with her suicide. She details the thirteen reasons why she was driven to end her life in an audio diary which is mailed to a friend two weeks after her death.”



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***13 Reasons Why* - Netflix**

***“13 Reasons Why* ... is an American web television series developed for Netflix...The series revolves around seventeen-year-old high school student, Clay Jensen, and his deceased friend Hannah Baker, who takes her own life after having to face a culture of gossip, bullying and sexual assault at her high school and a lack of support from her friends, her family and her school.” - Wikipedia**



Concerns Raised About *13 RW*

- All episodes released on March 31, 2017 – increases risk for binge watching (3rd most binged watched show on Netflix in 2017)
- Does not address issue of mental health and suicide
- Graphically depicts the lead character's suicide death
- Depicts suicide as a means of coping with psychological pain, which could trigger suicide in young people especially those who may identify with the lead character
- Adult characters in the series are portrayed as incapable of helping, insensitive, and/or unaware

What is “suicide contagion”?



- Process by which suicide-related behaviors spread quickly & spontaneously through a group (Gould, 1990)
- Youth, particularly those with elevated suicide risk factors, are most vulnerable but vast majority of youth are not negatively affected

What elements increase suicide contagion?



- Front page exposure, bold or sensationalistic headlines
 - Repetitive reporting of the same suicide
 - Detailed descriptions of method/location
 - Romanticizing or glamorizing the suicide or its function
 - Simplifying suicide to a single cause
 - Stories relay common suicide myths
-

Can reporting help prevent suicide?

Some suicide reporting strategies seem to reduce risk

- Focus on positive coping in adverse circumstances
- Focus on suicidal ideation not accompanied by suicide attempt or death where possible (“mastery of crisis”)

Niederkrötenhaller et al., 2010



Messaging > Entertainment > National Recommendations for Depicting Suicide

National Recommendations for Depicting Suicide

Real Stories

A collaborative suicide prevention approach for news and entertainment

An initiative of the National Action Alliance for Suicide Prevention

<https://theactionalliance.org/messaging/entertainment-messaging/national-recommendations>



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Convey that suicide is complex and often caused by a range of factors, rather than by a single event.



Show that help is available.



Portray characters with suicidal thoughts who do not go on to die by suicide.



Portray everyday characters who can be a lifeline.



Depiction Recommendations

Avoid showing or describing the details about suicide methods.



Consult with suicide prevention messaging experts and people with personal experience.



Depict the grieving and healing process of people who lose someone to suicide.



Use nonjudgmental language.




Services for Teens at Risk STAR Center

30th Year Anniversary Research Symposium

An Update on Suicidal Behavior in Youth:
Causes, Treatment, Prevention

May 3-4, 2017
Pittsburgh, PA

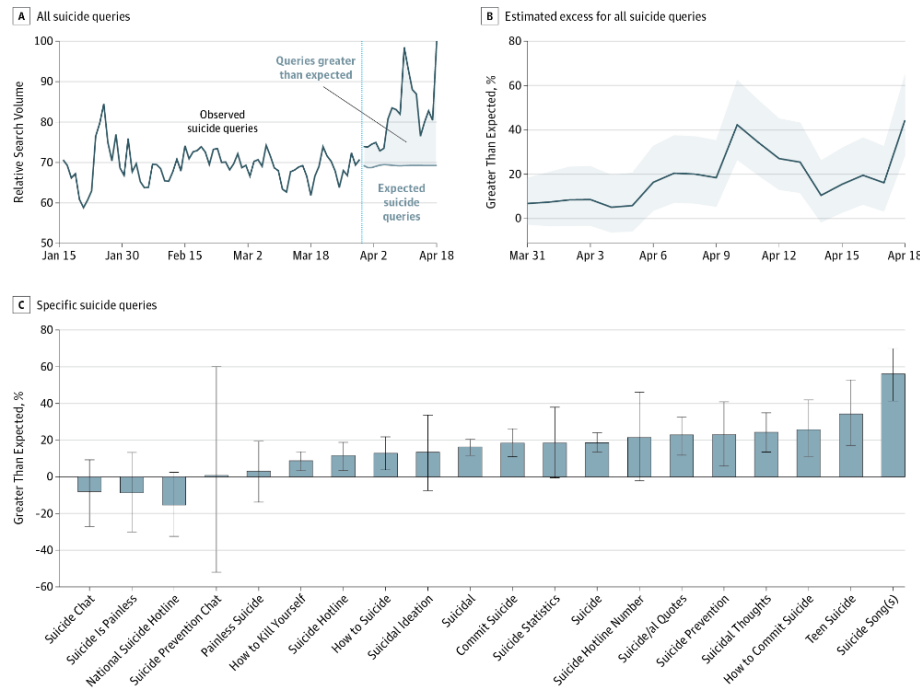
Internet Searches for Suicide Following the Release of 13 Reasons Why

- Ayers et al., 2017; JAMA Internal Medicine
- Used **Google Trends** to search for suicide-related terms after release of 13 RW, compared to expected search volumes through April 18, 2019 (A. Hernandez death)
- Cumulative volume 19% for the first 19 days after release
 - Reflecting 900,000 to 1.5 million more searches
- **Elevated search queries** suggested both increased suicide risk as well as suicide prevention



From: Internet Searches for Suicide Following the Release of 13 Reasons Why

JAMA Intern Med. 2017;177(10):1527-1529. doi:10.1001/jamainternmed.2017.3333



5 highest increases:

- 1) Suicide Songs (+50%)
- 2) Teen Suicide (+34%)
- 3) How to Commit Suicide (+26%)
- 4) Suicidal Thoughts (+25%)
- 5) Suicide Prevention (+23%)

Figure Legend:

Internet Searches Following the Release of 13 Reasons Why. A, Daily trend for all Google searches with the term “suicide” but not also mentioning “squad” alongside expected trends for the days following the release of the Netflix series 13 Reasons Why. B, Estimated excess for Google searches with the term “suicide” but not also mentioning “squad” by day with corresponding 95% CIs (blue shaded area) and the estimated cumulative excess for March 31, 2017, through April 18, 2017. The cumulative mean for excess of suicide queries was determined to be 19% (95% CI, 14%-24%). C, Cumulative excess for each listed search term for March 31, 2017, through April 18, 2017.

Internet Searches for Suicide Following the Release of 13 Reasons Why

- **Summary**

- Suicide awareness terms elevated but also searched indicating potential suicide risk

- **Limitations**

- Unable to assess whether any search query preceded an actual suicide attempt

Ayers et al., 2017; JAMA Intern Med

Research Timeline Following the Release of 13 Reasons Why

1. Ayers et al.
2. O'Brien et al.
3. Beal
4. Zarin-Pass et al.
5. Campo & Bridge
6. Zimerman, et al.
7. Carmichael & Whitley
8. Ferguson
9. Rosa et al.
10. Hong et al.
11. Cooper et al.
12. Quinn & Ford

2017

2018

2019



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2017

2018

2019



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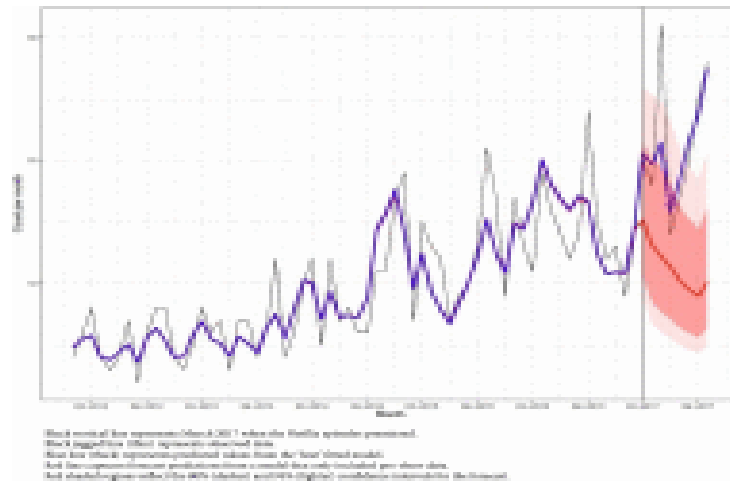
13 Reasons Why: Viewing Patterns and Perceived Impact Among Youths at Risk of Suicide

- Hong et al., 2018 *Psychiatric Services*
 - 87 youths (Mean age=14.5), 71% female, 91% white, in ED
 - Half (49%) the sample viewed at least one episode (S1)
 - 84% viewed the show alone and more likely to discuss the show with a peer (80%) than a parent (34%)
 - **51% believed the series increased their suicide risk**
 - Having a stronger identification with the lead female character was correlated with this belief ($r=.63$, $p<.01$)
 - Youth with more depressive symptoms and suicidal ideation were more likely to identify with the lead characters and report negative affect while viewing
-



Suicide Attempt Admissions From a Single Children's Hospital Before and After the Introduction of Netflix Series *13 Reasons Why*

- Cooper et al., 2019 *Journal of Adolescent Health*
- Identify trends in self-harm admissions to children's hospital
- 775 records were included in analysis
- Age range 4 to 18 years (M=15.2), 73% female



- Increasing underlying trend
- Model that best fit the data indicated an increase in observed over expected admissions following the release of *13 Reasons Why*

Research Timeline Following the Release of 13 Reasons Why

- | | | |
|-------------------|-------------------------|------------------------------|
| 1. Ayers et al. | 1. Beal | 1. Thompson et al. |
| 2. O'Brien et al. | 2. Zarin-Pass et al. | 2. Arendt et al. |
| | 3. Campo & Bridge | 3. Santana da Rosa et al. |
| | 4. Zimerman, et al. | 4. Bridge et al. |
| | 5. Carmichael & Whitley | 5. Niederkrotenthaler et al. |
| | 6. Ferguson | 6. Mueller |
| | 7. Rosa et al. | 7. Sinyor et al. |
| | 8. Hong et al. | |
| | 9. Cooper et al. | |
| | 10. Quinn & Ford | |

2017

2018

2019



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Research Timeline Following the Release of 13 Reasons Why

- | | | |
|-------------------|-------------------------|---------------------------|
| 1. Ayers et al. | 1. Beal | 1. Thompson et al. |
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| | 4. Zimerman, et al. | 4. Bridge et al. |
| | 5. Carmichael & Whitley | 5. Niederkröthaler et al. |
| | 6. Ferguson | 6. Mueller |
| | 7. Rosa et al. | 7. Sinyor et al. |
| | 8. Hong et al. | |
| | 9. Cooper et al. | |
| | 10. Quinn & Ford | |

2017

2018

2019

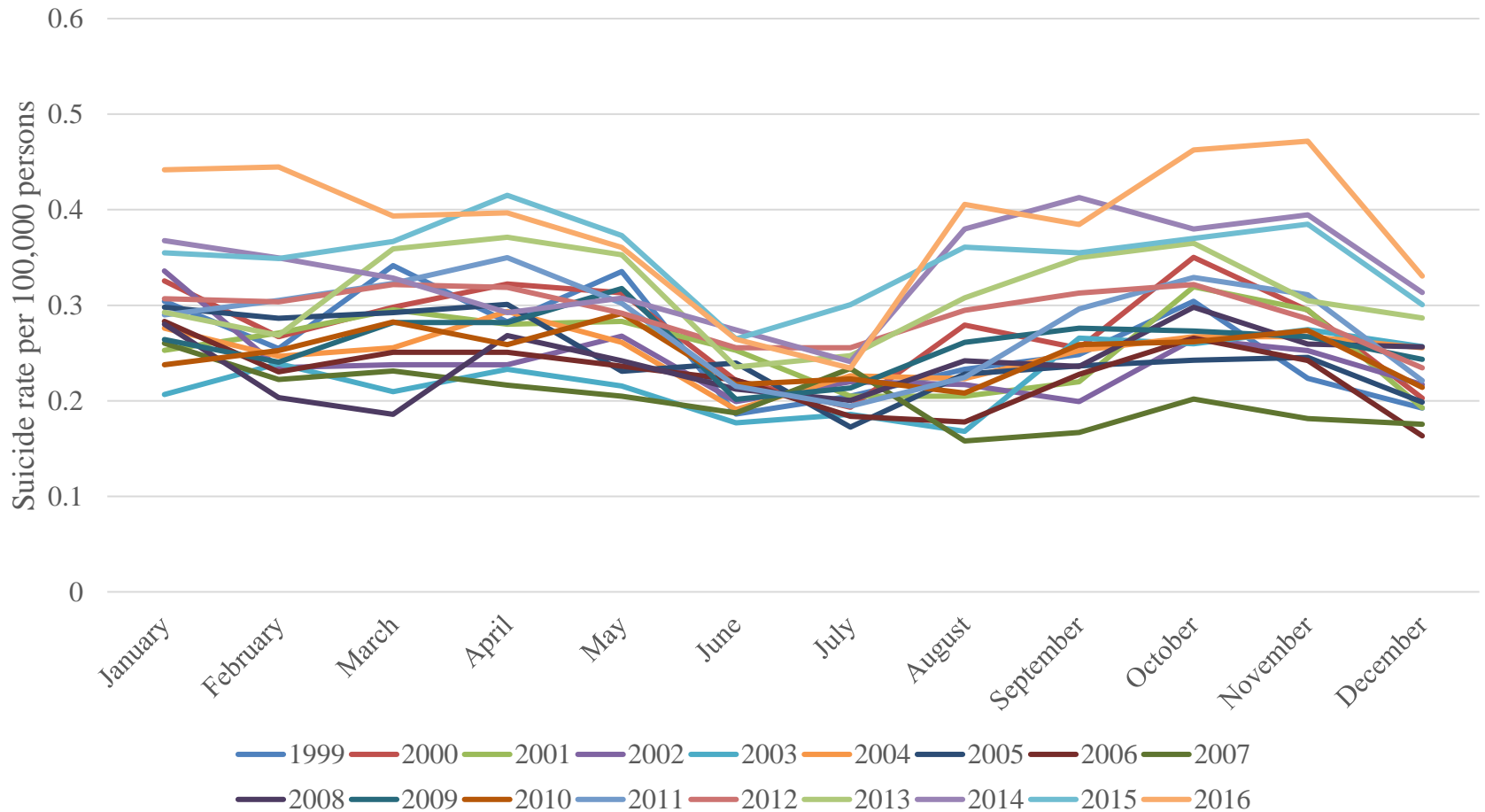


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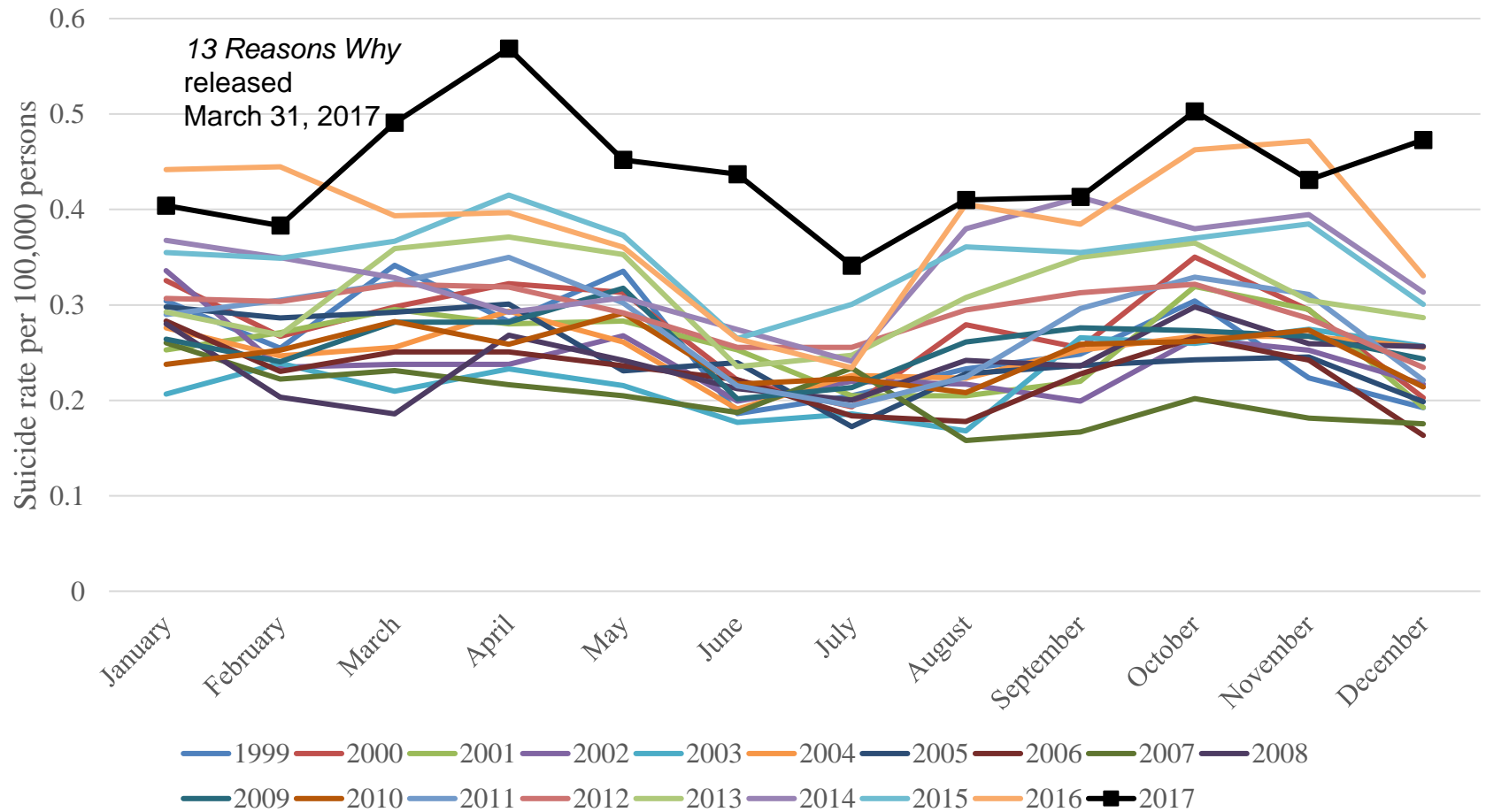


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Monthly Suicide Rates in Youth Aged 10 to 17 Years in the United States, 1999-2016



Monthly Suicide Rates in Youth Aged 10 to 17 Years in the United States, 1999-2017



Association Between the Release of Netflix's *13 Reasons Why* and Suicide Rates in the United States: An Interrupted Time Series Analysis

Jeffrey A. Bridge, PhD, Joel B. Greenhouse, PhD, Donna Ruch, PhD, Jack Stevens, PhD, John Ackerman, PhD, Arielle H. Sheftall, PhD, Lisa M. Horowitz, PhD, MPH, Kelly J. Kelleher, MD, John V. Campo, MD

Objective: To estimate the association between the release of the Netflix series *13 Reasons Why* and suicide rates in the United States.

Method: Using segmented quasi-Poisson regression and Holt-Winters forecasting models, we assessed monthly rates of suicide among individuals aged 10 to 64 years grouped into 3 age categories (10–17, 18–29, and 30–64 years) between January 1, 2013, and December 31, 2017, before and after the release of *13 Reasons Why* on March 31, 2017. We also assessed the impact of the show's release on a control outcome, homicide deaths.

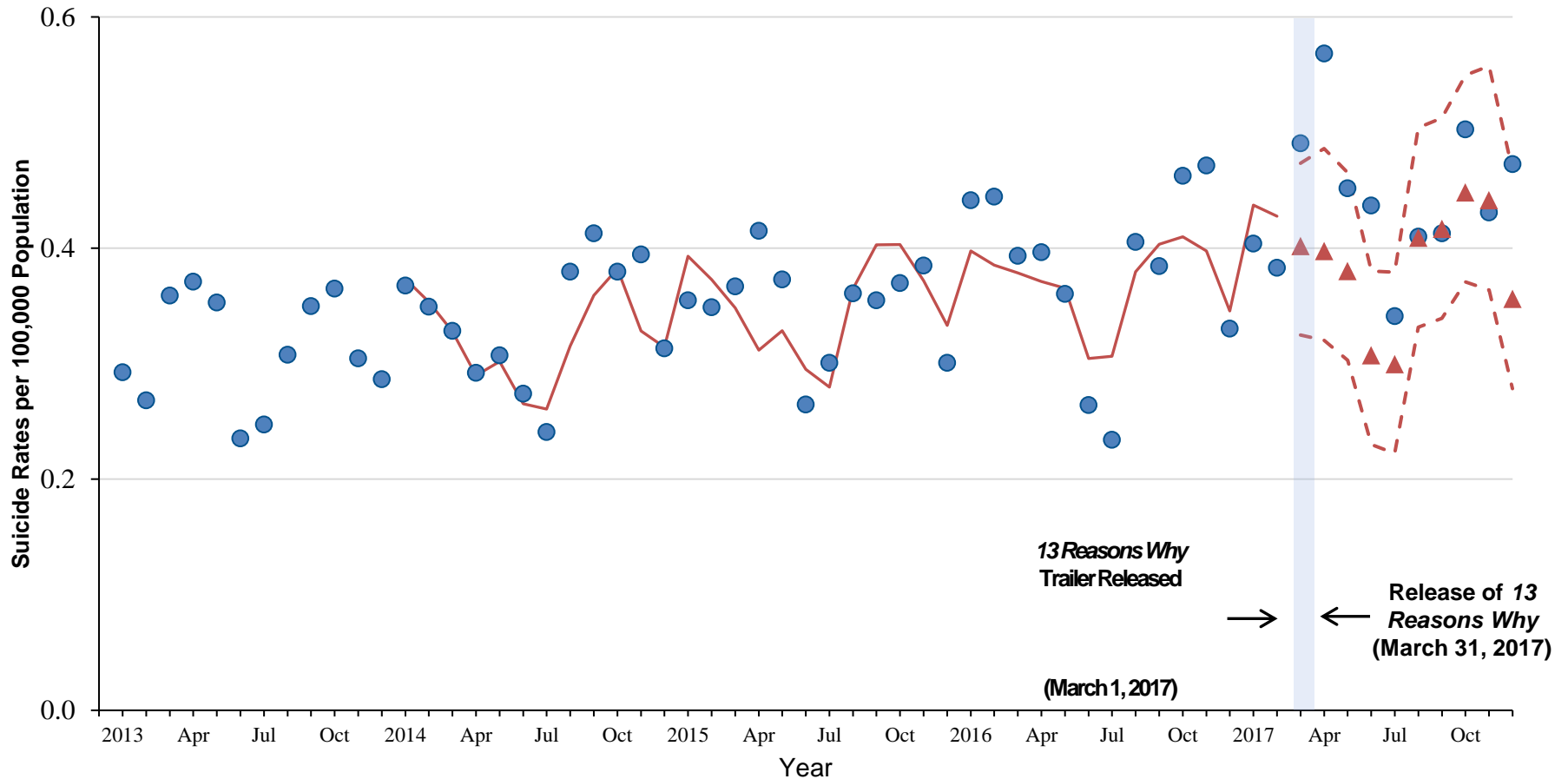
Results: After accounting for seasonal effects and an underlying increasing trend in monthly suicide rates, the overall suicide rate among 10- to 17-year-olds increased significantly in the month immediately following the release of *13 Reasons Why* (incidence rate ratio [IRR], 1.29; 95% CI, 1.09–1.53); Holt-Winters forecasting revealed elevated observed suicide rates in the month after release and in two subsequent months, relative to corresponding forecasted rates. Contrary to expectations, these associations were restricted to boys. Among 18- to 29-year-olds and 30- to 64-year-olds, we found no significant change in level or trend of suicide after the show's release, both overall and by sex. The show's release had no apparent impact in the control analyses of homicide deaths within any age group.

Conclusion: The release of *13 Reasons Why* was associated with a significant increase in monthly suicide rates among US youth aged 10 to 17 years. Caution regarding the exposure of children and adolescents to the series is warranted.

Key words: suicide, *13 Reasons Why*, suicide media reporting guidelines, time series



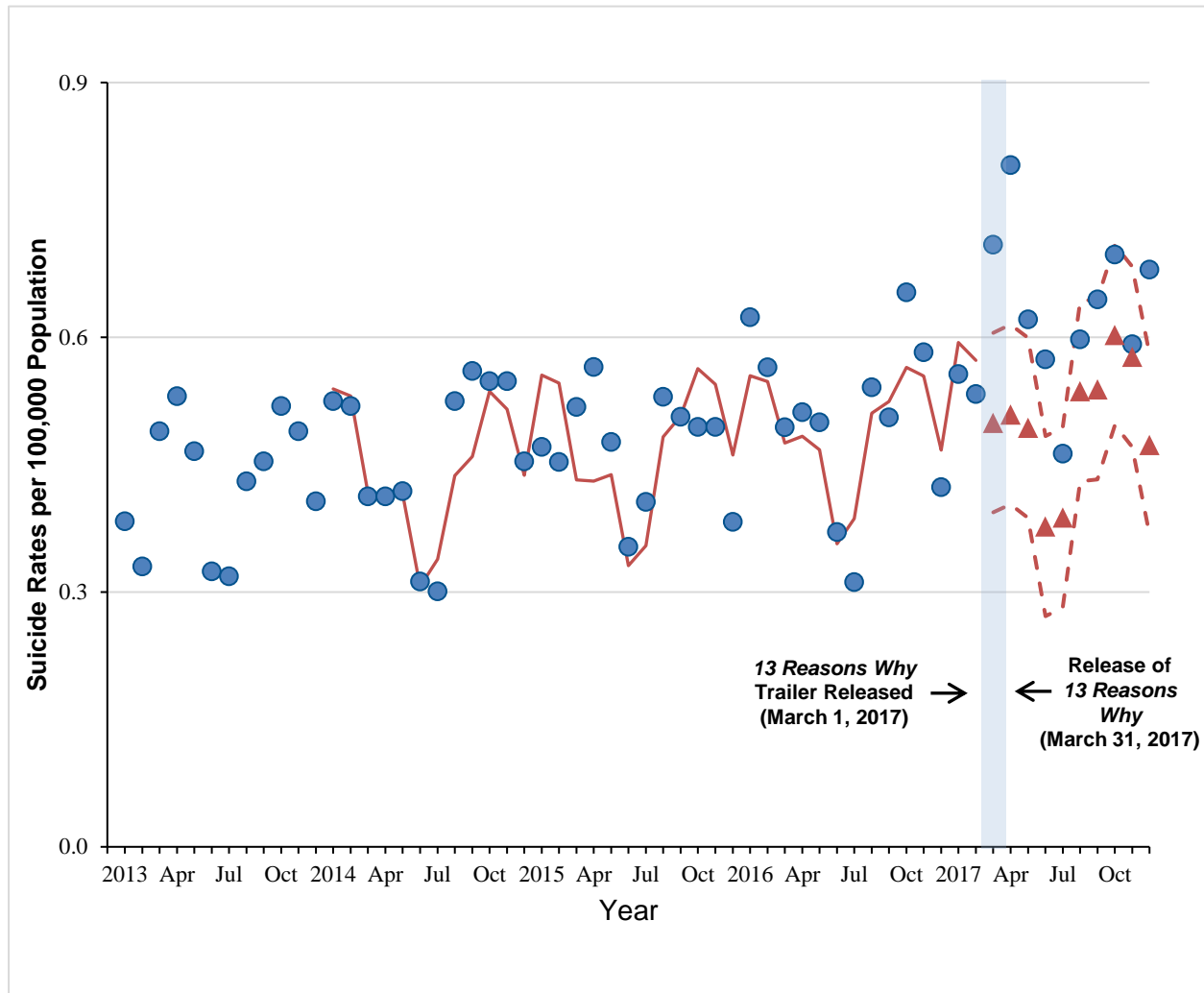
Association Between the Release of *13 Reasons Why* and Suicide Rates in 10- to 17-Year-Old Children and Adolescents in the United States



Blue circles indicate observed suicide rates between January 1, 2013 and December 31, 2017. Orange solid line indicates fitted values that best account for underlying level, trend, and seasonal variation prior to release. The leading edge of the shaded area indicates the initial airing of the *13 Reasons Why* trailer. The trailing edge of the shaded area indicates the release date of *13 Reasons Why*. Orange triangles indicate forecasted suicide rates; curved orange dashed lines indicate the upper and lower 95% prediction intervals. Observed suicide rates in March, April, June, and December 2017 were significantly higher than corresponding forecasted rates.

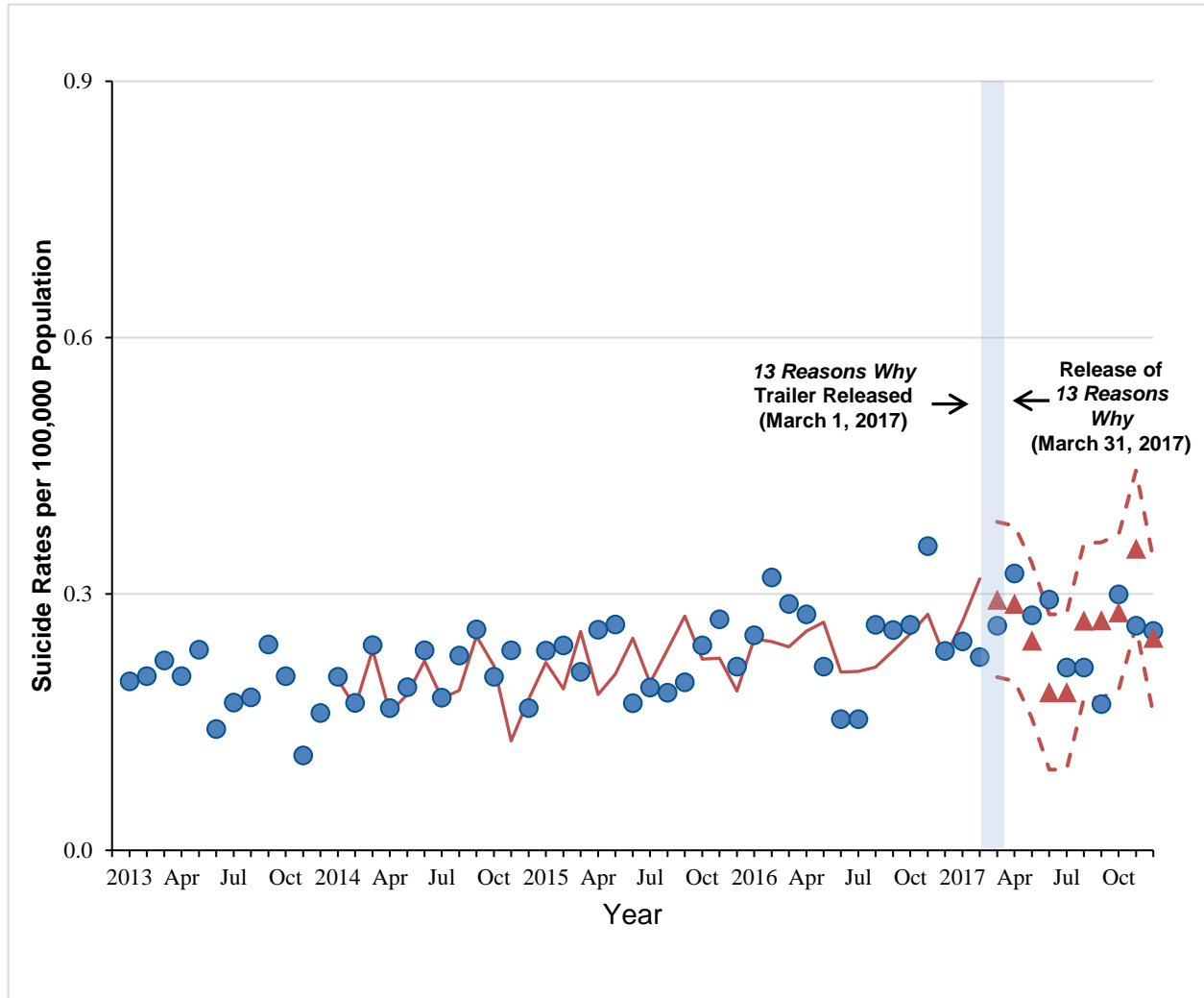
Association Between the Release of *13 Reasons Why* and Suicide Rates in 10- to 17-Year-Old Children and Adolescents in the United States, Stratified by Sex

Males



Association Between the Release of *13 Reasons Why* and Suicide Rates in 10- to 17-Year-Old Children and Adolescents in the United States, Stratified by Sex

Females



Association Between the Release of *13 Reasons Why* and Suicide in the US, by Age Group

Characteristic	Pre-13RW Trend ^a (IRR) (95% CI)	p	Post-13RW Trend ^b (IRR) (95% CI)	p	Step Change ^c (IRR) (95% CI)	p
10 to 17 Years						
Overall	1.005 (1.003-1.008)	<.001	0.97 (0.95-1.00)	.057	1.29 (1.09-1.53)	.004
Sex						
Female	1.007 (1.003-1.010)	<.001	0.97 (0.93-1.01)	.163	1.15 (0.89-1.50)	.279
Male	1.005 (1.002-1.007)	<.001	0.97 (0.94-1.00)	.098	1.35 (1.12-1.64)	.002
18 to 29 Years						
Overall	1.004 (1.003-1.005)	<.001	0.99 (0.98-1.01)	.443	1.07 (0.98-1.18)	.135
Sex						
Female	1.003 (1.001-1.005)	.006	0.98 (0.95-1.01)	.252	1.15 (0.97-1.38)	.111
Male	1.004 (1.003-1.005)	<.001	1.00 (0.98-1.01)	.675	1.05 (0.96-1.16)	.285
30 to 64 Years						
Overall	1.001 (1.000-1.002)	.060	1.00 (0.99-1.01)	.914	1.03 (0.95-1.12)	.448
Sex						
Female	1.002 (1.000-1.003)	.008	0.99 (0.98-1.01)	.465	1.00 (0.90-1.11)	.980
Male	1.001 (1.000-1.002)	.184	1.00 (0.99-1.02)	.879	1.04 (0.96-1.13)	.333

Bridge et al. (2019) Main Findings

- Significant increase in suicide rate among 10- to 17-yr-olds in the month after the release of 13RW controlling for temporal trends and seasonality
 - Suicide rates remained elevated in two subsequent months above forecasted rates as well
 - Increase in suicide rates in boys but not girls
 - **Estimated additional 195 suicides among 10-17 year-olds from April-December than predicted**
 - No associations between 13RW release and suicide in the two older age groups (18-29, 30-64)
-

JAMA Psychiatry | [Original Investigation](#)

Association of Increased Youth Suicides in the United States With the Release of *13 Reasons Why*

Thomas Niederkrotenthaler, MD, PhD, MMSc; Steven Stack, PhD; Benedikt Till, DSc; Mark Sinyor, MSc, MD; Jane Pirkis, PhD; David Garcia, DSc; Ian R. H. Rockett, PhD, MPH; Ulrich S. Tran, DSc

IMPORTANCE On March 31, 2017, Netflix released the show *13 Reasons Why*, sparking immediate criticism from suicide prevention organizations for not following media recommendations for responsible suicide portrayal and for possible suicide contagion by media. To date, little research has been conducted into the associations between the show and suicide counts among its young target audience.

OBJECTIVE To analyze the changes in suicide counts after the release of *13 Reasons Why*.

DESIGN, SETTING, AND PARTICIPANTS For this time series analysis, monthly suicide data for the age groups 10 to 19 years, 20 to 29 years, and 30 years or older for both US males and females from January 1, 1999, to December 31, 2017, were extracted from the Centers for Disease Control and Prevention's WONDER (Wide-ranging Online Data for Epidemiologic Research) database. Twitter and Instagram posts were used as a proxy to estimate the amount of attention the show received through social media from April 1, 2017, to June 30, 2017. Autoregressive integrated moving average time series models were fitted to the pre-April 2017 period to estimate suicides among the age groups and to identify changes in specific suicide methods used. The models were fitted to the full time series with dummy variables for (1) April 2017 and (2) April 1, 2017, to June 30, 2017. Data were analyzed in December 2018 and January 2019.

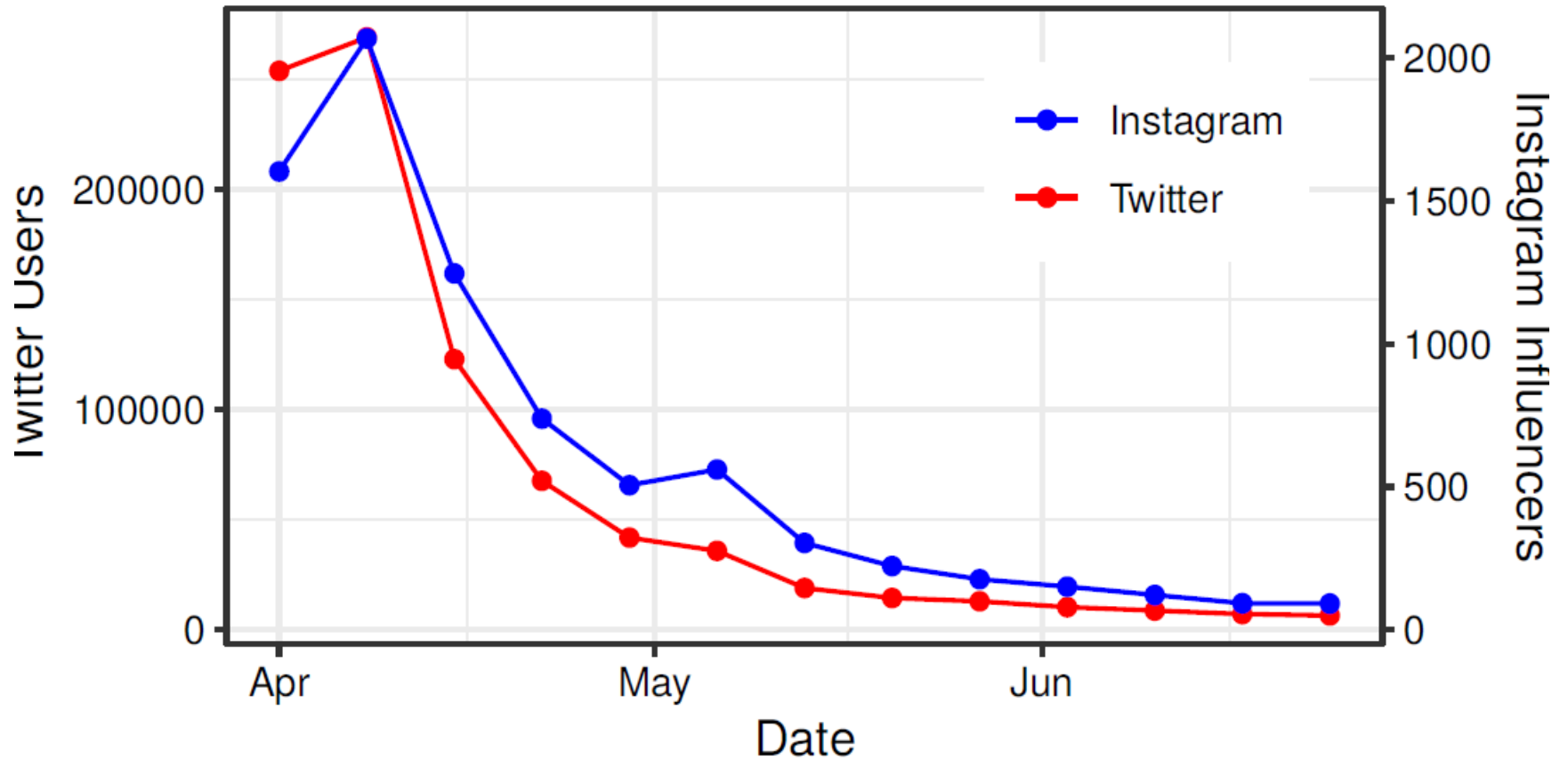
MAIN OUTCOMES AND MEASURES Suicide data before and after the release of the show in 2017.

RESULTS Based on social media data, public interest in the show was highest in April 2017 and was negligible after June 2017. For 10- to 19-year-old males and females, increases in

[+ Editorial](#)

[+ Author Audio Interview](#)

Public interest in the series



Niederkrötenhaller et al. (2019) Main Findings

- Significant increase in suicide rate among 10- to 19-year-olds in 3 months after the release of 13RW controlling for temporal trends and seasonality
 - Increase in suicide rates found among girls by extending the range to age 10-19 (21.7% compared to 12.4% in boys)
 - Excess suicides over predicted – 66 boys; 37 girls
 - Notable increases in suicide by hanging
 - No associations between 13RW release and suicide in the two older age groups (18-29, 30-64)
-



Study of youth in Ontario by Sinyor et al. (2019)



Suicides in Young People in Ontario Following the Release of “13 Reasons Why”

Suicides chez les jeunes personnes en Ontario après le lancement de « 13 raisons »

The Canadian Journal of Psychiatry /
La Revue Canadienne de Psychiatrie
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Mark Sinyor, MSc, MD^{1,2}, Marissa Williams, MSc¹, Ulrich S. Tran, DSc³,
Ayal Schaffer, MD^{1,2}, Paul Kurdyak, MD, PhD^{2,4,5,6}, Jane Pirkis, PhD⁷,
and Thomas Niederkrotenthaler, MD, PhD⁸

Abstract

Objective: “13 Reasons Why,” a Netflix series, included a controversial depiction of suicide that has raised fears about possible contagion. Studies of youth suicide in the United States found an increase on the order of 10% following release of the show, but this has not been replicated in other countries. This study aims to begin to address that gap by examining the relationship between the show’s release and youth suicide in Canada’s most populous province.

Methods: Suicides in young people (under the age of 30) in the province of Ontario following the show’s release on March 31, 2017, were the outcome of interest. Time-series analyses were performed using data from January 2013 to March 2017 to predict expected deaths from April to December 2017 with a simple seasonal model (stationary $R^2 = 0.732$, Ljung-Box $Q = 15.1$, $df = 16$, $P = 0.52$, Bayesian information criterion = 3.09) providing the best fit/used for the primary analysis.

Results: Modeling predicted 224 suicides; however, 264 were observed corresponding to 40 more deaths or an 18% increase. In the primary analysis, monthly suicides exceeded the 95% confidence limit for 3 of the 9 months (May, July, and October).

Conclusion: The statistical strength of the findings here is limited by small numbers; however, the results are in line with what has been observed in the United States and what would be expected if contagion were occurring. Further research in other locations is needed to increase confidence that the associations found here are causal.

The New York Times

Netflix Deletes ‘13 Reasons Why’ Suicide Scene

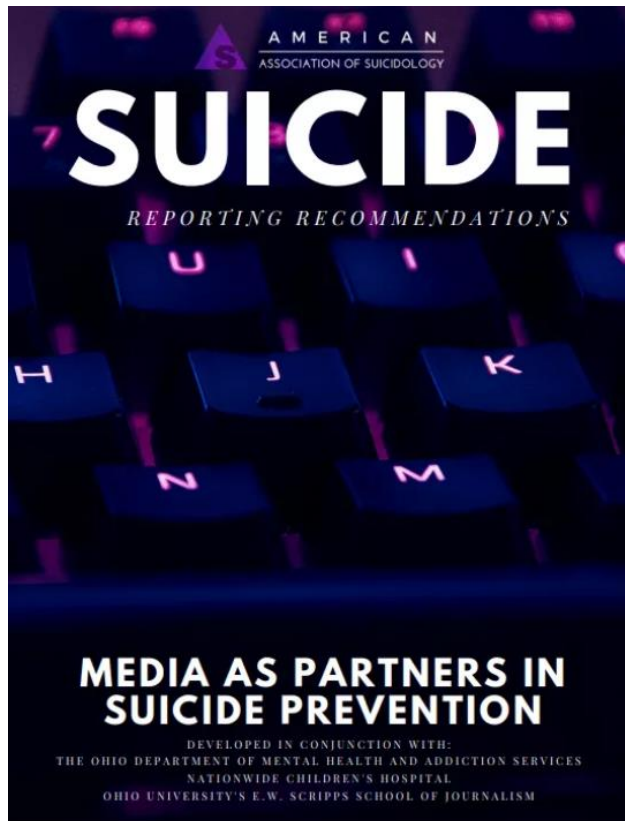
by Alex Marshall July 16, 2019

“Two months after a study linked the series to an increase in suicide rates, Netflix removed a graphic scene.”

Some Recommendations

- *13 RW* violates established best practices surrounding portrayal of suicide
- Vulnerable youth should not watch the show
- Parents should ask children if they've watched the show
- If a child wants to watch, they should with parents and have conversations about the issues addressed
 - Important for adults to listen and take concerns seriously
- Parents should become educated about warning signs of suicide and talk with their children about mental health. It does not hurt to ASK

Guidelines for reporting on suicide including social media recommendations



<https://suicidology.org/reporting-recommendations/>

The infographic is titled "RECOMMENDATIONS FOR REPORTING ON SUICIDE". It provides guidelines for media and online coverage. It includes a section on "IMPORTANT POINTS FOR COVERING SUICIDE" and a comparison of "INSTEAD OF THIS" versus "DO THIS".

RECOMMENDATIONS FOR REPORTING ON SUICIDE

IMPORTANT POINTS FOR COVERING SUICIDE

- More than 50 research studies worldwide have found that certain types of news coverage can increase the likelihood of suicide in vulnerable individuals. The magnitude of the increase is related to the amount, duration and prominence of coverage.
- Risk of additional suicides increases when the story explicitly describes the suicide method, uses dramatic/graphic headlines or images, and repeated/extensive coverage sensationalizes or glamorizes a death.
- Covering suicide carefully, even briefly, can change public misperceptions and correct myths, which can encourage those who are vulnerable or at risk to seek help.

Suicide is a public health issue. Media and online coverage of suicide should be informed by using best practices. Some suicide deaths may be newsworthy. However, the way media cover suicide can influence behavior negatively by contributing to contagion or positively by encouraging help-seeking.

Suicide Contagion or "Copycat Suicide" occurs when one or more suicides are reported in a way that contributes to another suicide.

References and additional information can be found at: www.ReportingOnSuicide.org.

INSTEAD OF THIS: ❌	DO THIS: ✅
• Big or sensationalistic headlines, or prominent placement (e.g., "Kurt Cobain Used Shotgun to Commit Suicide").	• Inform the audience without sensationalizing the suicide and minimize prominence (e.g., "Kurt Cobain Dead at 27").
• Including photos/videos of the location or method of death, grieving family, friends, memorials or funerals.	• Use school/work or family photo; include hotline logo or local crisis phone numbers.
• Describing recent suicides as an "epidemic," "skyrocketing," or other strong terms.	• Carefully investigate the most recent CDC data and use non-sensational words like "rise" or "higher."
• Describing a suicide as inexplicable or "without warning."	• Most, but not all, people who die by suicide exhibit warning signs. Include the "Warning Signs" and "What to Do" sidebar (from p. 2) in your article if possible.
• "John Doe left a suicide note saying..."	• "A note from the deceased was found and is being reviewed by the medical examiner."
• Investigating and reporting on suicide similar to reporting on crimes.	• Report on suicide as a public health issue.
• Quoting/interviewing police or first responders about the causes of suicide.	• Seek advice from suicide prevention experts.
• Referring to suicide as "successful," "unsuccessful" or a "failed attempt."	• Describe as "died by suicide" or "completed" or "killed him/herself."

<http://reportingonsuicide.org/>

Comprehensive Resource for Suicide Prevention in the Schools

Erbacher, T. A., Singer, J. B., & Poland, S. (2015). *Suicide in schools: A practitioner's guide to multi-level prevention, assessment, intervention, and postvention*. New York: Routledge.

Terri A. Erbacher, Jonathan B. Singer,
and Scott Poland



SUICIDE IN SCHOOLS

A Practitioner's Guide to Multi-level Prevention,
Assessment, Intervention, and Postvention

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Questions?

The Center for Suicide Prevention and Research

<http://www.nationwidechildrens.org/suicide-prevention>

Phone: 614-355-0850

Email: suicideprevention@nationwidechildrens.org



Citation: Romer D (2020) Reanalysis of the Bridge et al. study of suicide following release of *13 Reasons Why*. PLoS ONE 15(1): e0227545.
<https://doi.org/10.1371/journal.pone.0227545>

“In addition, the increase that Bridge et al. observed in April was replicated, $B = .173$, 95% CI = .011, .335.”

