

# The CBHSQ Report

Short Report

September 27, 2017

## SUICIDALITY AND DEATH BY SUICIDE AMONG MIDDLE-AGED ADULTS IN THE UNITED STATES

### AUTHORS

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### INTRODUCTION

Suicide is a national public health concern. According to the U.S. Department of Health and Human Services (HHS) National Center for Health Statistics (NCHS), suicide was the 10th leading cause of death in the United States in 2013.<sup>1</sup> Recent research indicates that suicide is at a 30-year high.<sup>2</sup> In addition, other reports conclude that the suicide rate is rising sharply for males aged 45 to 64 (from 20.8 to 29.7 deaths per 100,000 between 1999 and 2014) and females aged 45 to 64 had the second-largest percentage increase in suicide deaths (from 6.0 to 9.8 deaths per 100,000 between 1999 and 2014) among all age groups by gender.<sup>3,4</sup>

To present a complete picture of suicidal behavior and outcomes, this issue of *The CBHSQ Report* uses data from two federal sources: the National Survey on Drug Use and Health (NSDUH) from the Substance Abuse and Mental Health Services Administration (SAMHSA) and the National Vital Statistics System (NVSS) Mortality data file from NCHS. This report focuses on adults aged 45 to 64 because of the increase in the suicide death rate for this age group.

The Center for Behavioral Health Statistics and Quality (CBHSQ) within SAMHSA collects, analyzes, and disseminates NSDUH data on mental health and substance use. NSDUH is a nationally representative household survey of the U.S. civilian, noninstitutionalized population aged 12 or older. In 2009 to 2014, the number of completed interviews was 410,000, with 280,100 of those completed interviews from people aged 18 or older. NSDUH respondents aged 18 or older were asked if at any time during the past 12 months they had thought seriously about trying to kill themselves. Those who had serious thoughts of suicide were then asked whether they made a plan to kill themselves or tried to kill themselves in the past 12 months.

NCHS maintains the NVSS Mortality data file, which includes state-level information about the demographics of all deaths in the nation and the causes of the deaths based on death certificates filed in the 50 states and the District of Columbia. The Mortality data file contains information related to "intentional self-harm (suicide)," which is defined as International Classification of Diseases, Tenth Revision (ICD-10) codes \*U03, X60-X84 and Y87.0 as the underlying cause of death.<sup>5</sup>



### In Brief

- The 2009 to 2014 National Survey on Drug Use and Health (NSDUH) data indicate that middle-aged adults (45- to 64-year olds) had significantly lower percentages of suicidal thoughts and attempts (3.5 and 0.3 percent, respectively) compared with 18 to 25 year olds, which had the highest rate of suicidal thoughts and attempts (6.9 and 1.2 percent, respectively).
- According to NSDUH data, the annual average percentage of middle-aged adults who had serious thoughts of suicide ranged from 3.3 percent in 2011 to 2012 to 3.5 percent in 2009 to 2010 and 3.6 percent in 2013 to 2014. The annual average percentage of middle-aged adults who attempted suicide were 0.3 percent in 2009 to 2010, 0.4 percent in 2011 to 2012 and 0.3 percent in 2013 to 2014.
- Data from the National Vital Statistics System show that 45- to 64- year olds had the highest increase in the death rate for suicide (13.2 to 19.5 deaths per 100,000) between 1999 and 2014 among all age groups.

This report examines NSDUH and NVSS mortality data using the same time frame (2009 to 2014) as a recent NCHS publication (NCHS's *Data Brief No. 241*).<sup>4</sup> To improve statistical power for trend analysis, 2-year annual averages were used for both data files. The NVSS data were analyzed using the online Web-based Injury Statistics Query and Reporting System (WISQARS).

All NSDUH estimates (e.g., percentages, numbers) presented in this report are subject to sampling errors. NSDUH estimates that do not meet criteria for reliability have been suppressed and are not shown.<sup>6</sup> NVSS data do not have associated sampling errors because the data come from a census and are not from a random sample.

Trend analyses in this report focus on percentages because the percentages take into account any changes in the size of the total population and facilitate the comparison of estimates across years.<sup>7</sup> Statistical tests also have been conducted for comparisons that appear in the text of this report. Statistically significant differences are described using terms such as "higher," "lower," "increased," or "decreased." Statements use terms such as "similar," "remained steady," or "stable" when a difference is not statistically significant. Statistical tests, though, were not performed comparing NSDUH estimates with NVSS rates. Also, suicide death rates for 1999 versus 2014 were not tested; the Centers for Disease Control and Prevention tested only time differences for separate genders. Supporting NSDUH (including standard errors) and NVSS tables are included at the end of this report (Tables S1-S12).<sup>8</sup>

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## SUICIDAL THOUGHTS

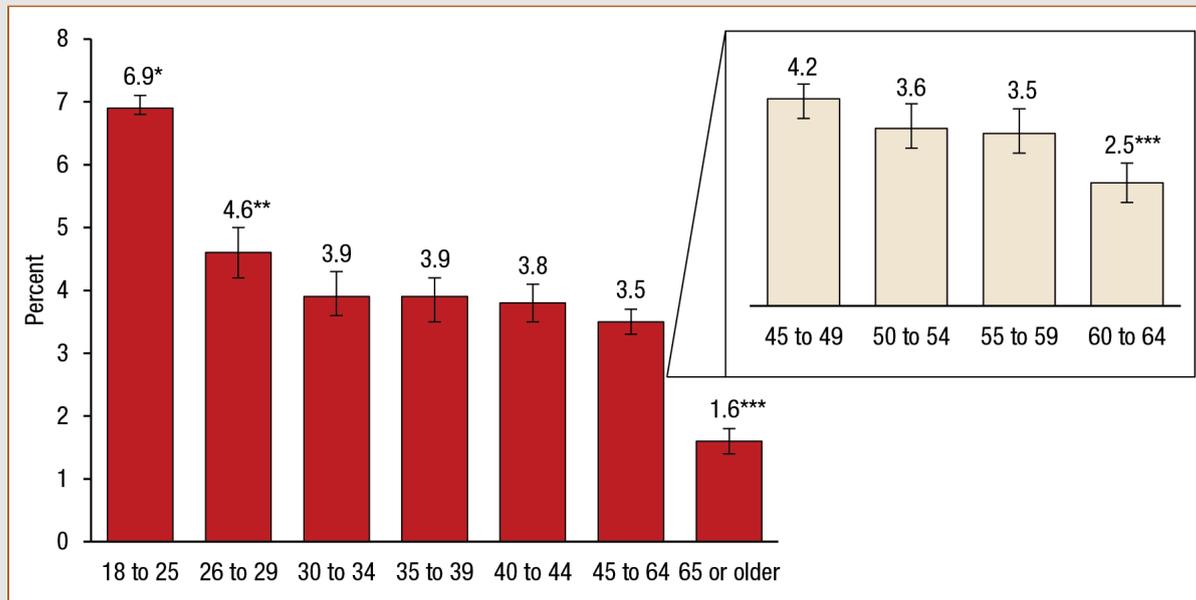
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### ***Age Group Comparisons***

The combined 2009 to 2014 NSDUH data indicate that young adults aged 18 to 25 are at highest risk for suicidal thoughts. As Figure 1 shows, those aged 18 to 25 had a higher percentage of suicidal thoughts (6.9 percent) than other age groups (ranging from 4.6 to 1.6 percent). Overall, 3.5 percent of middle-aged adults had suicidal thoughts in the past year, ranging from 2.5 percent among those aged 60 to 64 to 4.2 percent among those aged 45 to 49. This pattern persisted for males and females.

When the analyses were conducted by gender, young adults aged 18 to 25 had the highest percentages of suicidal thoughts compared with other age groups by gender (Figures 2 and 3).

**Figure 1. Suicidal thoughts in the past year among adults aged 18 or older, by age group: annual averages, combined 2009 to 2014**



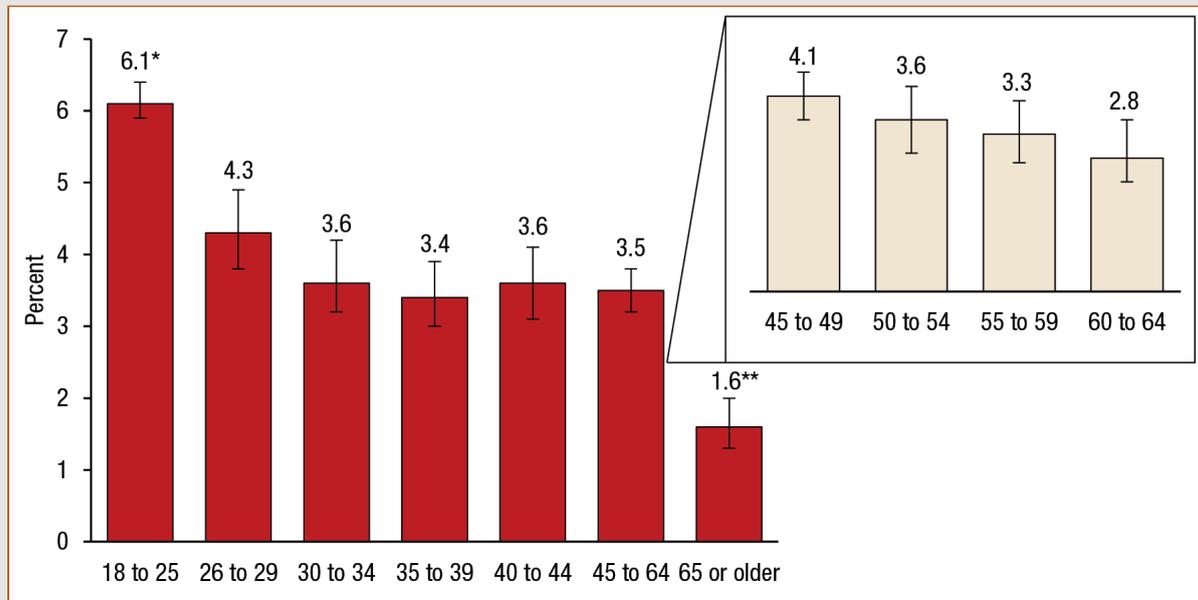
\* Estimate for young adults aged 18 to 25 is significantly higher than estimates for all other age groups at the .05 level.

\*\* Estimate for adults aged 26 to 29 is significantly higher than estimates for all other age groups at the .05 level, except young adults aged 18 to 25 and adults aged 45 to 49.

\*\*\* Estimates for adults aged 60 to 64 and adults aged 65 or older are significantly lower than estimates for all other age groups at the .05 level.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Figure 2. Suicidal thoughts in the past year among males aged 18 or older, by age group: annual averages, combined 2009 to 2014**

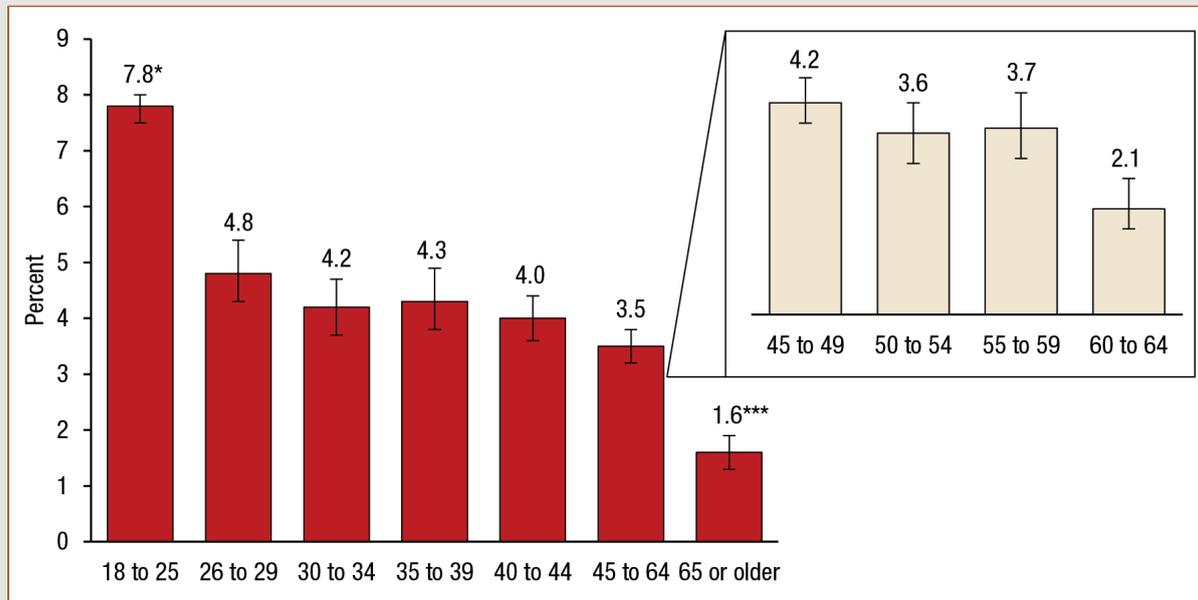


\* Estimates for males aged 18 to 25 are significantly higher than estimates for all other age groups at the .05 level.

\*\* Estimate for males aged 65 or older is significantly lower than estimates for all other age groups at the .05 level.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Figure 3. Suicidal thoughts in the past year among females aged 18 or older, by age group: annual averages, combined 2009 to 2014**



\* Estimates for females aged 18 to 25 are significantly higher than estimates for all other age groups at the .05 level.

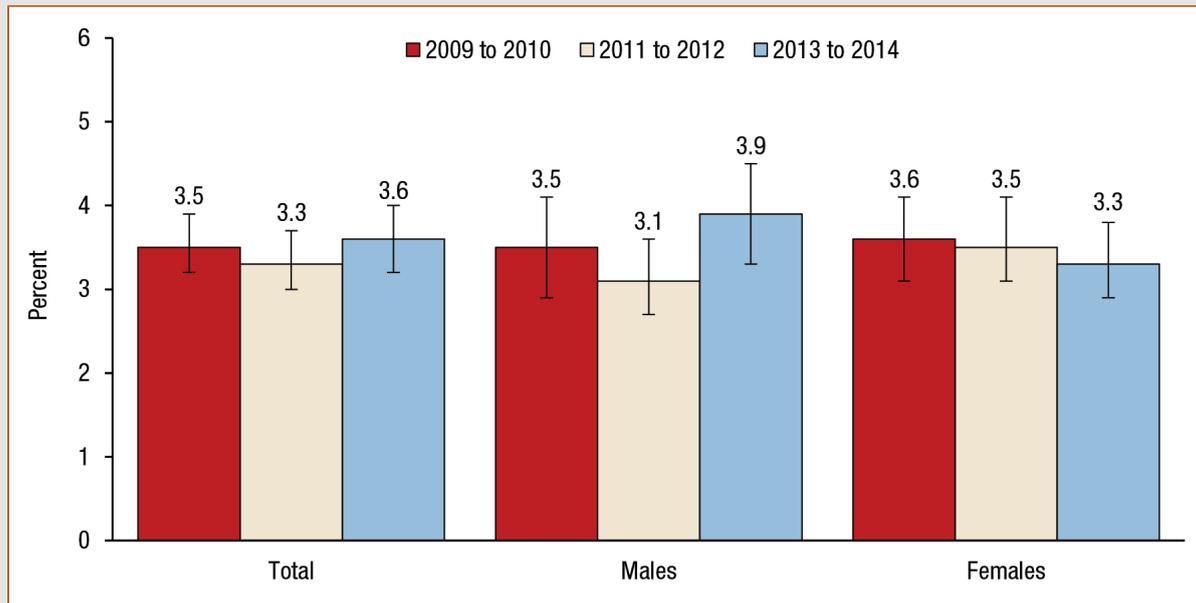
\*\*\* Estimate for females aged 65 or older is significantly lower than estimates for all other age groups at the .05 level, except females aged 60 to 64.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

## Trends

When examined over time, there does not appear to be an increase in suicidal thoughts among adults aged 45 to 64; the trend ranged from 3.3 to 3.6 percent (Figure 4). The percentage of males aged 45 to 64 who had suicidal thoughts remained stable at 3.5 percent in 2009 to 2010, 3.1 percent in 2011 to 2012 and 3.9 percent in 2013 to 2014. Females aged 45 to 64 also had a stable percentage of suicidal thoughts at 3.6 percent in 2009 to 2010, 3.5 percent in 2011 to 2012 and 3.3 percent in 2013 to 2014.

**Figure 4. Trends in suicidal thoughts in the past year among adults aged 45 to 64, by gender: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**



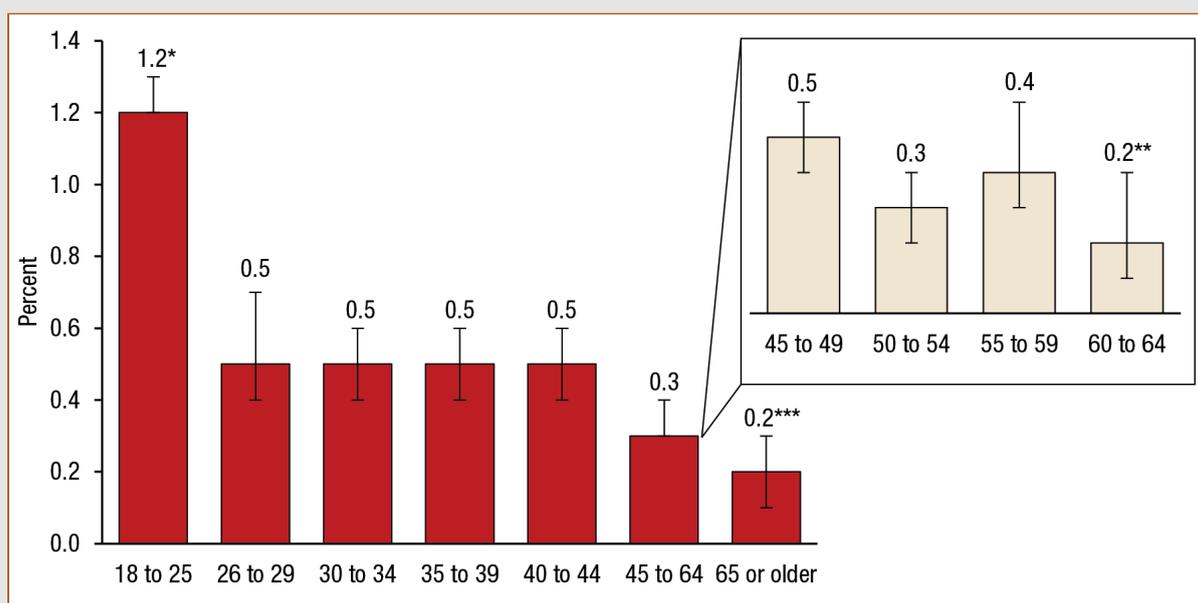
Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

## SUICIDE ATTEMPT

### Age Group Comparisons

The annual average percentage of nonfatal suicide attempts for young adults from 2009 to 2014 was 1.2 percent and was higher than percentages of other age groups (which ranged from 0.2 to 0.5 percent; Figure 5). Therefore, young adults aged 18 to 25 are likely at most risk for suicide attempt, although people aged 45 to 64 are more likely to die from a suicide attempt.<sup>4</sup> There was no gender difference in percentages of attempts for middle-aged adults.

**Figure 5. Suicide attempt in the past year, by age group: annual averages, 2009 to 2014**



\* Estimate for young adults aged 18 to 25 is significantly higher than estimates for all other age groups at the .05 level.

\*\* Estimate for adults aged 60 to 64 is significantly lower than estimates for all other age groups at the .05 level, except adults aged 50 to 54, 55 to 59, and 65 or older.

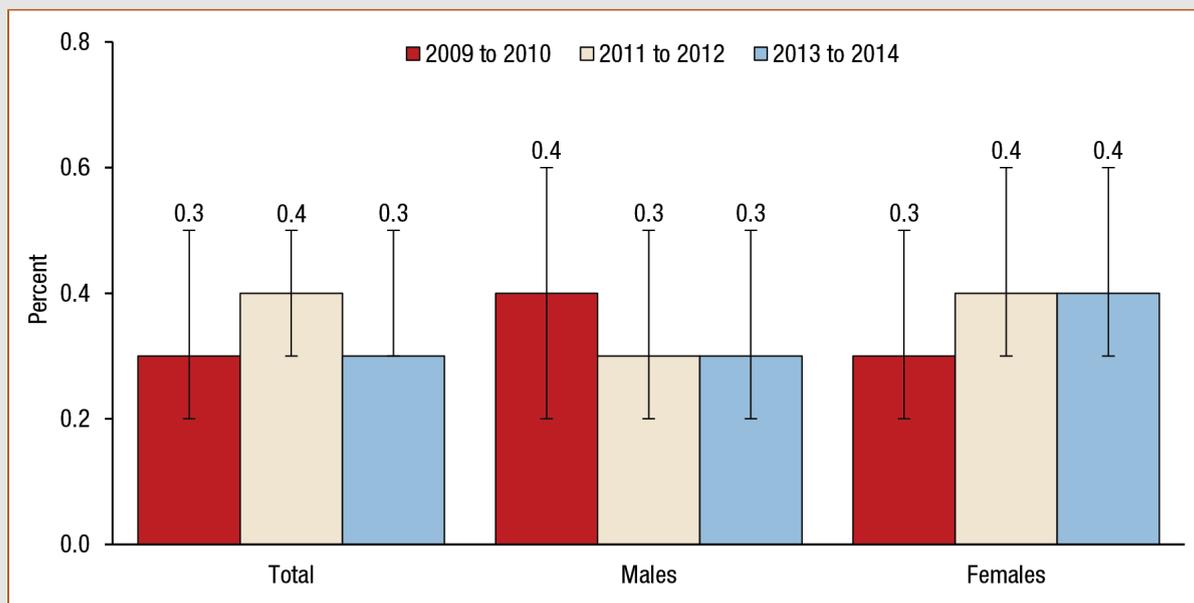
\*\*\* Estimate for adults aged 65 or older is significantly lower than estimates for all other age groups at the .05 level, except adults aged 50 to 54 and 60 to 64.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

## Trends

For the 45 to 64 age groups, there was no significant increase in suicide attempt over time across the 2-year groupings: 0.3 percent for 2009 to 2010, 0.4 percent for 2011 to 2012, and 0.3 percent for 2013 to 2014 (Figure 6). Additionally, the data on suicide attempt by males and females aged 45 to 64 showed no significant differences over time in the past 6 years. For males aged 45 to 64, the percentage attempting suicide in the past year remained stable at 0.4 percent in 2009 to 2010, 0.3 percent in 2011 to 2012 and 0.3 percent in 2013 to 2014. The percentage of females aged 45 to 64 attempting suicide in the past year was also stable at 0.3 percent annual average in 2009 to 2010 and 0.4 percent annual average in both 2011 to 2012 and 2013 to 2014.

**Figure 6. Trends in suicide attempt in the past year among adults aged 45 to 64, by gender: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**



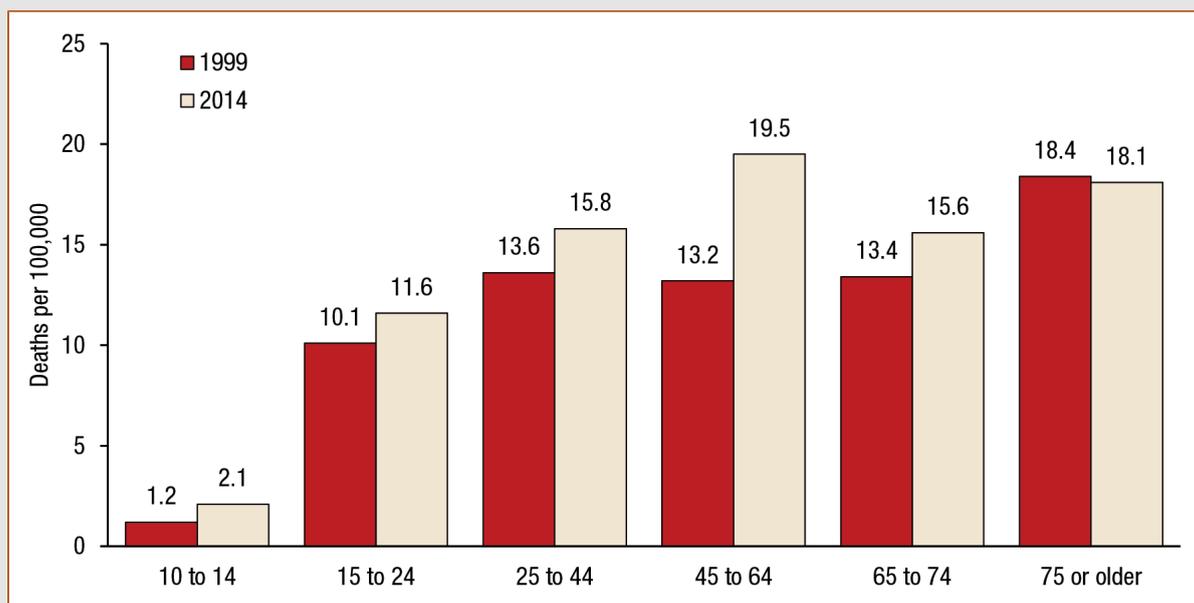
Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

## DEATHS BY SUICIDE

### Age Group Comparisons for 1999 and 2014

According to NVSS data, the suicide rate for 1999 ranged from 1.2 deaths per 100,000 for 10- to 14-year-olds to 18.4 per 100,000 for adults aged 75 or older (Figure 7). For 2014, the suicide rate ranged from 2.1 deaths per 100,000 for 10- to 14-year-olds to 19.5 per 100,000 for adults aged 45 to 64. The largest increase between 1999 and 2014 suicide rates was 6.3 percentage points (or a 48 percent increase) for 45- to 64-year-olds; other groups had only 0.3 to 2.2 percentage point differences over time.<sup>9</sup>

**Figure 7. Trends in suicide rate, by age group: United States, 1999 and 2014**

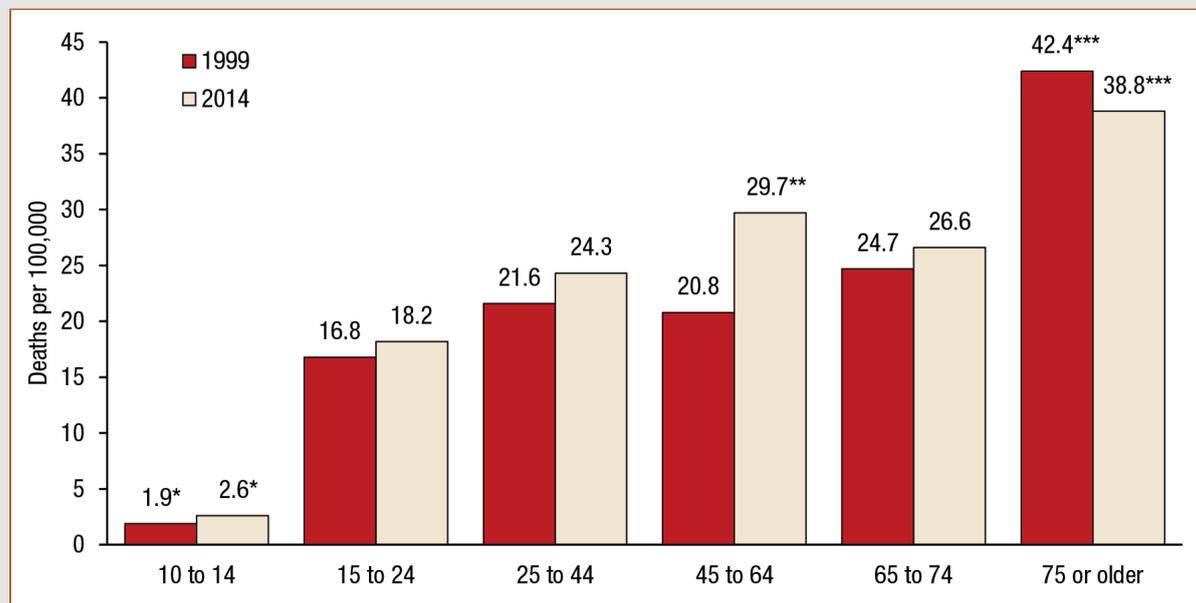


Note: ICD-10 codes: X60–X84, Y87.0, and \*U03. Crude rate is deaths per 100,000. Rates are not age adjusted. The Centers for Disease Control and Prevention (CDC) did not test for statistical differences.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 1999 and 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

Males in the 45 to 64 and 75 or older age groups had significantly higher suicide death rates than males in the other age groups (but the age group of males 45 to 64 and 75 or older were not significantly different from each other; Figure 8). However, NCHS noted that the "largest percent increase (43 percent) in rates" between 1999 and 2014 was from the 45- to 64-year-old male age group.<sup>4</sup> For females in 2014, the fatal suicide rate was higher for those aged 45 to 64 than for other age groups (Figure 9).

**Figure 8. Trends in suicide rates among males, by age group: United States, 1999 and 2014**



\* Rates for youths aged 10 to 14 are significantly lower than rates for all other age groups at the .05 level.

\*\* Rates for adults aged 45 to 64 is significantly higher than rates for all other age groups at the .05 level, except adults aged 75 or older.

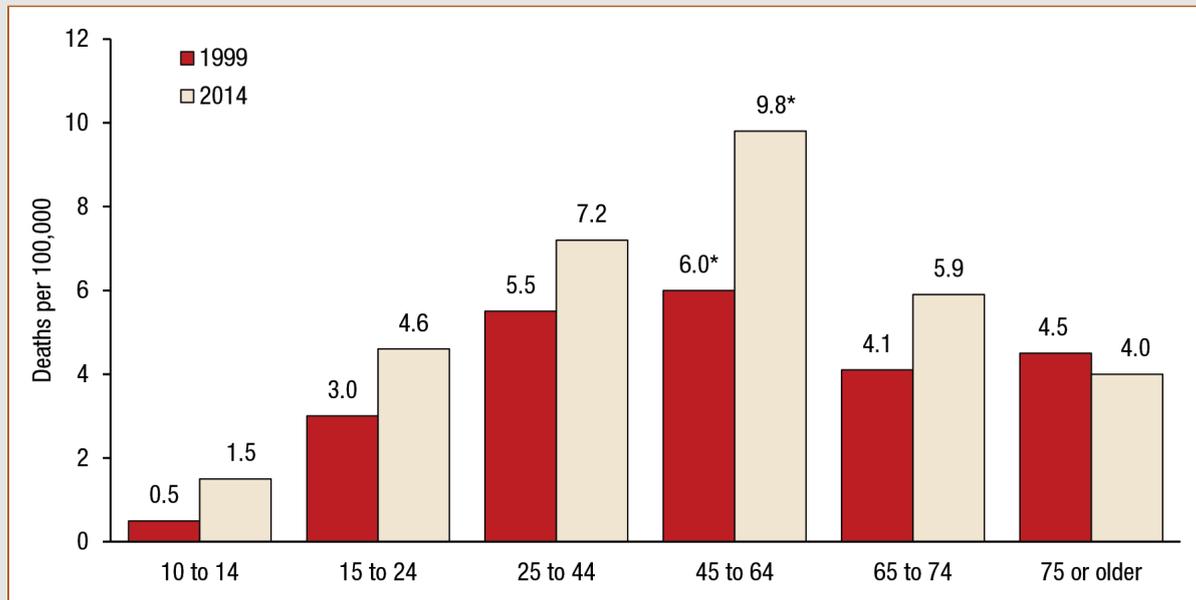
\*\*\* Rates for adults aged 75 or older are significantly higher than rates for all other age groups at the .05 level.

Note: For all age groups, the difference in rates between 1999 and 2014 is significant at the .05 level.

Note: ICD-10 codes: X60-X84, Y87.0, and \*U03. Crude rate is deaths per 100,000.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 1999 and 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

**Figure 9. Trends in suicide rates among females, by age group: United States, 1999 and 2014**



\* Rates for adults aged 45 to 64 are significantly higher than rates for all other age groups at the .05 level.

Note: For all age groups, the difference in rates between 1999 and 2014 is significant at the .05 level.

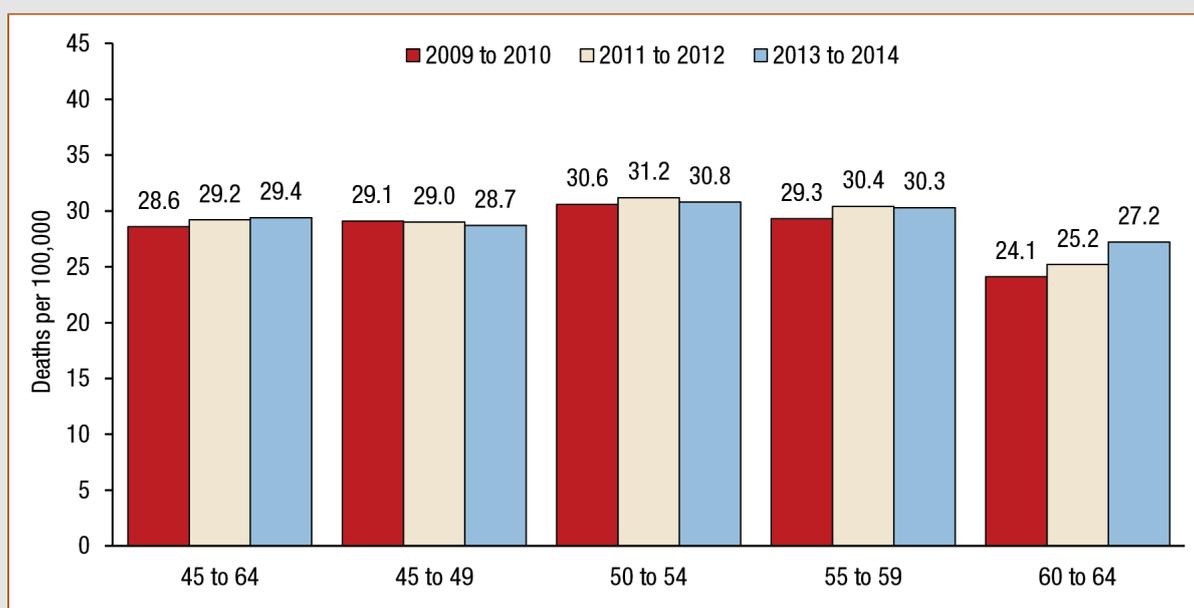
Note: ICD-10 codes: X60-X84, Y87.0, and \*U03. Crude rate is deaths per 100,000.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 1999 and 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

## Two-Year Trends

Analyses were also performed for combined data from 2 years at three times (as done for the NSDUH data previously discussed): 2009 to 2010, 2011 to 2012, and 2013 to 2014. Figures 10 and 11 show the 2-year NVSS data<sup>10</sup> for 2009 to 2014. For males aged 45 to 64, the fatal suicide rates were 28.6 in 2009 to 2010, 29.2 in 2011 to 2012 and 29.4 in 2013 to 2014. Females showed the same trend in fatal suicide rates: 8.5 in 2009 to 2010, 9.0 in 2011 to 2012 and 9.6 in 2013 to 2014.

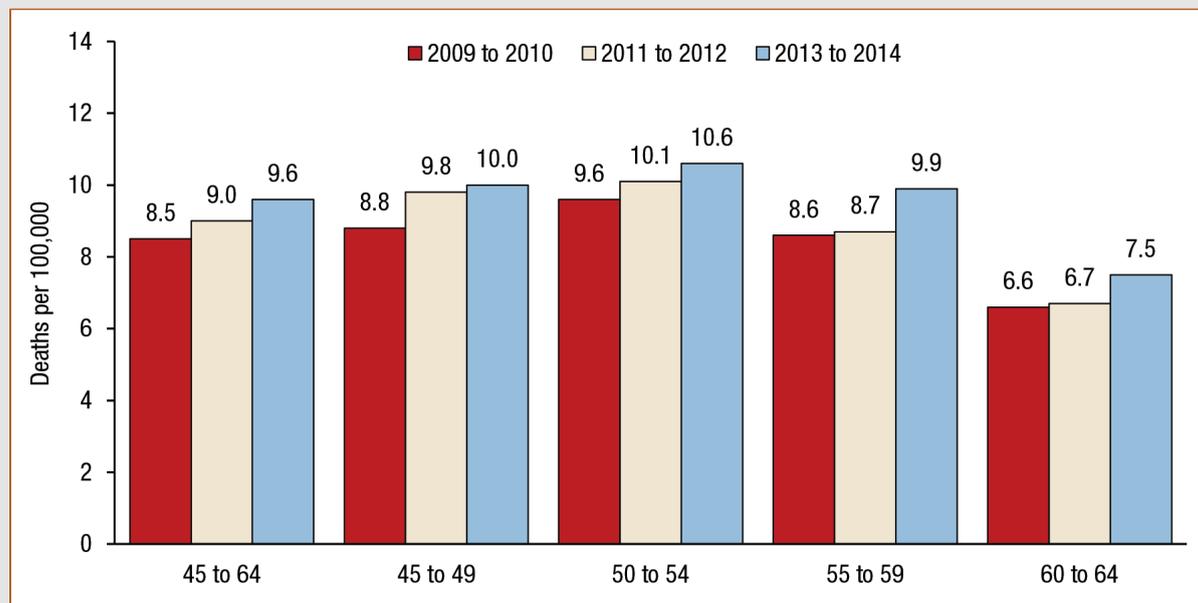
**Figure 10. Trends in suicide deaths among males aged 45 to 64, by age group: 2009 to 2010, 2011 to 2012, and 2013 to 2014**



Note: ICD-10 codes: X60-X84, Y87.0, and \*U03. Crude rate is deaths per 100,000.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 2009 to 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

**Figure 11. Trends in suicide deaths among females aged 45 to 64, by age group: 2009 to 2010, 2011 to 2012, and 2013 to 2014**



Note: ICD-10 codes: X60-X84, Y87.0, and \*U03. Crude rate is deaths per 100,000.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 2009 to 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

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## DISCUSSION

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Young adults aged 18 to 25 are at higher risk for suicidal thoughts and attempts than other age groups. However, adults aged 45 to 64 have higher rates of death from suicides than other age groups. Additionally, the suicide rate (i.e., the death rate from suicide) has significantly increased over the years for those aged 45 to 64, higher than any other age group. This increase is seen for both male and female adults aged 45 to 64. The percentage of adults aged 45 to 64 who had serious thoughts of suicide and attempted suicide remained stable from 2009 to 2014. Additional research is needed to examine why there is this incongruity between risk for suicidal thoughts and attempts and death rates for suicide among middle aged persons.

Research suggests that there are more attempted suicides than there are deaths from suicide.<sup>1,11</sup> Out of every 31 adults who attempted suicide in the past 12 months in the United States, there was 1 death by suicide.<sup>12</sup> In addition, people are likely to have thought about suicide before actually attempting suicide.

Deaths by suicide can be prevented; suicide awareness and interventions are keys to improving this public health issue. SAMHSA's efforts toward suicide prevention can be found at <http://www.samhsa.gov/suicide-prevention/>, and information on the National Suicide Hotline is at <https://www.suicidepreventionlifeline.org/>.

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## ENDNOTES

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1. National Center for Health Statistics, Centers for Disease Control and Prevention. (2016, October). *Suicide and self-inflicted injury* [Web page] Retrieved from <http://www.cdc.gov/nchs/fastats/suicide.htm>
2. Tavernise, S. (2016, April 22). U.S. suicide rate surges to a 30-year high. *The New York Times*. Retrieved from <http://www.nytimes.com>
3. Leonard, K. (2016, April 22). Suicide rate triples among girls. *The New York Times*. Retrieved from <http://www.usnews.com/>
4. Curtin, S. C., Warner, M., & Hedegaard, H. (2016, April). *Increase in suicide in the United States, 1999–2014* (NCHS Data Brief No. 241). Retrieved from <http://www.cdc.gov/nchs/products/databriefs/db241.htm>
5. More information about the NVSS can be found at [http://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65\\_04.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr65/nvsr65_04.pdf).
6. For a discussion of the criteria for suppressing (i.e., not publishing) unreliable estimates, see Section B.2.2 in the following reference: Center for Behavioral Health Statistics and Quality. (2016). *2015 National Survey on Drug Use and Health: Methodological summary and definitions*. Retrieved from <http://samhsa.gov/data/>
7. If the number of people in the population with a characteristic of interest has increased (e.g., the number of adults who had serious thoughts of suicide) simply because the size of the overall population has increased, then the percentages will control for the increases in the number of people with the characteristic of interest and in the total number of people in the population.
8. Items about suicidal thoughts and behavior among adults have missing data. Respondents with missing data on suicidal thoughts and behavior were excluded from the relevant analyses. An investigation for the 2014 NSDUH indicated that less than 1 percent of all adult respondents had missing data for estimates related to suicidal thoughts and behavior.
9. The WISQARS does not allow for significance testing among estimates; therefore, no tests were performed for statements about estimates combining data for males and females.
10. For NVSS data, the number of deaths is the total for the 2-year span, and the crude rate is calculated based on the total number of deaths and the population for the 2-year span.
11. Mościcki, E. K. (2001). Epidemiology of completed and attempted suicide: Toward a framework for prevention. *Clinical Neuroscience Research*, 1, 310–323.
12. This estimate is based on a 3.2 percent rate (95 percent confidence interval = 2.9 to 3.5 percent) as reported in Han, B., Kott, P. S., Hughes, A., McKeon, R., Blanco, C., & Compton, W. M. (2016). Estimating the rates of deaths by suicide among adults who attempt suicide in the United States. *Journal of Psychiatric Research*, 77, 125–133. <https://dx.doi.org/10.1016/j.jpsychires.2016.03.002>

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## SUGGESTED CITATION

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Piscopo, K.D. *Suicidality and Death by Suicide Among Middle-aged Adults in the United States*. The CBHSQ Report: September 27, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.

**Table S1. Suicidal thoughts and suicide attempts in the past year among adults aged 18 or older, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2014**

Age group	Suicidal thoughts <sup>1</sup>			Suicide attempts		
	#	%	SE	#	%	SE
18 or older	8,915	3.8	0.05	1,170	0.5	0.02
18 to 25	2,376	6.9	0.09	426	1.2	0.04
26 to 29	770	4.6*	0.20	90	0.5*	0.07
30 to 34	777	3.9*	0.18	99	0.5*	0.06
35 to 39	753	3.9*	0.18	94	0.5*	0.06
40 to 44	779	3.8*	0.17	100	0.5*	0.06
45 to 64	2,808	3.5*	0.11	280	0.3*	0.03
45 to 49	884	4.2*	0.18	99	0.5*	0.06
50 to 54	819	3.6*	0.23	68	0.3*	0.06
55 to 59	688	3.5*	0.23	76	0.4*	0.08
60 to 64	417	2.5*	0.21	36	0.2*	0.06
65 or older	652	1.6*	0.11	81	0.2*	0.04

\* Pairwise tests were performed, and significant differences were found between estimates for this group and for young adults aged 18 to 25 at  $p < .05$ .

<sup>1</sup> Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year.

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014. Note: Respondents with unknown suicide information were excluded.

**Table S2. Suicidal thoughts and suicide attempts in the past year among males aged 18 or older, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2014**

Age group	Suicidal thoughts <sup>1</sup>			Suicide attempts		
	#	%	SE	#	%	SE
18 or older	4,110	3.7	0.08	487	0.4	0.02
18 to 25	1,053	6.1	0.13	180	1.0	0.06
26 to 29	367	4.3*	0.29	33	0.4*	0.08
30 to 34	353	3.6*	0.24	34	0.3*	0.06
35 to 39	330	3.4*	0.23	39	0.4*	0.08
40 to 44	357	3.6*	0.25	42	0.4*	0.09
45 to 64	1,363	3.5*	0.16	125	0.3*	0.05
45 to 49	426	4.1*	0.26	42	0.4*	0.08
50 to 54	393	3.6*	0.36	30	0.3*	0.09
55 to 59	310	3.3*	0.32	28	0.3*	0.09
60 to 64	234	2.8*	0.33	25	0.3*	0.11
65 or older	287	1.6*	0.17	33	0.2*	0.05

\* Pairwise tests were performed, and significant differences were found between estimates for this group and for young adults aged 18 to 25 at  $p < .05$ .

<sup>1</sup> Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year.

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S3. Suicidal thoughts and suicide attempts in the past year among females aged 18 or older, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2014**

Age group	Suicidal thoughts <sup>1</sup>			Suicide attempts		
	#	%	SE	#	%	SE
18 or older	4,805	4.0	0.08	683	0.6	0.03
18 to 25	1,323	7.8	0.13	246	1.4	0.06
26 to 29	403	4.8*	0.28	57	0.7*	0.10
30 to 34	423	4.2*	0.25	65	0.6*	0.11
35 to 39	423	4.3*	0.27	55	0.6*	0.10
40 to 44	421	4.0*	0.22	58	0.5*	0.08
45 to 64	1,445	3.5*	0.14	154	0.4*	0.05
45 to 49	457	4.2*	0.23	57	0.5*	0.09
50 to 54	426	3.6*	0.30	38	0.3*	0.08
55 to 59	378	3.7*	0.33	49	0.5*	0.13
60 to 64	183	2.1*	0.25	11	0.1*	0.06
65 or older	366	1.6*	0.14	48	0.2*	0.06

\* Pairwise tests were performed, and significant differences were found between estimates for this group and for young adults aged 18 to 25 at  $p < .05$ .

<sup>1</sup> Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year.

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S4. Trends in suicidal thoughts in the past year among adults aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	1,032	4.6***	0.33	875	4.1	0.31	745	3.7	0.27
50 to 54	695	3.1	0.36	766	3.3	0.36	996	4.3	0.49
55 to 59	696	3.7	0.43	592	3.0	0.39	777	3.8	0.38
60 to 64	358	2.2	0.36	475	2.7	0.37	419	2.4	0.33
<b>Total: 45 to 64</b>	<b>2,779</b>	<b>3.5</b>	<b>0.19</b>	<b>2,708</b>	<b>3.3</b>	<b>0.18</b>	<b>2,936</b>	<b>3.6</b>	<b>0.19</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year. Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S5. Trends in suicidal thoughts in the past year among males aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	501	4.6	0.49	400	3.8	0.45	378	3.8	0.41
50 to 54	289	2.7	0.51	367	3.3	0.50	523	4.7	0.84
55 to 59	330	3.6	0.67	220	2.3*	0.44	380	3.9*	0.56
60 to 64	206	2.7	0.59	239	2.9	0.57	256	2.9	0.55
<b>Total: 45 to 64</b>	<b>1,326</b>	<b>3.5</b>	<b>0.29</b>	<b>1,226</b>	<b>3.1</b>	<b>0.24</b>	<b>1,536</b>	<b>3.9</b>	<b>0.31</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year. Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S6. Trends in suicidal thoughts in the past year among females aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	531	4.6	0.42	474	4.4	0.43	367	3.6	0.33
50 to 54	405	3.6	0.51	400	3.3	0.51	473	3.9	0.55
55 to 59	366	3.7	0.58	373	3.7	0.62	397	3.7	0.50
60 to 64	152	1.8	0.41	235	2.6	0.50	163	1.8	0.38
<b>Total: 45 to 64</b>	<b>1,453</b>	<b>3.6</b>	<b>0.25</b>	<b>1,482</b>	<b>3.5</b>	<b>0.26</b>	<b>1,400</b>	<b>3.3</b>	<b>0.23</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents were asked, "At any time in the past 12 months, did you seriously think about trying to kill yourself?" If they answered "Yes," they were categorized as having serious thoughts of suicide in the past year. Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S7. Trends in suicide attempts in the past year among adults aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	117	0.5	0.10	80	0.4	0.11	101	0.5	0.10
50 to 54	56	0.3	0.09	96	0.4	0.13	53	0.2	0.07
55 to 59	55	0.3	0.11	82	0.4	0.16	91	0.4	0.13
60 to 64	41	0.3	0.15	29	0.2	0.07	38	0.2	0.10
<b>Total: 45 to 64</b>	<b>269</b>	<b>0.3</b>	<b>0.06</b>	<b>287</b>	<b>0.4</b>	<b>0.06</b>	<b>283</b>	<b>0.3</b>	<b>0.05</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S8. Trends in suicide attempts in the past year among males aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	61	0.6*	0.16	21	0.2*	0.09	45	0.4	0.14
50 to 54	27	0.2	0.13	60	0.5**	0.23	5	<0.1**	0.03
55 to 59	29	0.3	0.18	23	0.2	0.14	31	0.3	0.15
60 to 64	22	0.3	0.25	18	0.2	0.12	36	0.4	0.20
<b>Total: 45 to 64</b>	<b>139</b>	<b>0.4</b>	<b>0.09</b>	<b>121</b>	<b>0.3</b>	<b>0.08</b>	<b>116</b>	<b>0.3</b>	<b>0.07</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S9. Trends in suicide attempts in the past year among females aged 45 to 64, by age group: numbers in thousands, percentages, and standard errors (SEs) of percentages: annual averages, 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	#	%	SE	#	%	SE	#	%	SE
45 to 49	55	0.5	0.13	59	0.5	0.20	56	0.6	0.14
50 to 54	29	0.3	0.12	36	0.3	0.14	48	0.4	0.14
55 to 59	26	0.3	0.15	60	0.6	0.29	60	0.6	0.22
60 to 64	20	0.2	0.17	11	0.1	0.07	2	<0.1	0.02
<b>Total: 45 to 64</b>	<b>130</b>	<b>0.3</b>	<b>0.07</b>	<b>166</b>	<b>0.4</b>	<b>0.09</b>	<b>167</b>	<b>0.4</b>	<b>0.08</b>

\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2011 to 2012 at  $p < .05$ .

\*\* Pairwise tests were performed, and significant differences were found between estimates for 2011 to 2012 and for 2013 to 2014 at  $p < .05$ .

\*\*\* Pairwise tests were performed, and significant differences were found between estimates for 2009 to 2010 and for 2013 to 2014 at  $p < .05$ .

Note: Respondents with unknown suicide information were excluded.

Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Surveys on Drug Use and Health (NSDUHs), 2009 to 2014.

**Table S10. Trends in suicide deaths and rates, by age group: number, population, and crude rate: 1999 and 2014**

Year	Age group	Number of deaths	Population	Suicide rate
1999	10 to 14	242	20,213,365	1.2
2014	10 to 14	425	20,671,506	2.1
1999	15 to 24	3,901	38,676,031	10.1
2014	15 to 24	5,079	43,979,821	11.6
1999	25 to 44	11,572	85,255,084	13.6
2014	25 to 44	13,275	84,029,637	15.8
1999	45 to 64	7,977	60,355,849	13.2
2014	45 to 64	16,294	83,536,432	19.5
1999	65 to 74	2,471	18,418,910	13.4*
2014	65 to 74	4,110	26,398,290	15.6*
1999	75 or older	3,018	16,378,937	18.4
2014	75 or older	3,583	19,844,921	18.1

\* Estimate is significantly higher than estimates for all other age groups ( $p < .05$ ).

Note: ICD-10 codes: X60–X84, Y87.0, and \*U03. Crude rate is deaths per 100,000. Rates are not age adjusted.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 1999 and 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

**Table S11. Trends in suicide deaths among males aged 45 to 64, by age group: number, population, and crude rate: 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	Number of deaths	Population	Crude rate <sup>1</sup>	Number of deaths	Population	Crude rate <sup>1</sup>	Number of deaths	Population	Crude rate <sup>1</sup>
45 to 49	6,551	22,494,756	29.12	6,291	21,698,440	28.99	5,993	20,866,709	28.72
50 to 54	6,651	21,716,837	30.63	6,924	22,162,798	31.24	6,820	22,162,480	30.77
55 to 59	5,520	18,858,034	29.27	6,041	19,895,833	30.36	6,282	20,731,561	30.30
60 to 64	3,806	15,819,173	24.06	4,309	17,086,574	25.22	4,770	17,554,660	27.17
<b>Total: 45 to 64</b>	<b>22,528</b>	<b>78,888,800</b>	<b>28.56 (28.70)</b>	<b>23,565</b>	<b>80,843,645</b>	<b>29.15 (29.27)</b>	<b>23,865</b>	<b>81,315,410</b>	<b>29.35 (29.37)</b>

<sup>1</sup> Numbers in parentheses are age-adjusted rates for comparison.

Note: ICD-10 codes: X60–X84, Y87.0, and \*U03. Crude rate is deaths per 100,000. Population estimates are aggregated for multi-year reports to produce rates.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 2009 to 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

**Table S12. Trends in suicide deaths among females aged 45 to 64, by age group: number, population, and crude rate: 2009 to 2010, 2011 to 2012, and 2013 to 2014**

Age group	2009 to 2010			2011 to 2012			2013 to 2014		
	Number of deaths	Population	Crude rate <sup>1</sup>	Number of deaths	Population	Crude rate <sup>1</sup>	Number of deaths	Population	Crude rate <sup>1</sup>
45 to 49	2,033	23,076,080	8.81	2,171	22,199,974	9.78	2,130	21,275,879	10.01
50 to 54	2,162	22,586,131	9.57	2,334	23,018,041	10.14	2,445	22,999,625	10.63
55 to 59	1,731	20,087,374	8.62	1,852	21,162,241	8.75	2,179	21,989,123	9.91
60 to 64	1,135	17,123,748	6.63	1,248	18,560,730	6.72	1,431	19,145,281	7.47
<b>Total: 45 to 64</b>	<b>7,061</b>	<b>82,873,333</b>	<b>8.52 (8.60)</b>	<b>7,605</b>	<b>84,940,986</b>	<b>8.95 (9.12)</b>	<b>8,185</b>	<b>85,409,908</b>	<b>9.58 (9.72)</b>

<sup>1</sup> Numbers in parentheses are age-adjusted rates for comparison.

Note: ICD-10 codes: X60–X84, Y87.0, and \*U03. Crude rate is deaths per 100,000. Population estimates are aggregated for multi-year reports to produce rates.

Source: National Center for Health Statistics National Vital Statistics System for numbers of deaths. U.S. Census Bureau for population estimates. Produced by CDC, National Center for Injury Prevention and Control, 2009 to 2014. Retrieved from [http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_us.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html)

## SUMMARY

**Background:** Suicide is a public health problem. **Method:** Two federal data sources collect suicide information: the National Survey on Drug Use and Health (NSDUH) and the National Vital Statistics System (NVSS). This issue of *The CBHSQ Report* uses 2009 to 2014 NSDUH and NVSS data to examine the trends in suicidal thoughts, attempts, and deaths for males and females aged 45 to 64. **Results:** Middle-aged adults have a significantly lower percentage of suicidal thoughts and attempts compared to the 18 to 25 year olds, which is the age group with the highest percentages of suicidal thoughts and attempts. In addition to relatively low rates of suicidal thoughts and attempts, the trend for middle-aged suicidal thoughts and attempts has remained stable between 2009 and 2014 even though the death rates for suicide from the age group increased from 1999 to 2014. **Conclusion:** Knowing the differences in risk among the age groups is important for suicide prevention because young adults aged 18 to 25 have the highest rate of suicide attempts, but those aged 45 to 64 are more likely to have fatal suicide attempts.

**Keywords:** middle-aged adults, National Survey on Drug Use and Health, NSDUH, suicide

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## KEYWORDS

Age Group, Gender, Short Report, Population Data, 2009, 2010, 2011, 2012, 2013, 2014, Media, Policymakers, Prevention Professionals, Professional Care Providers, Public Health Professionals, Public Officials, Researchers, Suicide, Mature Adults as Population Group, Awareness, Prevention, Multi-Year Trend, Non-SAMHSA Data Set, All US States Only, Risk & Protective Factors

The Substance Abuse and Mental Health Services Administration (SAMHSA) is the agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities.

The National Survey on Drug Use and Health (NSDUH) is an annual survey sponsored by SAMHSA. The NSDUH data used in this report are based on information obtained from 280,100 people aged 18 or older in 2009 to 2014. NSDUH collects data by administering questionnaires to a representative sample of the population through face-to-face interviews at their place of residence.

*The CBHSQ Report* is prepared by the Center for Behavioral Health Statistics and Quality (CBHSQ), SAMHSA, and by RTI International in Research Triangle Park, North Carolina. (RTI International is a registered trademark and a trade name of Research Triangle Institute.)

Information on the most recent NSDUH is available in the following publication:

Center for Behavioral Health Statistics and Quality. (2016). *Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health* (HHS Publication No. SMA 16-4984, NSDUH Series H-51). Retrieved from <http://samhsa.gov/data/>

Also available online at <http://www.samhsa.gov/data/population-data-nsduh>.

The National Center for Health Statistics (NCHS) is part of the Centers for Disease Control and Prevention, Department of Health and Human Services. NCHS maintains the National Vital Statistics System (NVSS) Mortality data file, which includes state-level information about the demographics of all deaths in the nation and the cause of the death based on death certificates filed in the 50 states and the District of Columbia. The Mortality data file contains information related to "intentional self-harm (suicide)," which is defined in International Classification of Diseases, Tenth Revision (ICD-10) codes \*U03, X60-X84 and Y87.0 as the underlying cause of death.

More information about the NVSS data files can be found at <https://www.cdc.gov/nchs/nvss/deaths.htm>

Other substance abuse reports:  
<http://www.samhsa.gov/data>



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