



# Oklahoma Youth Tobacco Survey Trends Report

2015 Report

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## Executive Summary

The overwhelming majority of individuals begin using tobacco products by age 18<sup>1-2</sup>. The remaining individuals who smoke usually begin by age 26<sup>1-2</sup>. This being the case, it is imperative that tobacco control efforts focus strategies on preventative measures for youth and young adults. In order to ensure the most appropriate evidence-based interventions are selected, tobacco use among youth must be monitored. In addition to strategy selection, monitoring youth use will also provide measures to evaluate effectiveness, and identify emerging issues. In Oklahoma, this is particularly true because our state has one of the highest rates of youth tobacco use in the entire nation. For example, 14.6% of Oklahoma high school students were currently smoking cigarettes in 2015. This compares to 9.3% nationally in 2015. Among middle school students, 4.1% of Oklahoma students were currently smoking in 2015, compared to 2.3% nationally in 2015.

This report presents data from the Oklahoma Youth Tobacco Survey (1999-2015) and the National Youth Tobacco Survey (2000-2015). A major finding was that the percentage of all students (middle school and high school) who have ever used combustible tobacco has greatly declined over time. Another major finding was that electronic cigarettes (e-cigarettes) were the most commonly used product among middle (6.7%) and high (19.0%) school students in Oklahoma and in the nation (middle 5.3% and high 16.0%). From 2013-2015, statistically significant increases were observed among Oklahoma high school students for both current use of e-cigarettes and smokeless tobacco. While decreases were observed for the current use of traditional tobacco products such as cigarettes, cigars and snus, they were not statistically significant. Among Oklahoma middle school students decreases were observed for every tobacco product except e-cigarettes. Only the decreases in the use of kreteks and bidis were statistically significant. Of note, hookah use significantly increased nationally for middle (2.0%) and high (7.2%) school students, while rates among middle (0.8%) and high (3.8%) school students in Oklahoma remain lower.

This report contains key indicators most often used for planning and evaluation purposes from the Oklahoma Youth Tobacco Survey and National Youth Tobacco Survey for the years 1999 through 2015. Additional survey data is available upon request from the Center for the Advancement of Wellness.

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# Introduction

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## Design and Purpose of the Survey

The Oklahoma Youth Tobacco Survey (OYTS) is a statewide school-based survey of public school students in grades 6-12. The survey was conducted in the spring of 1999, 2002 and every two years since 2005 by the Oklahoma State Department of Health, in cooperation with the Centers for Disease Control and Prevention, the Oklahoma State Department of Education, and numerous partners from local health agencies, community organizations and school districts. This comprehensive survey of tobacco use, knowledge and attitudes among Oklahoma youth provides important data for tracking changes and to guide youth tobacco use prevention programs.

The National Youth Tobacco Survey (NYTS) is a national school-based survey of students in public and private schools in grades 6-12. The survey provides nationally representative data about middle and high school students' tobacco-related beliefs, attitudes, behaviors, and exposure to pro- and anti-tobacco influences. It was conducted in 1999, 2000, 2002, 2004, 2006, 2009, and annually since 2011. The NYTS serves as a national comparison to state youth tobacco survey results.

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## Methodology

The OYTS uses a two-stage sampling procedure to select schools and students to be surveyed. Two samples are drawn – one from grades 6-8 and one from grades 9-12. Schools in each sample are selected with a probability proportional to enrollment. Then, a random sample of classrooms is selected within each selected school; all students in those classes are invited to participate. The data have been weighted to adjust for non-response at the school and student levels to reflect the prevalence of tobacco usage in Oklahoma public schools.

The NYTS uses a three-stage sampling procedure to select schools and students to be surveyed. One sample is drawn of students in grades 6-12. Primary sampling units of large counties or smaller, adjacent counties are selected with probability proportional to weighted school enrollment. Schools are selected from within the sampling units proportional to weighted school enrollment, and classes are randomly selected from within these selected schools. The data have been weighted to adjust for nonresponse and varying probabilities of selection.

Data in this report are statewide and national estimates of prevalence. They are computed based on survey results, probability of respondent selection, and demographics of students in those grades. The minimum overall response rate for weighted data is 60%. Weighted data allows statewide and national estimates to be inferred from the sample to the population of Oklahoma and United States adolescents.

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## School and Student Response Rates

The 2015 OYTS middle school sample consisted of 37 middle schools out of 49 selected (75.5% response rate) with 2,576 completed student questionnaires among 3,011 eligible (85.6% response rate). The overall response rate for middle schools was 75.5%. The 2015 OYTS high school sample consisted of 37 high schools out of 50 selected (74.0% response rate) with 2,148 completed student questionnaires among 2,673 eligible (80.4% response rate). The overall response rate for high schools was 59.5%. Weighted analysis was performed for both the OYTS middle school and high school data. Final weights were applied to account for initial selection probabilities, non-response patterns, and adjustment for sampling frame characteristics (gender, race, and grade). The 2015 NYTS<sup>3</sup> consisted of 185 of the 255 selected schools (72.6%

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response rate) with 17,711 completed questionnaires among 20,259 eligible students (87.4% response rate). The overall response rate for the 2015 NYTS was 63.4%. Each dataset for the previous years of the OYTS and NYTS was analyzed with the appropriate survey weights.

## Definitions

- **Bidis\***: small, hand-rolled cigarettes produced in India and southeastern Asian countries. They may be flavored or unflavored.
- **Current use**: youth who used the product on at least one day during the past 30 days. Current use does not include the use of tobacco for ceremonial use.
- **Dissolvable tobacco**: a relatively new product that can be formed of strips or lozenges, for example, and melts in the mouth. Dissolvable tobacco was first assessed by the NYTS in 2011 and OYTS in 2013.
- **Electronic cigarettes**: battery-powered devices that provide doses of nicotine and other additives to the user in an aerosol. Depending on the brand, e-cigarette cartridges typically contain nicotine, a component to produce the aerosol (e.g., propylene glycol or glycerol), and flavorings (e.g., fruit, mint, or chocolate)<sup>4</sup>. Electronic cigarettes were first assessed in the 2011 NYTS and the 2013 OYTS. Changes in wording and placement of electronic cigarette survey questions occurred between 2011 and 2015 for both the NYTS and the OYTS. See pages 10 and 11 for a description of these changes.
- **High school students**: public school students who were in 9th, 10th, 11th, or 12th grade at the time of the survey.
- **Hookah**: a smoking device consisting of a water chamber with a long flexible tube. Tobacco (or occasionally herbs) is heated with indirect heat through coals. Also known as a waterpipe, narghile, or shisha. Hookah was first assessed in the 2011 NYTS and OYTS.
- **Kreteks\***: clove cigarettes produced in Indonesia. They are a mixture of tobacco, cloves and other additives.
- **Middle school students**: public school students who were in 6th, 7th, or 8th grade at the time of the survey.
- **Pipe tobacco**: loose tobacco smoked in a pipe.
- **Prevalence**: the proportion of youth using a particular tobacco product at a specific point in time.
- **Snus**: a moist powder tobacco product that typically does not need to be spit out as smokeless or spit tobacco does. Snus was first assessed by the NYTS in 2011 and OYTS in 2013.
- **Tobacco**: use of at least one type of tobacco product. Youth may have used more than one type of product in the categories.
  - **Traditional Tobacco Products**: It can include cigarettes, cigars, smokeless or spit tobacco, pipe tobacco, bidis\* or kreteks\*.
  - **Any Tobacco Products**: It can include cigarettes, cigars, smokeless or spit tobacco, pipe tobacco, bidis\*, kreteks\*, snus, dissolvable tobacco, electronic cigarettes and hookahs. For 2014 and 2015 data, kreteks was excluded from this list.

\* The use of bidis and kreteks was not assessed in 1999.

Note: All categories of tobacco use include only non-ceremonial use.

# Results and Trends

## Tobacco Products

Current use of any traditional tobacco product has gradually declined among high school students in most years in which the OYTS was conducted (Figure 1). In 1999, current use of any traditional tobacco product was 42.0%, as compared to 24.5% in 2015. This is a decrease of 42% over that time span. There was a gradual decline in traditional tobacco use in Oklahoma and in the United States from 1999 to 2013, and usage of traditional tobacco products was at the lowest point in 2013 for Oklahoma since OYTS data collection started for high school students. Although a slight increase was observed with the OYTS from 2013 to 2015, this change was not significant.

An examination of middle school students' data shows decreased use of traditional tobacco products over the last 16 years (Figure 2). In 1999, 21.0% of Oklahoma middle school students reported current use of any traditional tobacco product, as compared to 8.1% in 2015. This is a reduction of 61%, which is a tremendous improvement that will result in much better health in the state.

Beginning in 2012, the definition for current use of any tobacco product was expanded from the traditional tobacco definition to also include snus, dissolvable tobacco, electronic cigarettes and hookahs. These trends are displayed in Figures 3 and 4. Presently, 27.9% of Oklahoma high school students report using any tobacco product while 25.3% of high school students report using any tobacco product in the nation. Among middle school students the current use of any tobacco product is 10.3% in Oklahoma compared to 7.4% in the nation.

**Figure 1. Current Traditional Tobacco Use Among Oklahoma and United States High School Students, 1999-2015**

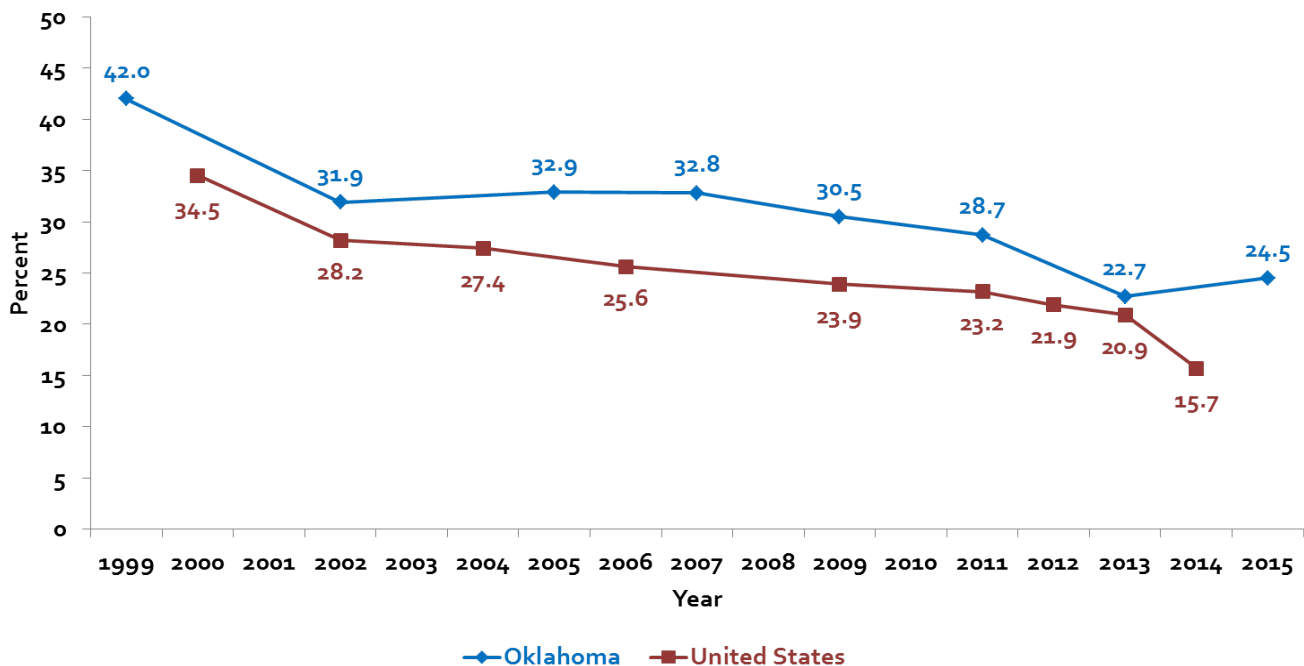


Figure 2. Current Traditional Tobacco Use Among Oklahoma and United States Middle School Students, 1999-2015

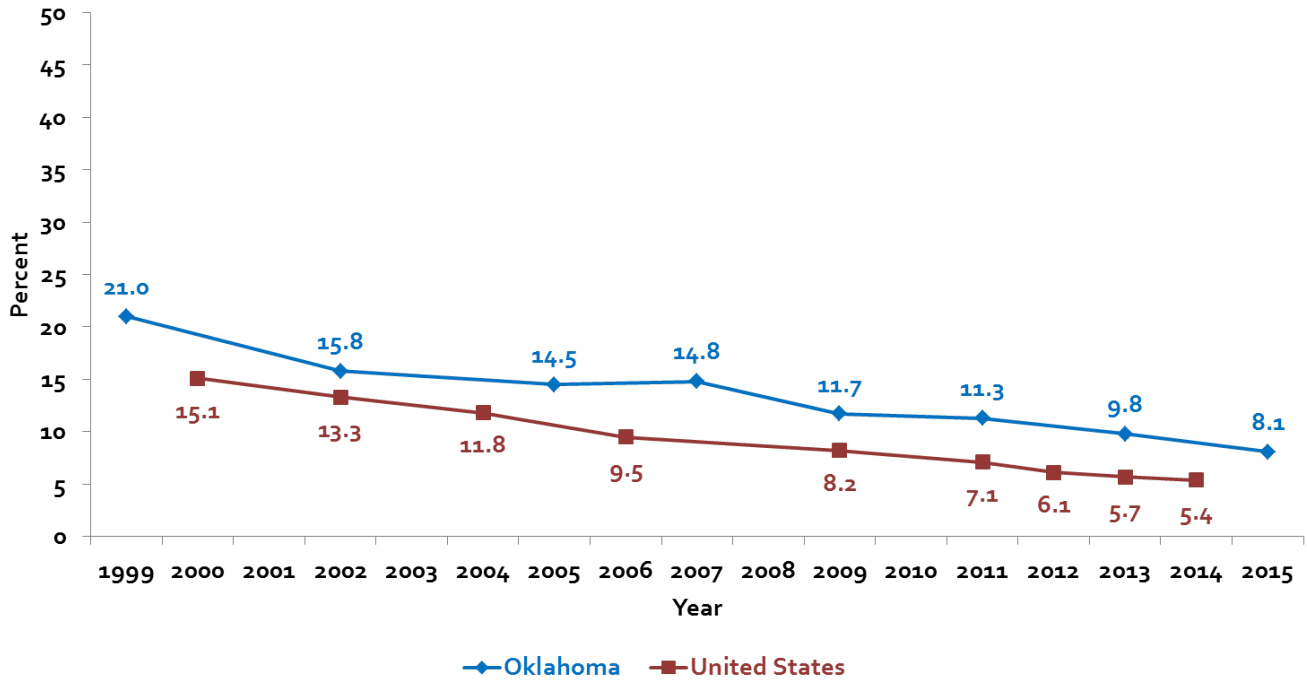


Figure 3. Current Tobacco Use Among Oklahoma and United States High School Students, (Any Tobacco Product) 2012-2015

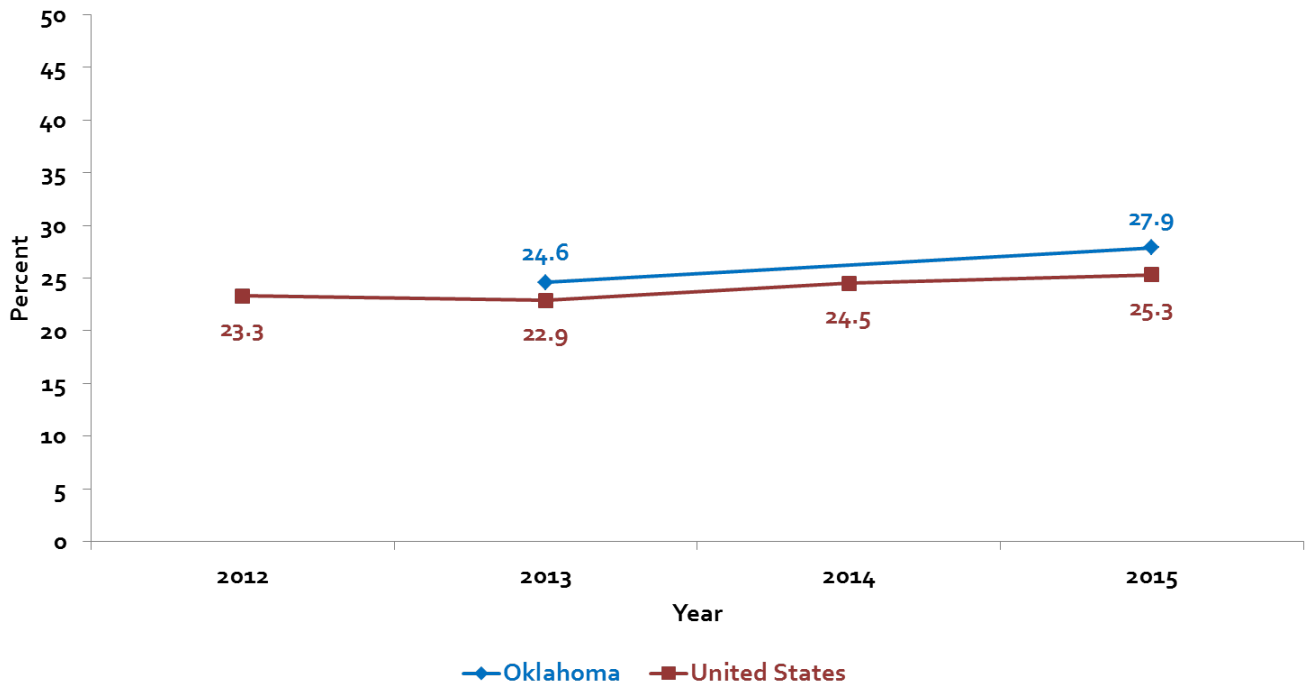
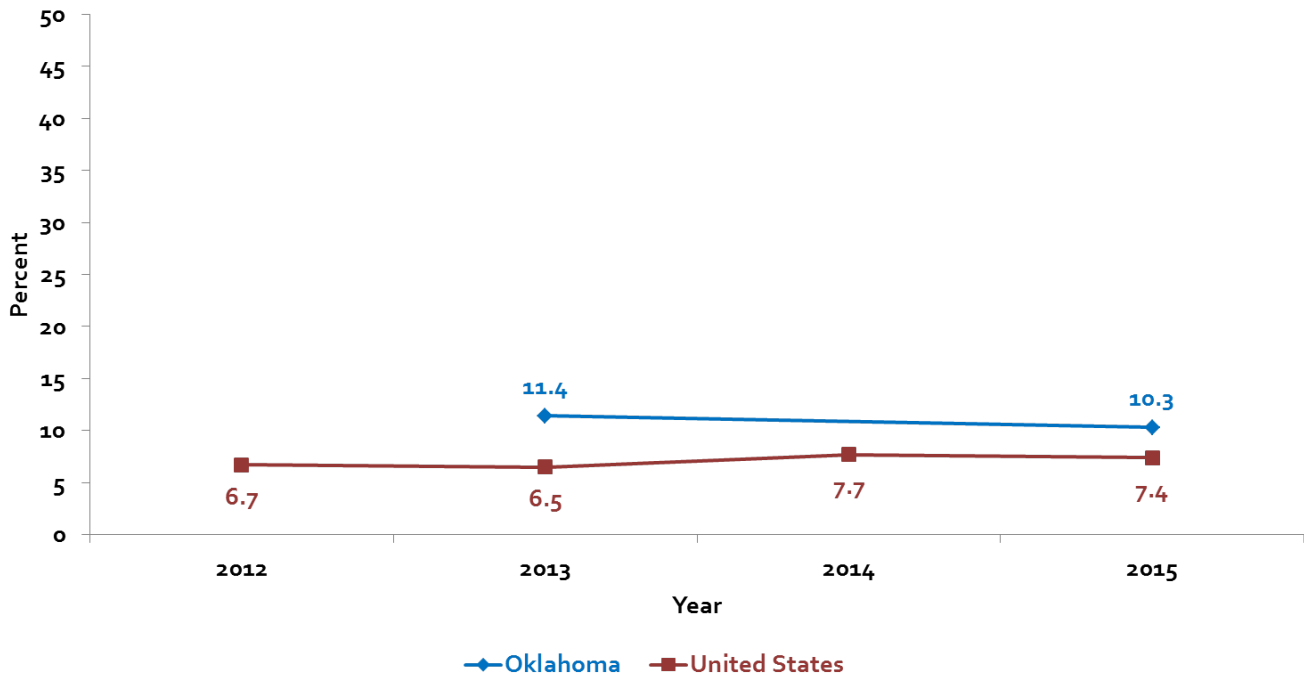


Figure 4. Current Tobacco Use Among Oklahoma and United States Middle School Students, (Any Tobacco Product) 2012-2015



## Cigarette Smoking

Since 1999, the percentage of high school students who currently smoke cigarettes has been decreasing both in Oklahoma and nationally. About 1 in 3 Oklahoma high school students (33.0%) reported smoking cigarettes on at least one day in the past 30 days in 1999. By 2015, this percentage had declined to about 1 in 7 high school students (14.6%). The national estimates are slightly lower than in Oklahoma but follow a similar trend: the percentage of current smokers declined from 28.0% in 2000 to 9.3% in 2015 (Figure 3).

Smoking prevalence also generally decreased over time among middle school students. In 1999, 16.9% of middle school students in Oklahoma were current smokers, as compared to 4.1% in 2015. National estimates have also decreased from 11.0% in 2000 to 2.3% in 2015 (Figure 4).



Figure 3. Current Cigarette Smoking Among Oklahoma and United States High School Students, 1999-2015

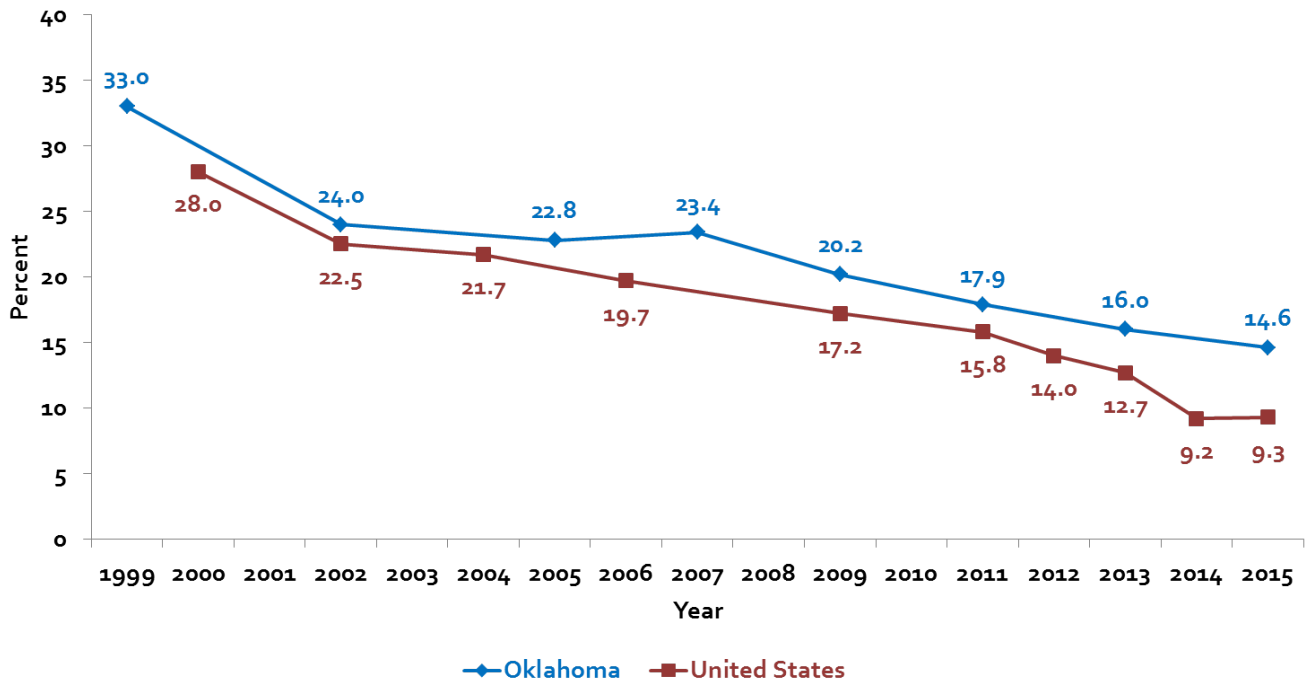
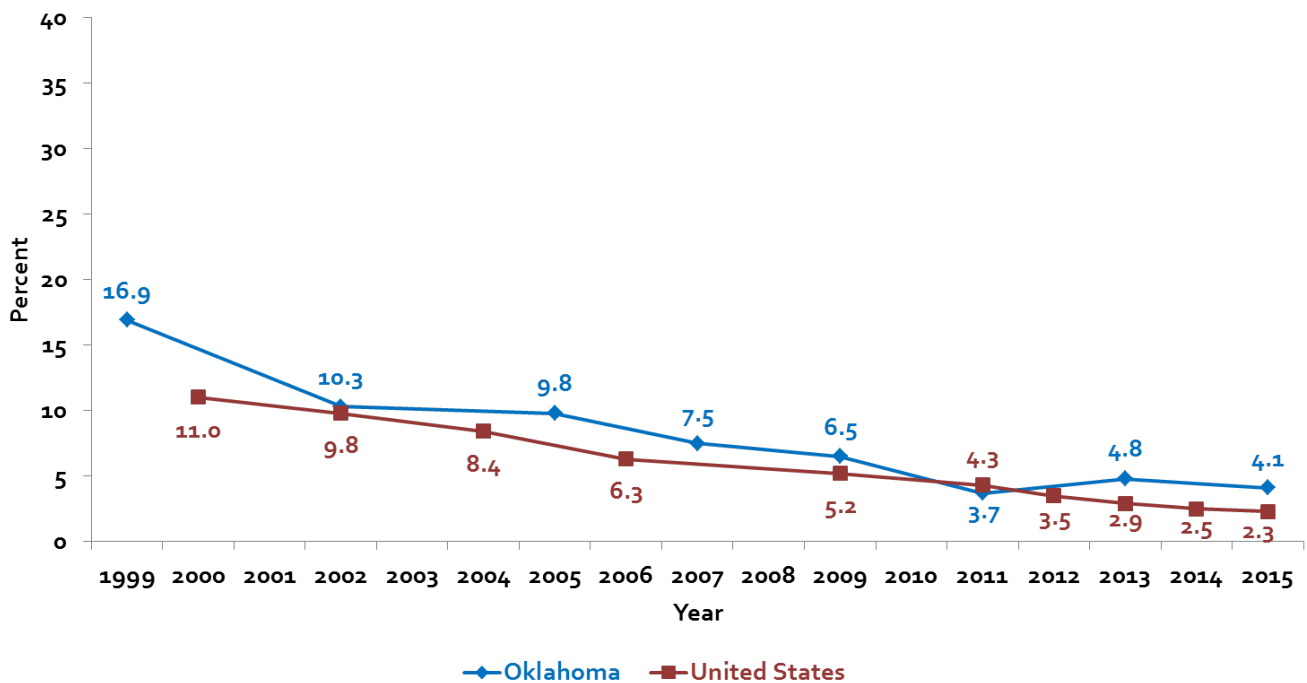


Figure 4. Current Cigarette Smoking Among Oklahoma and United States Middle School Students, 1999-2015



## Smokeless Tobacco

Smokeless tobacco use among high school students is relatively prevalent in Oklahoma, compared to the nation (Figure 5). Use of smokeless tobacco is much more common among males (17.3%) than females (2.6%) in Oklahoma (Table 1). A similar pattern is seen in the nation as a whole. In Oklahoma, use of smokeless tobacco has been relatively steady since 1999, there was a decrease from 12.0% in 2011 to 8.4% in 2013 but it increased to 10.2% in 2015

In middle school, current use of smokeless tobacco is reported by 4.3% of students in Oklahoma in 2015 and only 1.8% of students in the nation in 2015 (Figure 6). Again, there is a notable difference in usage by sex with 6.6% of males reporting use as compared to 1.9% of females, in Oklahoma (Table 2).

Figure 5. Current Smokeless Tobacco Use Among Oklahoma and United States High School Students, 1999-2015

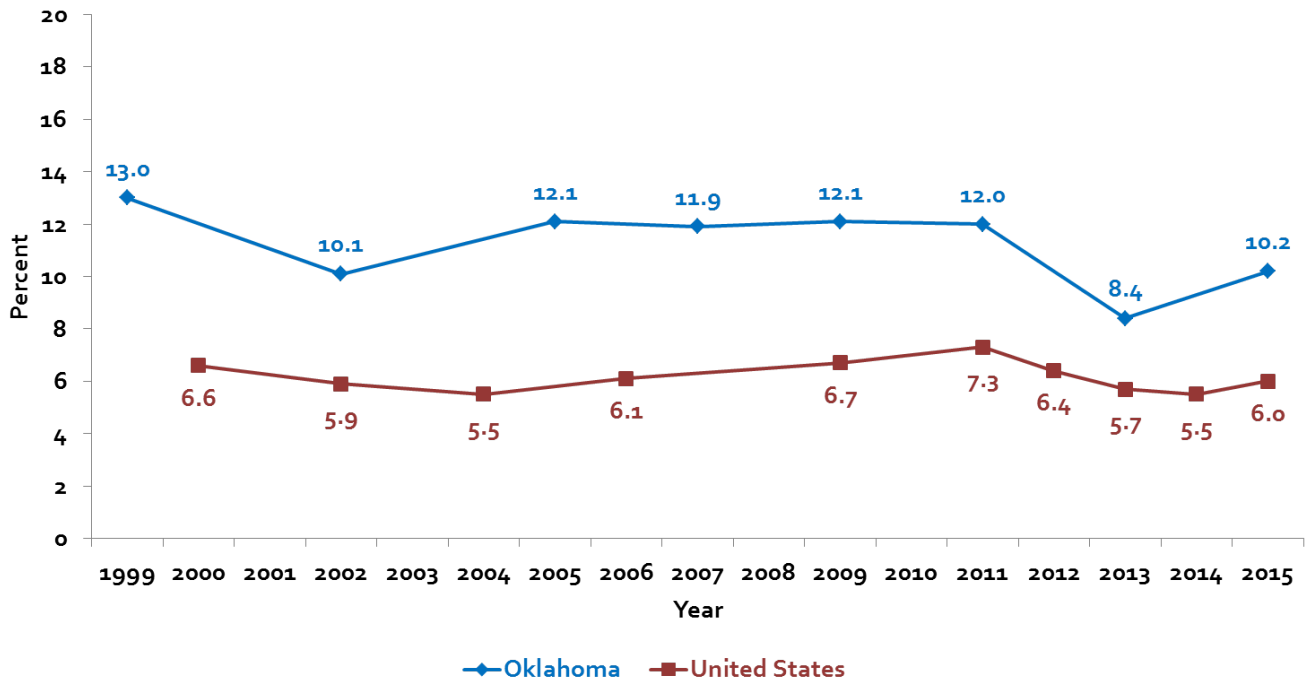
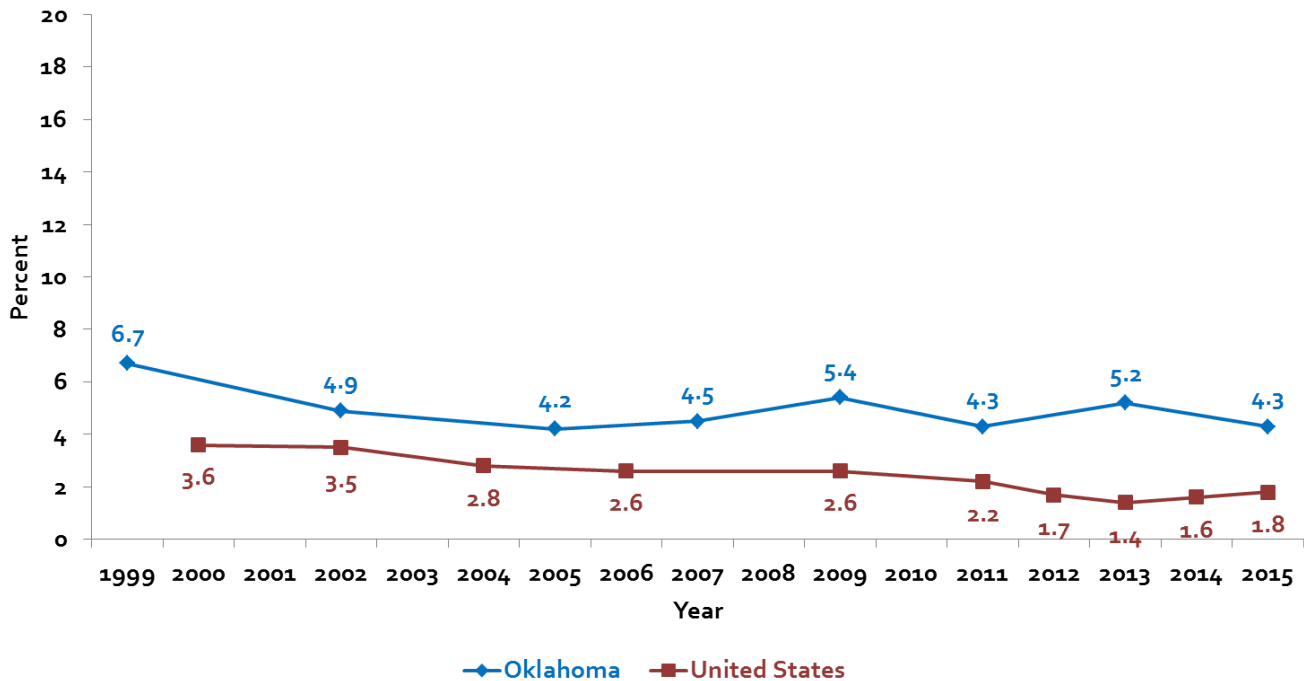


Figure 6. Current Smokeless Tobacco Use Among Oklahoma and United States Middle School Students, 1999-2015



## Electronic Cigarettes

Nationally, electronic cigarettes have become the most commonly used tobacco products among youth with 16.0% of high school students having reported current use of electronic cigarettes in 2015 compared to only 1.5% in 2011. In Oklahoma, usage among high school students increased three-folds from 6.3% in 2013 to 19.0% in 2015 (Figure 7).

Use of electronic cigarettes among middle school students occurs less frequently than in high school. However, Oklahoma has greater usage of these products than in the nation as a whole. Among Oklahoma middle school students, 6.7% reported current use of electronic cigarettes in 2015 which increased from 2.6% in 2013. A similar upward trend is observed among middle school students in the nation from 2011 (0.6%) to 2015 (5.3%) (Figure 8).

Reported use of electronic cigarettes may have been impacted by changes in the wording and placement of survey questions between 2011 and 2015; however, it is difficult to assess since usage patterns were also shifting during this timeframe<sup>3</sup>. In 2015, current use of e-cigarettes was assessed by the OYTS question "During the past 30 days, on how many days did you use an e-cigarette (such as blu or NJOY), ecigar, e-pipe, vape pipe, vaping pen, e-hookah (such as Starbuzz), hookah pen, or tank system (such as eGo, Joyetech or iTaste)?"; and in 2013, e-cigarette use was assessed by the question "In the past 30 days, which of the following products have you used on at least one day?," and the response option for e-cigarettes was "Electronic cigarettes or e-cigarettes such as Ruyan or NJOY."

In 2015, current use of e-cigarettes was assessed for the NYTS by the question, "During the past 30 days, on how many days did you use electronic cigarettes or e-cigarettes?" E-cigarette questions were preceded by an introductory paragraph:

"The next twelve questions are about electronic cigarettes or e-cigarettes. E-cigarettes are electronic devices that usually contain a nicotine-based liquid that is vaporized and inhaled. You may also know them as vape-pens, hookah-pens, electronic hookahs (e-hookahs), electronic cigars (e-cigars), electronic pipes (e-pipes), or e-vaporizers. Some look like cigarettes and others look like pens or small pipes. These are battery-powered devices that produce vapor instead of smoke. Some brands examples are NJOY, Blu, VUSE, MarkTen, Finiti, Starbuzz, and Fantasia." In 2014, current use of e-cigarettes was assessed by the question "During the past 30 days, on how many days did you use e-cigarettes such as Blu, 21st Century Smoke, or NJOY?"; and in 2011 to 2013, e-cigarette use was assessed by the question "In the past 30 days, which of the following products have you used on at least one day?," with the response option for e-cigarettes being "Electronic cigarettes or e-cigarettes such as Ruyan or NJOY."

Figure 7. Current Electronic Cigarette Smoking Among Oklahoma and United States High School Students, 2011-2015

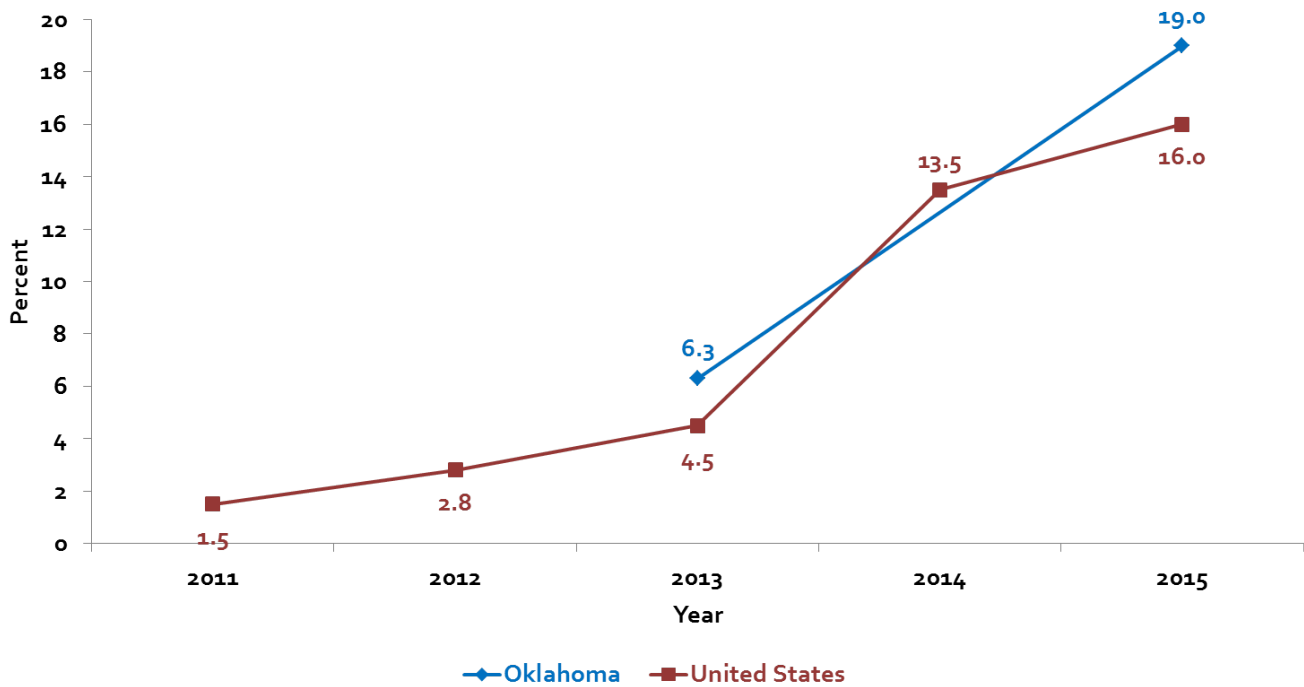
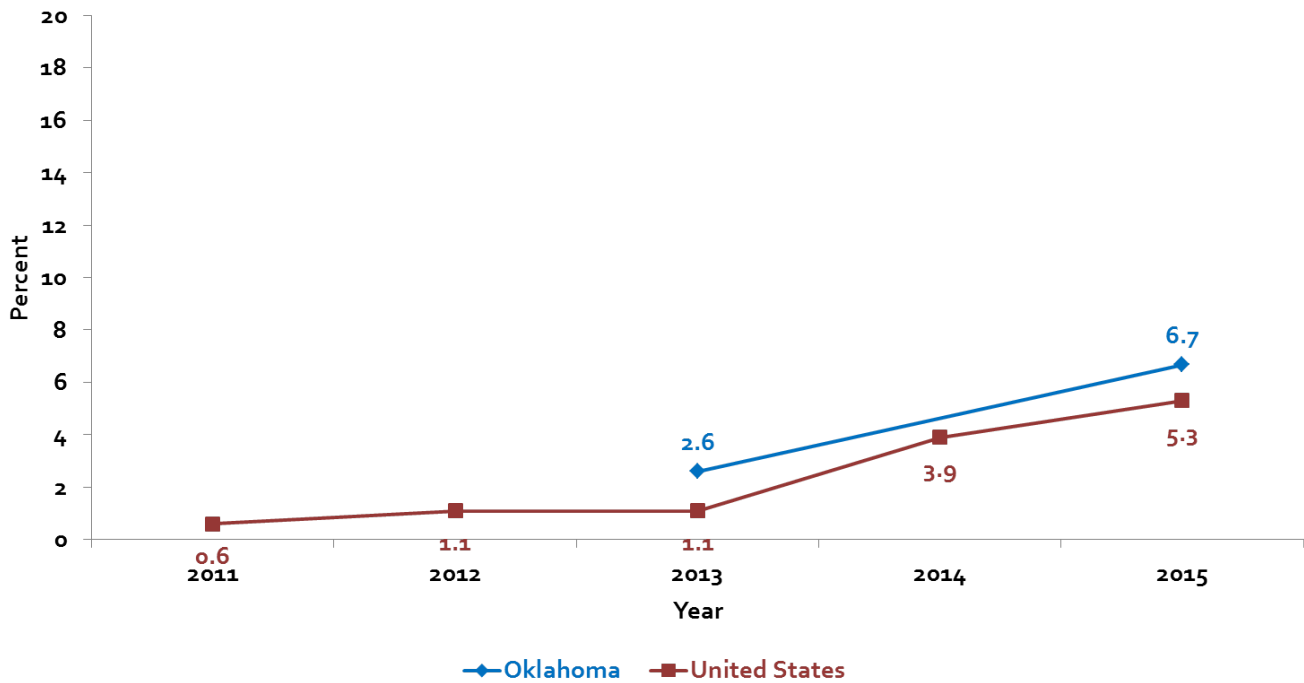


Figure 8. Current Electronic Cigarette Smoking Among Oklahoma and United States Middle School Students, 2011-2015



## Conclusions

This report contains selected items from the OYTS and NYTS for the years from 1999 through 2015. Additional survey data are available upon request from the Center for the Advancement of Wellness.

The data indicate that use of various tobacco products in Oklahoma continues to slowly decline, but still remains at a much higher rate when compared to national use. Nonetheless, the vast majority of Oklahoma youth do not use tobacco of any kind, and overwhelming majorities of students in both high school and middle school agree that tobacco products are dangerous. Furthermore, the majority of students who do smoke want to quit, indicating a reason to hope that tobacco use will continue to decline in the future. The advent of electronic cigarettes and other new tobacco products is a challenge to public health efforts, and will need to be studied in the next several administrations of the OYTS to determine their impact on use. Additionally, the long-term health impact and gateway implications of electronic cigarettes remain unknown..

# Appendix

**Table 1. Estimates of Current Use of Tobacco Products Among High School Students in 2015**

Tobacco Product	Overall	Females	Males
	OYTS % (NYTS %)	OYTS % (NYTS %)	OYTS % (NYTS %)
Any tobacco product†	27.9 (25.3)	18.4 (20.3)	30.1 (30.0)
Cigarettes	14.6 (9.3)	14.6 (7.7)	14.1 (10.7)
Cigars	10.1 (8.6)	6.3 (5.6)	13.9 (11.5)
Smokeless tobacco	10.2 (6.0)	2.6 (1.8)	17.3 (10.0)
Pipes	5.1 (1.0)	3.7 (0.7)	6.6 (1.4)
Bidis	1.5 (0.6)	0.9 (0.4)	2.1 (0.9)
Hookah	3.8 (7.2)	3.9 (6.9)	3.8 (7.4)
Electronic cigarettes	19.0 (16.0)	16.6 (12.8)	21.5 (19.0)
Kreteks	1.9	1.5	2.2
Snus	2.6	1.6	3.7

† Any tobacco product included include cigarettes, cigars, smokeless or spit tobacco, pipe tobacco, bidis, snus, dissolvable tobacco, electronic cigarettes and hookahs.

Note: Current use is defined as use of a product on at least one day during the past thirty days.

**Table 2. Estimates of Current Use of Tobacco Products Among Middle School Students in 2015**

Tobacco Product	Overall	Females	Males
	OYTS % (NYTS %)	OYTS % (NYTS %)	OYTS % (NYTS %)
Any tobacco product†	10.3 (7.4)	7.4 (6.4)	8.7 (8.3)
Cigarettes	4.1 (2.3)	5.0 (2.2)	3.3 (2.3)
Cigars	2.7 (1.6)	2.5 (1.4)	2.8 (1.8)
Smokeless tobacco	4.3 (1.8)	1.9 (1.1)	6.6 (-)
Pipes	2.2 (0.4)	2.5 (-)	2.0 (-)
Bidis	0.9 (0.2)	1.3 (-)	0.3 (-)
Hookah	0.8 (2.0)	0.9 (2.0)	0.7 (1.9)
Electronic cigarettes	6.7 (5.3)	7.0 (4.8)	6.3 (5.9)
Kreteks	1.1	1.3	0.8
Snus	0.9	0.9	0.8

† Any tobacco product included include cigarettes, cigars, smokeless or spit tobacco, pipe tobacco, bidis, snus, dissolvable tobacco, electronic cigarettes and hookahs.

§ Data are statistically unreliable because sample size <50 or relative standard error >0.3.

Note: Current use is defined as use of a product on at least one day during the past thirty days.

## Sources

<sup>1</sup>U.S. Department of Health and Human Services. Preventing Tobacco Use Among Young People: A Report of the Surgeon General. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1994.

<sup>2</sup>U.S. Department of Health and Human Services. Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.

<sup>3</sup>Arrazola RA, Singh T, Corey CG, et al. Tobacco use among middle and high school students—United States, 2011-2015. *MMWR Morb Mortal Wkly Rep* 2015; 64(14); 381-385

<sup>4</sup>Centers for Disease Control and Prevention. Tobacco Product Use Among Middle and High School Students—United States, 2011 and 2012. *MMWR* 2013; 62: 893-908.

<sup>5</sup>Oklahoma Youth Tobacco Survey Instruments, 2013 and 2015.

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