

# **The Evolving Landscape of Tobacco Use and Control:**

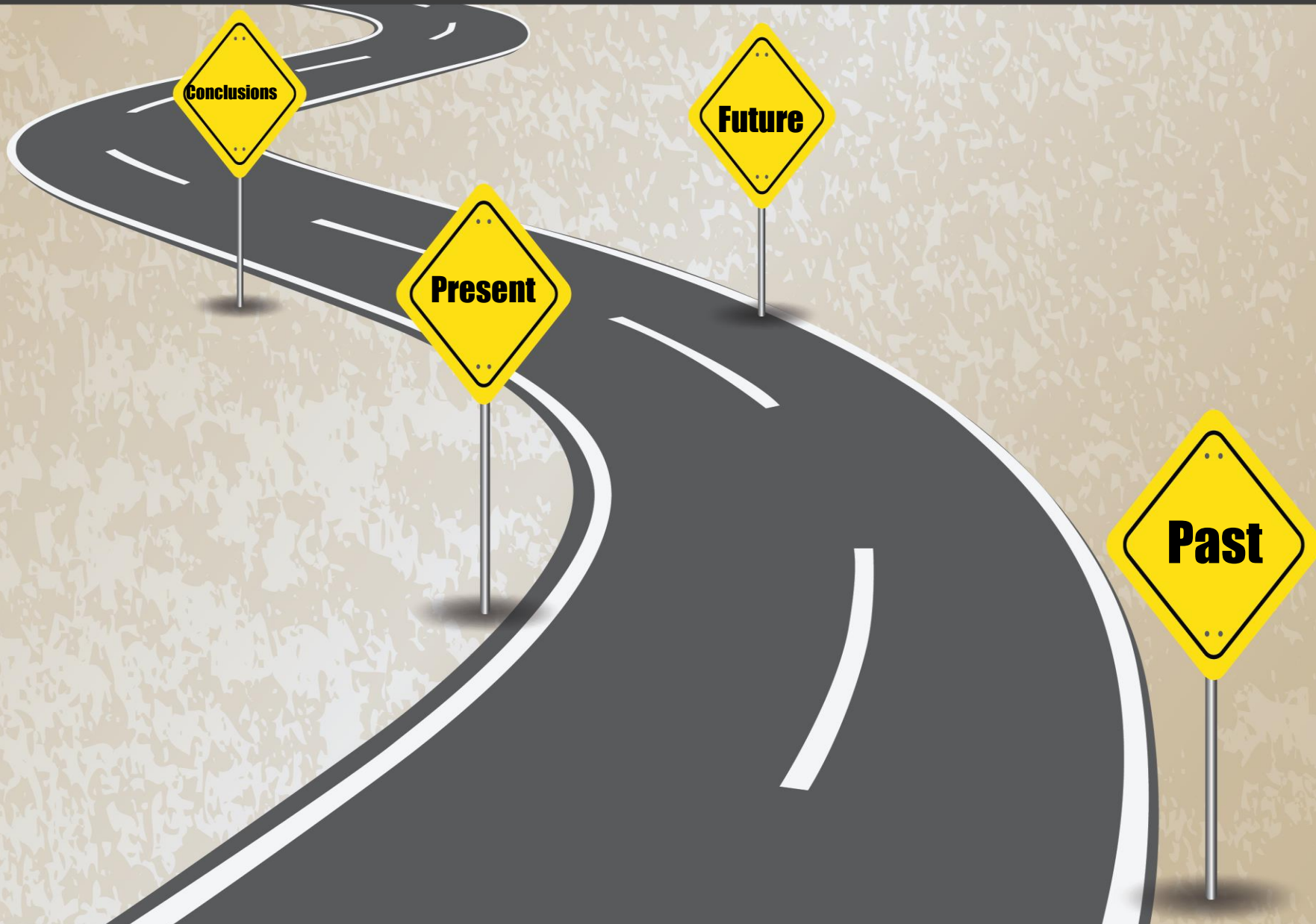
## **Past, Present, and Future**

Brian A. King, PhD, MPH

New Mexico Allied Council on Tobacco's 3<sup>rd</sup> Annual ACTION Conference

May 15, 2018

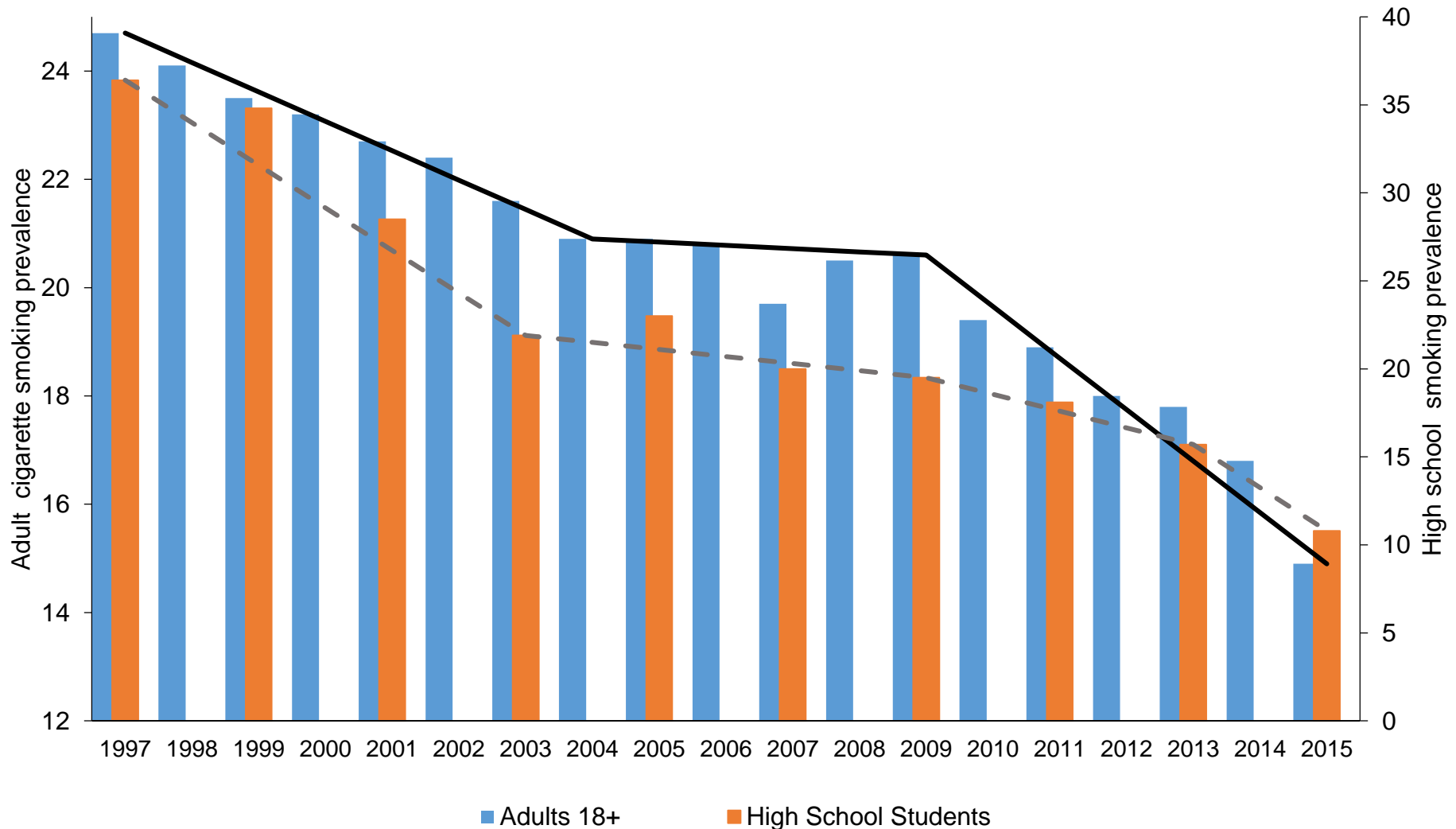
# The Evolving Landscape of Tobacco Use and Control



# The Evolving Landscape of Tobacco Use and Control



# The Good News: Cigarette Smoking Is Down



**Source:** Adult cigarette smoking prevalence data are from the National Health Interview Survey (NHIS); 2015 data based on NHIS Early Release data for January-June. High school cigarette smoking prevalence data are from the National Youth Risk Behavior Survey.



# The Bad News: Tobacco Use is the Single Most Preventable Cause of Disease, Disability, and Death in the U.S.



**38M**

Nearly **38 million**  
U.S. adults smoke.<sup>1</sup>



**480,000**

Cigarette smoking kills about  
**480,000** people in the U.S. each  
year.<sup>2</sup>



**2 in 5**

About **two in every five children**  
**aged 3-11** are exposed to  
secondhand smoke.<sup>3</sup>



**1 vs. 30**

For every one smoking-related  
death, **at least 30** people live with  
a serious smoking-related illness.<sup>2</sup>



**\$300B**

Each year, cigarette smoking costs the U.S. more than **\$300 billion**, including  
\$170 billion in direct medical costs and \$156 billion in lost productivity.<sup>2,4</sup>

1. Jamal A, Phillips E, Gentzke AS, et al. Current Cigarette Smoking Among Adults — United States, 2016. MMWR Morb Mortal Wkly Rep 2018;67:53–59. DOI: <http://dx.doi.org/10.15585/mmwr.mm6702a1>.  
2. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. ([https://www.cdc.gov/tobacco/data\\_statistics/sgr/50th-anniversary/index.htm](https://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/index.htm)) Atlanta, 2014.  
3. Homa D, Neff L, King B, Caraballo R, Bunnell R, Babb S, Garrett B, Sosnoff C, Wang L. Vital Signs: Disparities in Nonsmokers' Exposure to Secondhand Smoke — United States, 1999–2012. MMWR 2015;64(04):103–108.  
4. Xu X, Bishop EE, Kennedy SM, Simpson SA, Pechacek TF. Annual healthcare spending attributable to cigarette smoking: an update. Am J Prev Med 2015; 48(3):326–33.

# Who Do We Still Need to Reach?



## Race/Ethnicity

**21.9%** American  
Indians/Alaska Natives  
**16.6%** white



## Education

**34.1%** GED  
**3.6%** Graduate  
degree



## Poverty status

**26.1%** Below poverty  
**13.9%** At or above



## Health Insurance

**27.8%** Medicaid  
**27.4%** Uninsured  
**11.1%** Private



## Disability

**21.5%** Yes  
**13.8%** No



## Sexual Orientation

**20.6%** Lesbian/Gay/  
Bisexual  
**14.9%** Heterosexual



## Mental Illness

**40.6%** Yes  
**14.0%** No

# Youth and Tobacco Use

*Youth use of tobacco in any form is unsafe.*



If smoking continues at the current rate among youth in this country, **5.6 million of today's Americans younger than 18 will die early from a smoking-related illness.<sup>1</sup>**



Nearly **9 out of 10** cigarette smokers first tried smoking by age **18**, and 99% first try smoking by age 26.<sup>1,3</sup>



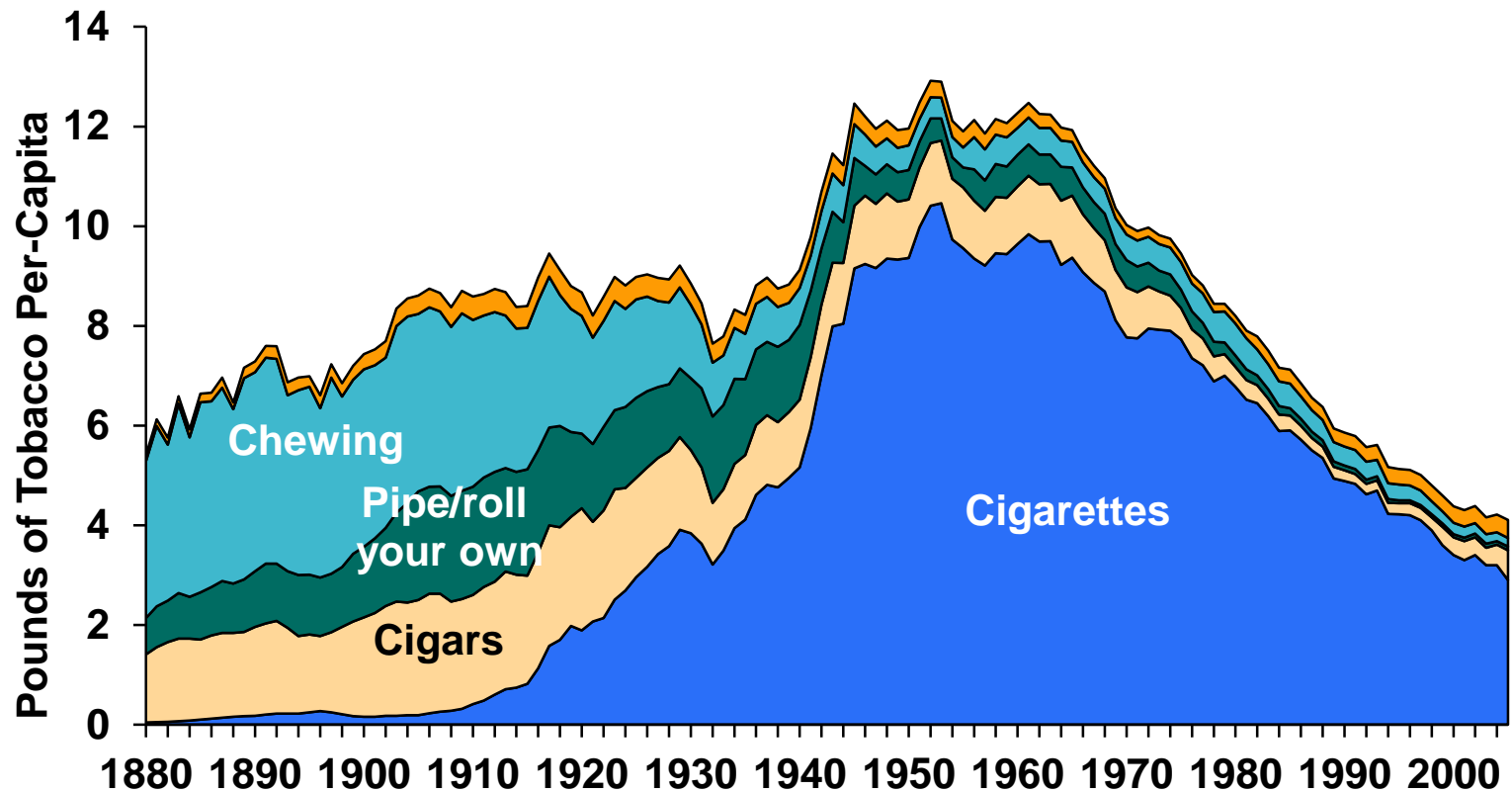
**Each day**, about **2,500 kids** in the United States **try their first cigarette**, and another 400 additional kids become new regular, daily smokers.<sup>2</sup>

1. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: HHS, CDC, NCCDPHP, OSH, 2014.

2. Bach, Laura. "Smoking and Kids." Washington, D.C.: Campaign for Tobacco-Free Kids, June 20, 2017. <https://www.tobaccofreekids.org/research/factsheets/pdf/0001.pdf>

3. Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General. Atlanta: HHS, CDC, NCCDPHP, OSH, 2012.

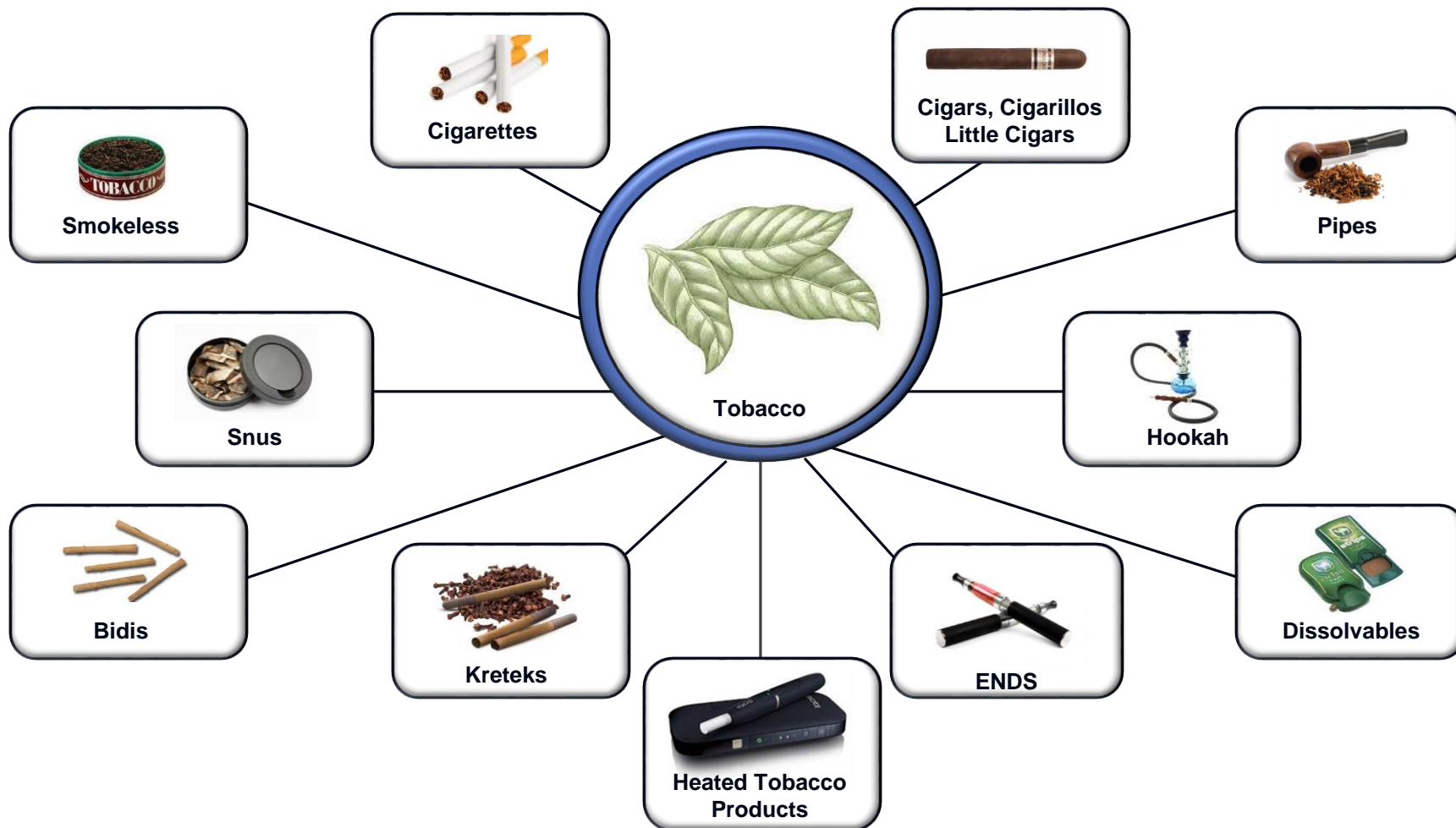
# The Ever Changing Tobacco Product Landscape



**Source:** Tobacco Situation and Outlook Report, U.S. Department of Agriculture, U.S. Census  
**Note:** Among persons >18 years old. Beginning in 1982, fine-cut chewing tobacco was reclassified as snuff.

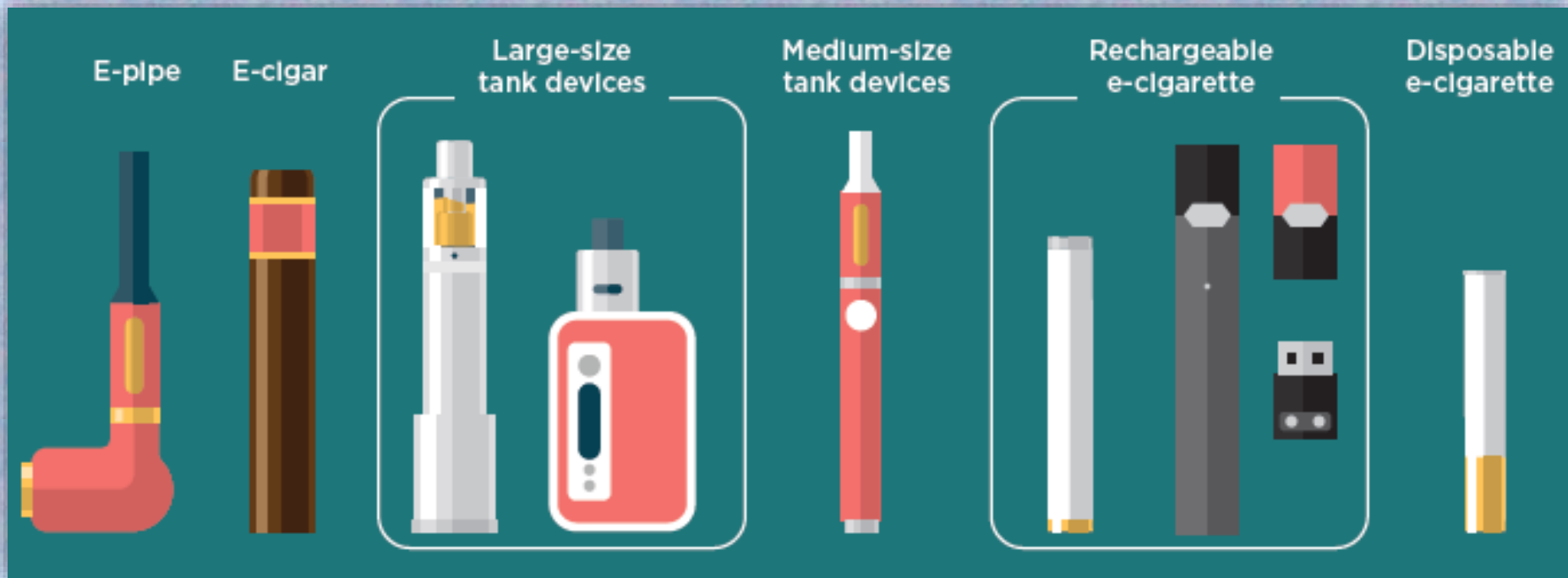


# The Evolving Tobacco Product Landscape



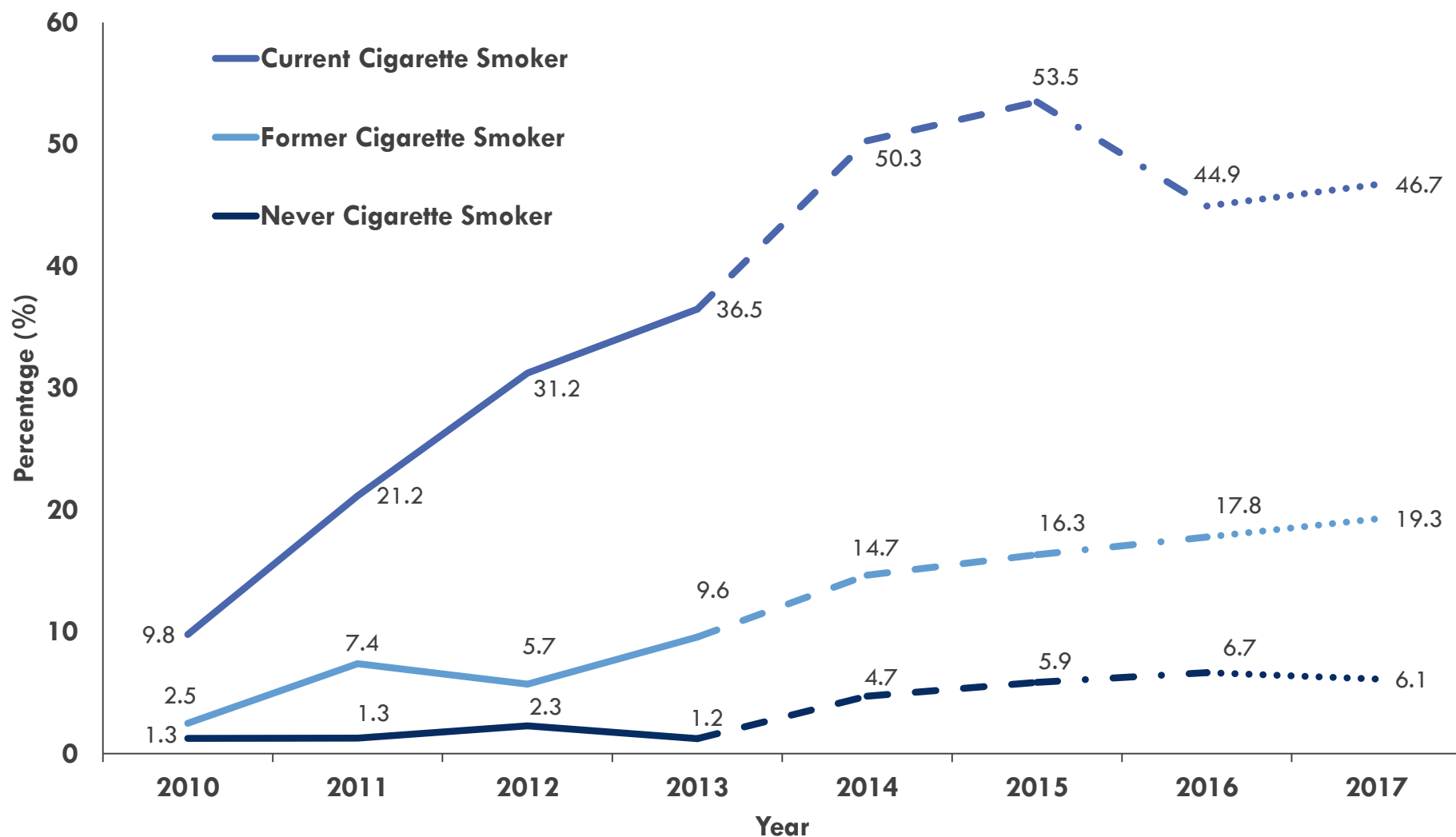
# The Evolving Landscape of Tobacco Use and Control





E-cigarettes

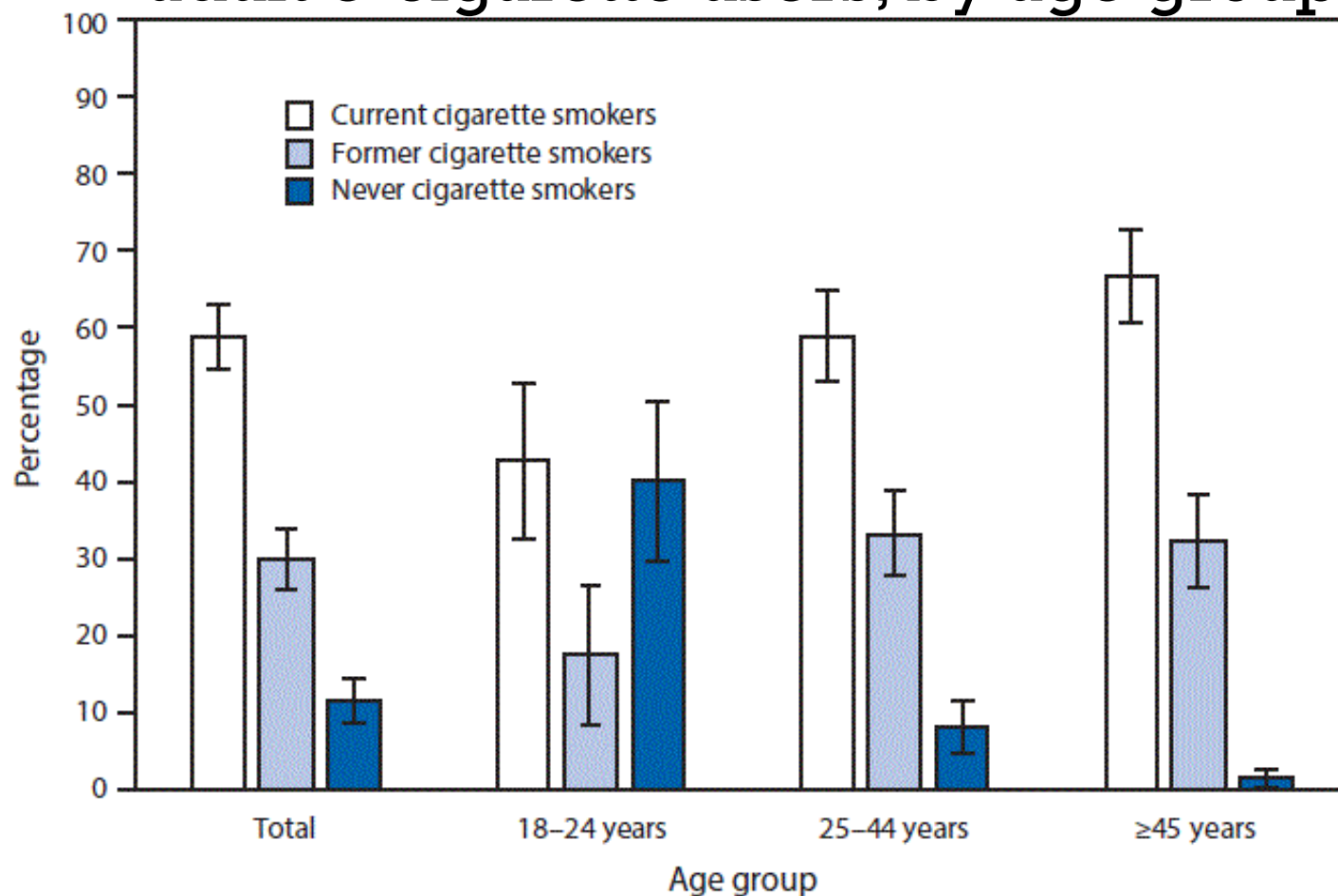
# Ever Use of E-cigarettes Among Adults, by Cigarette Smoking Status—U.S., 2010-2017



A majority of adult e-cigarette users also smoke conventional cigarettes: “dual use.”

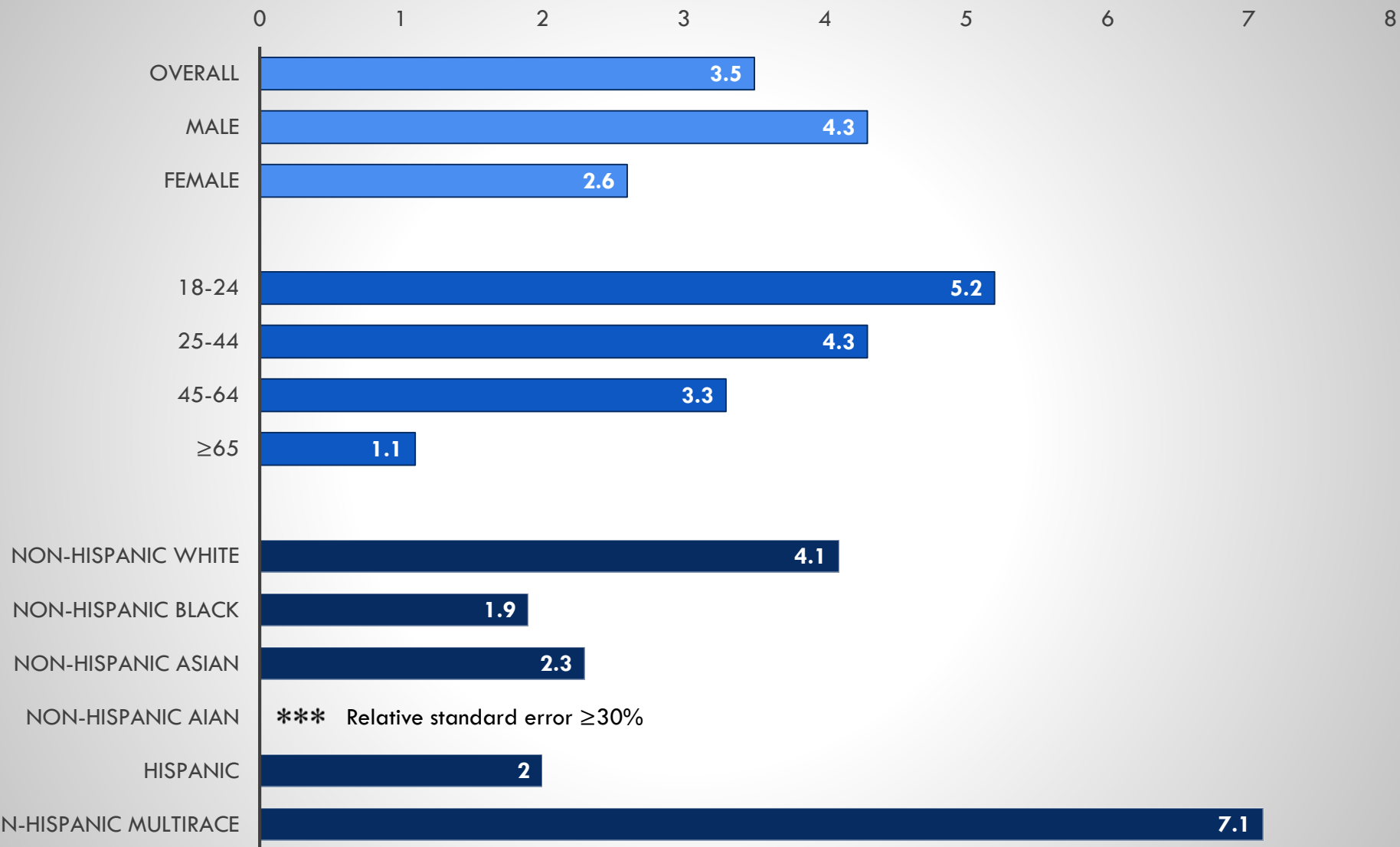


## Cigarette smoking status among current adult e-cigarette users, by age group





# Percentage of U.S Adults Aged $\geq 18$ Who Reported E-cigarette Use “Every Day” or “Some Days”, 2015



# E-cigarette Use Among US Youth

E-CIGARETTES ARE NOW THE MOST COMMONLY USED TOBACCO PRODUCT AMONG U.S. YOUTH.

IN THE U.S.,  
YOUTH ARE  
MORE LIKELY  
THAN ADULTS  
TO USE  
E-CIGARETTES



**4.3%**

MIDDLE SCHOOL  
STUDENTS

In 2016, more than  
**2 MILLION**

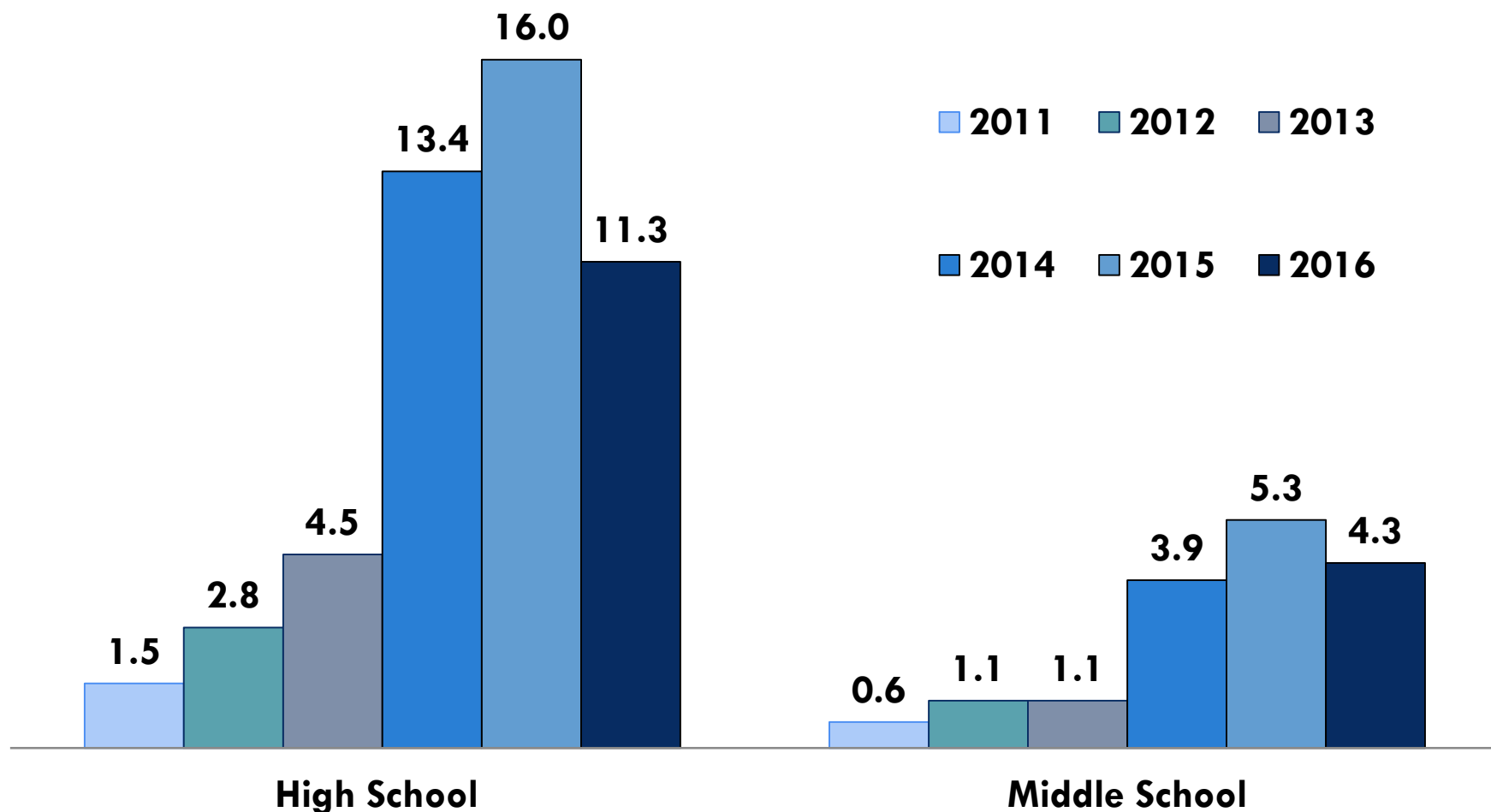
U.S. middle and high school  
students used e-cigarettes in  
the past 30 days, including:

**11.3%**

HIGH SCHOOL  
STUDENTS



# Youth E-cigarette Use 2011-2016



# Are E-cigarettes a “Gateway” to Smoking



**Conclusion 16-2.** Among youth and young adult e-cigarette users who ever use combustible tobacco cigarettes, there is *moderate evidence* that e-cigarette use increases the frequency and intensity of subsequent combustible tobacco cigarette smoking.



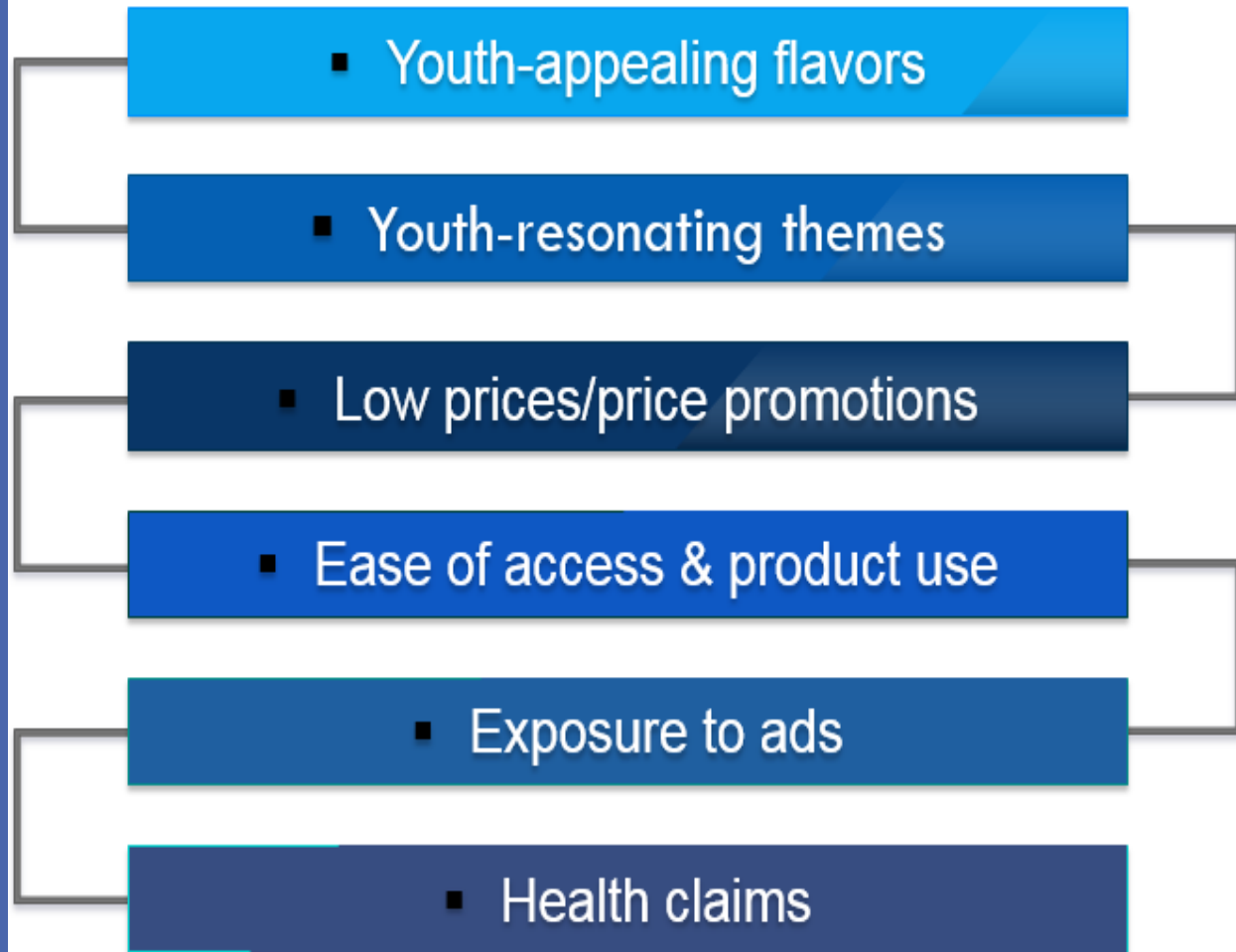
# What Factors Lead to Youth Smoking?

## Preventing Tobacco Use Among Youth and Young Adults

A Report of the Surgeon General



U.S. Department of Health and Human Services



**Source:** DHHS. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA. 2012.



# Surgeon General Report

## E-cigarette Use Among Youth and Young Adults

December 8, 2016  
Washington, D.C.





# Major Conclusion



Source: Soap Opera Digest (2013).

“E-cigarettes are marketed by promoting flavors and using a wide variety of media channels and approaches that have been used in the past for marketing conventional tobacco products to youth and young adults.”

# Flavored E-cigarette Use Among Youth



85%

of e-cigarette users ages  
12-17 use flavors

menthol

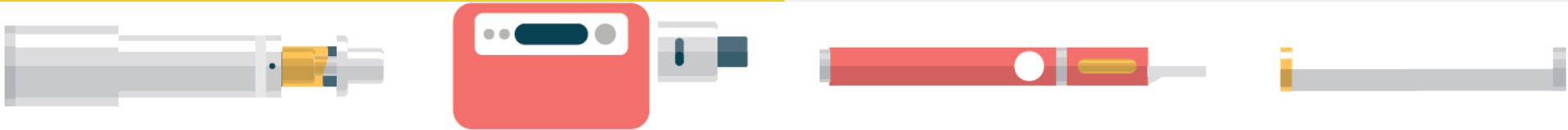
alcohol

candy

fruit

chocolate

sweets



# Youth Exposure to E-cigarette Advertising



## E-CIGARETTE ADS

REACH NEARLY

**4 in 5**

**U.S. MIDDLE AND  
HIGH SCHOOL STUDENTS**

More than 20 million youth saw e-cigarette ads in 2016.

### PERCENT OF STUDENTS EXPOSED TO E-CIGARETTE ADS



### YOUTH EXPOSURE TO E-CIGARETTE ADS, 2016



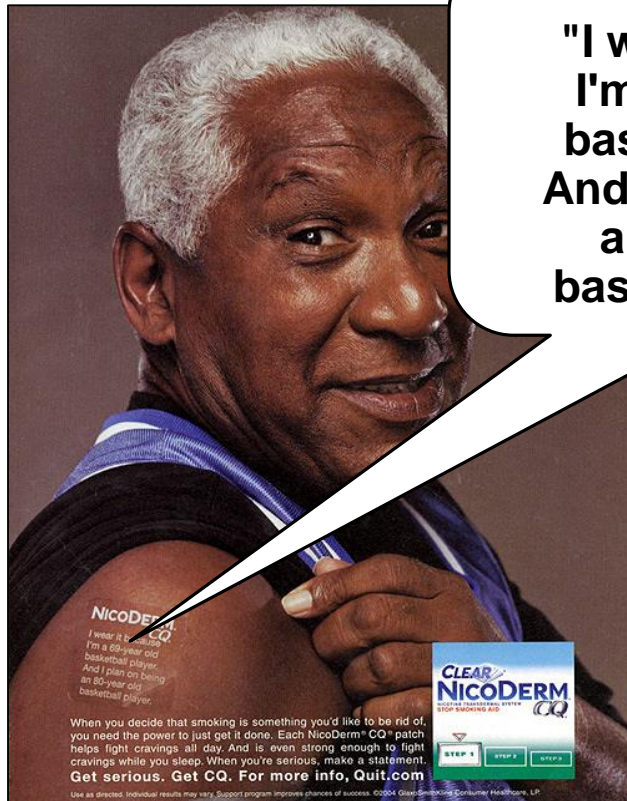
Efforts to reduce youth exposure to e-cigarette ads are important to prevent and reduce youth use of these products.

Source: National Youth Tobacco Survey





# Marketing for Nicotine Replacement Therapy

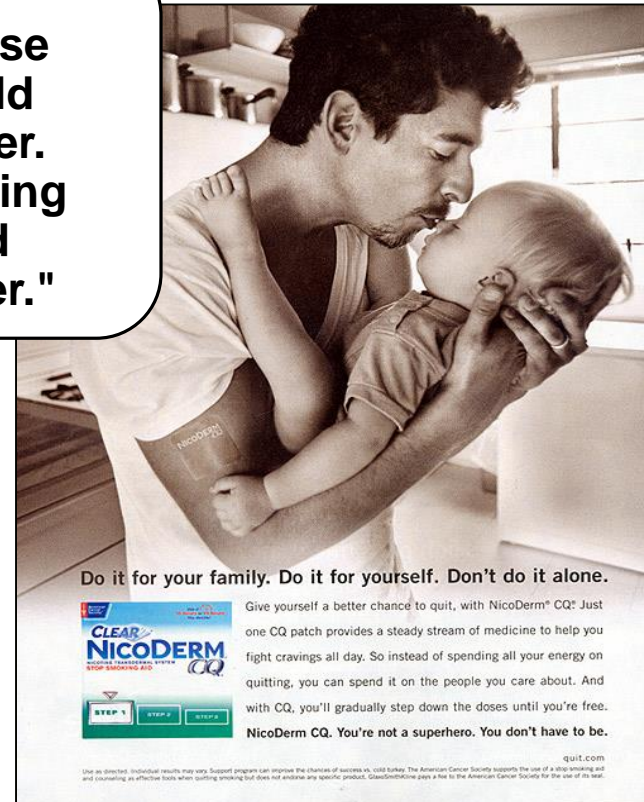


**NicoDerm CQ**  
I wear it because  
I'm a 69-year old  
basketball player.  
And I plan on being  
an 80-year old  
basketball player.

When you decide that smoking is something you'd like to be rid of, you need the power to just get it done. Each NicoDerm CQ patch helps fight cravings all day. And is even strong enough to fight cravings while you sleep. When you're serious, make a statement. **Get serious. Get CQ. For more info, Quit.com**

Use as directed. Individual results may vary. Support program improves chances of success. ©2004 GlaxoSmithKline Consumer Healthcare, LP.

Text on patch:  
**"I wear it because  
I'm a 69-year old  
basketball player.  
And I plan on being  
an 80-year old  
basketball player."**



**Do it for your family. Do it for yourself. Don't do it alone.**

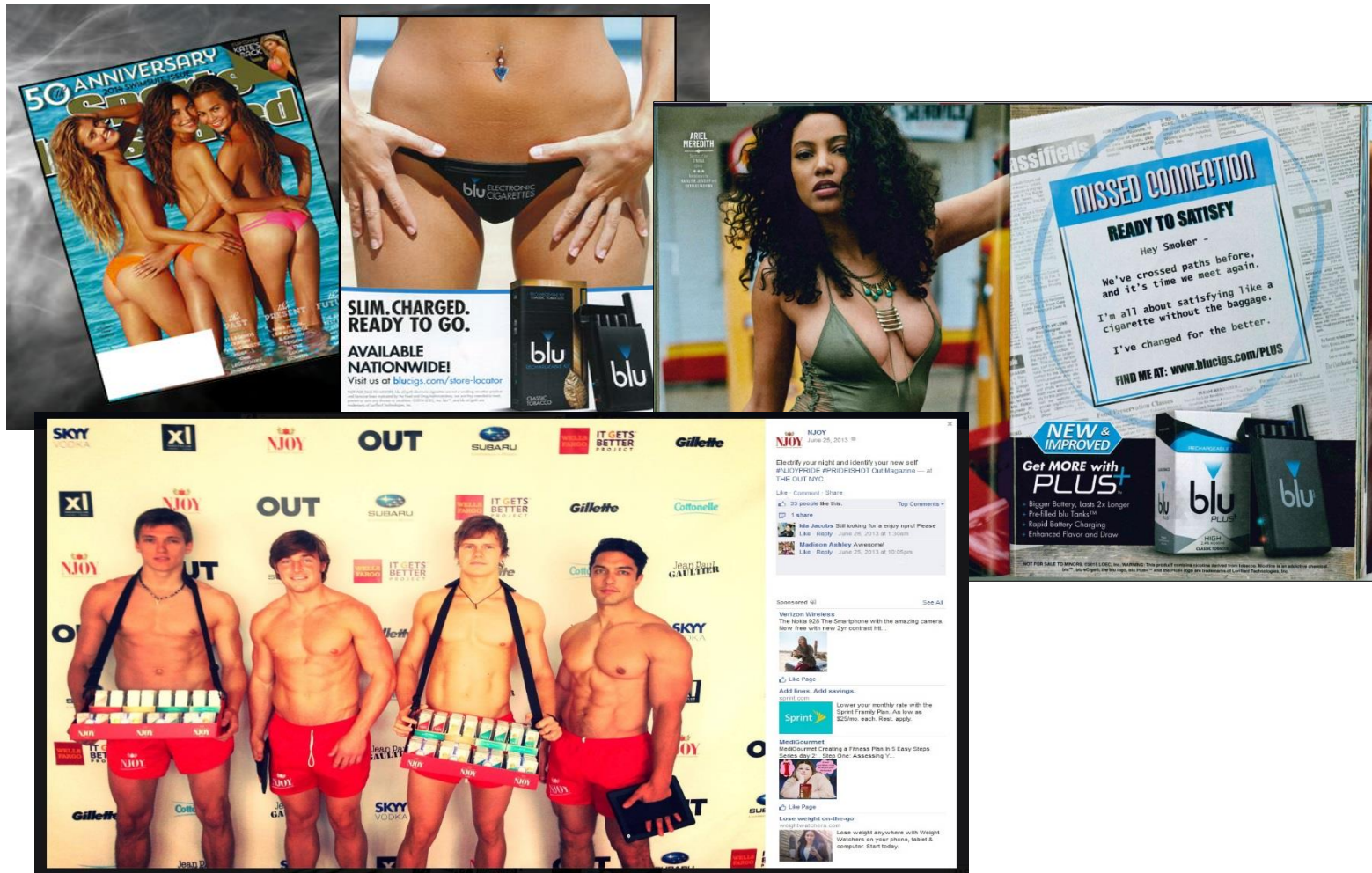
Give yourself a better chance to quit, with NicoDerm CQ. Just one CQ patch provides a steady stream of medicine to help you fight cravings all day. So instead of spending all your energy on quitting, you can spend it on the people you care about. And with CQ, you'll gradually step down the doses until you're free. **NicoDerm CQ. You're not a superhero. You don't have to be.**

**quit.com**

Use as directed. Individual results may vary. Support program can improve the chances of success. ©2004 Glaxo. The American Cancer Society supports the use of a stop-smoking aid and counseling as effective tools when quitting smoking, but does not endorse any specific product. GlaxoSmithKline pays a fee to the American Cancer Society for the use of its seal.



# Marketing for E-cigarettes



# 2014 Surgeon General's Report

## E-cigarettes could have negative and positive individual and population health impact

“This shift in patterns of tobacco use could have a number of potential impacts, ranging from the positive effect of accelerating the rate at which smokers quit smoking cigarettes completely to a negative effect of slowing down the decrease in the use of all tobacco products, especially cigarettes”

Chapter 15, Page 859



# Is there a potential benefit for e-cigarettes?

Answer: Under certain circumstances



Complete long term substitution by established smokers



Assist in rapid transition to a society with little or no use of combustible products



Short-term use if shown to produce successful & permanent cessation of combustible products

However, “Cutting back” is not enough—even a few cigarettes per day is dangerous

# “Cutting back” is not enough—even a few cigarettes per day is dangerous

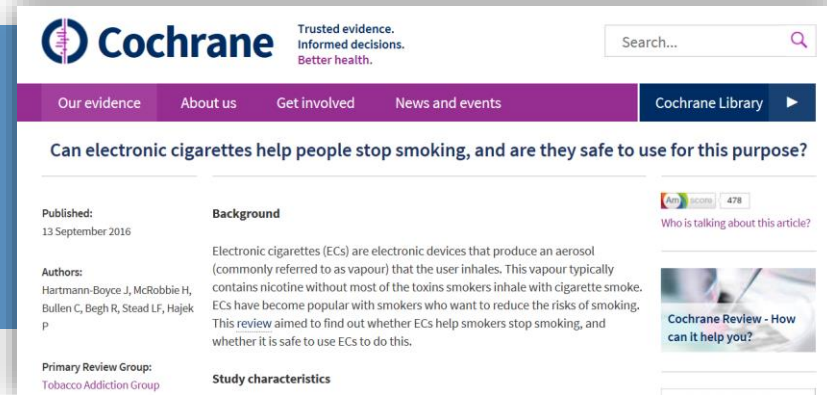
## RISKS FOR DUAL USERS OF CIGARETTES AND E-CIGARETTES

- ❑ Smoking just five cigarettes a day doubles the risk of dying from heart disease.
- ❑ Heavy smokers who reduce their cigarette use by half do not reduce their risk of early death by half.

## BENEFITS OF QUITTING SMOKING COMPLETELY

- ❑ Heart disease risk is cut in half one year after quitting and continues to drop over time.
- ❑ Even quitting at age 50 cuts your risk in half for early death from a smoking-related disease.

# E-Cigarette Use As A Smoking Cessation Tool Among Adults



“The long-term safety of e-cigarettes is unknown.”

“There is evidence from two trials that e-cigarettes help smokers to stop smoking in the long term compared with placebo e-cigarettes. However, the small number of trials, low event rates and wide confidence intervals around the estimates mean that our confidence in the result is rated 'low' by GRADE standards.”

“Overall, the USPSTF found the evidence on the use of ENDS as a smoking cessation tool in adults, including pregnant women, and adolescents to be insufficient.”



# E-cigarette Potential for Harm if:



Leads to initiation of combustible tobacco use among non-smokers, particularly children



Leads to relapse among former smokers



Diminishes the chances that a smoker will quit



Discourages smokers from using proven quit methods



Exposes children, pregnant women, and non-users to secondhand aerosol



Glamorizes or renormalizes tobacco use



Results in poisonings among users or non-users



# Conclusion 5: E-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine

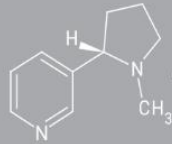
E-Cigarette Use Among Youth and Young Adults

A Report of the Surgeon General



on Services

VOLATILE  
ORGANIC  
COMPOUNDS



NICOTINE

ULTRAFINE  
PARTICLES



CANCER-CAUSING  
CHEMICALS



HEAVY METALS SUCH AS  
NICKEL, TIN, AND LEAD



FLAVORING SUCH AS  
DIACETYL, A CHEMICAL  
LINKED TO A SERIOUS  
LUNG DISEASE



# Nicotine Poses Unique Dangers to Young People



## E-Cigarette Use Among Youth and Young Adults

A Report of the Surgeon General



### Chapter 3 Conclusion 1, 2, & 5

1. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.

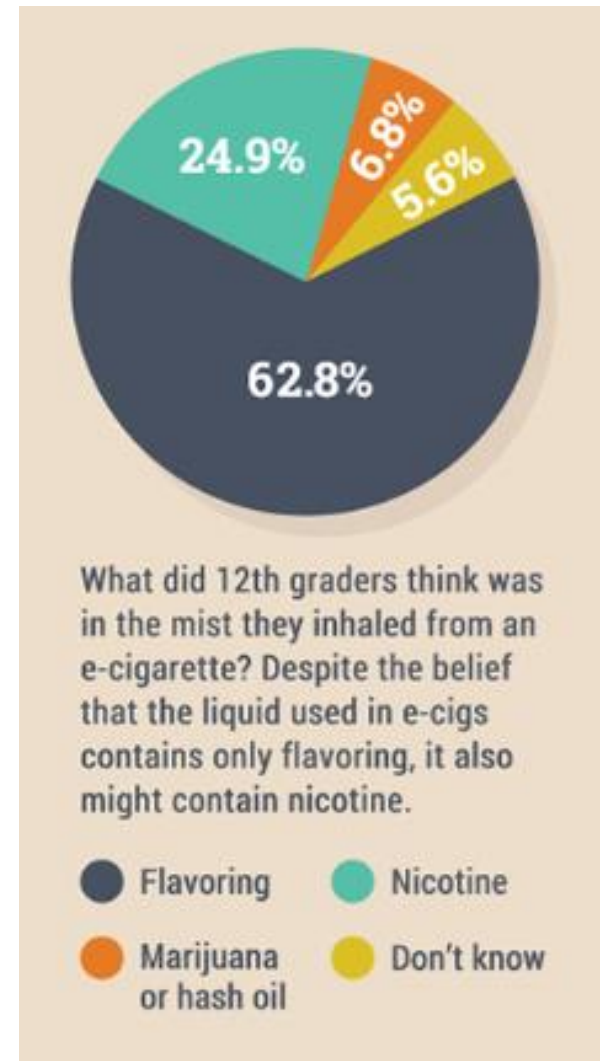
2. Nicotine can cross the placenta and has known effects on fetal and postnatal development. Therefore, nicotine delivered by e-cigarettes during pregnancy can result in multiple adverse consequences, including sudden infant death syndrome, and could result in altered corpus callosum, deficits in auditory processing, and obesity.

5. Ingestion of e-cigarette liquids containing nicotine can cause acute toxicity and possibly death if the contents of refill cartridges or bottles containing nicotine are consumed.

# Are Youth Using E-cigarettes with Nicotine?

## Self-reported nicotine consumption among youth may be subject to bias:

- Youth may not know what nicotine is, let alone whether it is in their e-cigarette.
- Youth who access e-cigarettes from peers may not see packaging.
- Some e-cigarette labels obscure nicotine content.
- Question asked respondents to choose only one response option.



# Sales Data Tell Another Story...

## Percentage of products that contained nicotine

- 99.6% of disposable e-cigarette sales
- 100% of rechargeable sales
- 99.5% of refill sales

## Percentage that contained nicotine by product type

- 99.6% of all e-cigarette products sold
- 99.4% of flavored e-cigarette products
- 99.9% of non-flavored e-cigarette products

### RESEARCH AND PRACTICE

## Sales of Nicotine-Containing Electronic Cigarette Products: United States, 2015

Kristy L. Marynak, MPP; David G. Gammon, MS; Todd Rogers, PhD; Ellen M. Coats, MS; Tushar Singh, MD, PhD; and Brian A. King, PhD, MPH

**Objectives:** To assess the proportion of electronic cigarette (e-cigarette) products sold in the United States that contain nicotine according to retail scanner data.

**Methods:** We obtained unit sales data from January 11, 2015, to December 12, 2015, from The Nielsen Company for convenience stores; supermarkets; mass merchandisers; drug, club, and dollar stores; and Department of Defense commissaries. The data did not include purchases from tobacco specialty shops, "vape shops," or online sources. Nicotine content was assessed by product type (disposables, rechargeables, and refills), region, and flavor status based on nicotine strength listed in the Universal Product Codes. For the 36.7% of entries lacking nicotine content information, we conducted Internet searches by brand, product, and flavor.

**Results:** In 2015, 99.0% of e-cigarette products sold contained nicotine, including 99.0% of disposables, 99.7% of rechargeables, and 98.8% of refills. Overall, 98.7% of flavored e-cigarette products and 99.4% of nonflavored e-cigarette products contained nicotine.

**Conclusions:** In 2015, almost all e-cigarette products sold in US convenience stores and other assessed channels contained nicotine.

**Public Health Implications:** Findings reinforce the importance of warning labels for nicotine-containing products, ingredient reporting, and restrictions on sales to minors. (*Am J Public Health*. Published online ahead of print March 21, 2017; e1–e4. doi:10.2105/AJPH.2017.303660)

self-reported information on nicotine content may be susceptible to bias, especially among youths. To address this gap, we used retail sales data from 2015 to assess unit sales of nicotine-containing e-cigarettes.

### METHODS

In 4-week aggregate periods from January 11, 2015, to December 12, 2015, we acquired nationally representative Universal Product Code (UPC) data on unit sales of e-cigarettes from The Nielsen Company (Nielsen) for convenience stores; supermarkets; mass merchandisers; drug, club, and dollar stores; and Department of Defense commissaries. Nielsen collects information when a product's UPC is scanned at checkout, which includes detailed characteristics of text on the product packaging, such as brand, subbrand, flavor, nicotine content (if any), type of device, and quantity per package.

We categorized e-cigarette products into 3 mutually exclusive types: (1) disposables, (2) starter kits or rechargeable devices ("rechargeables"), and (3) refills, including prefilled cartridges and atomizers, and e-liquid bottles ("e-liquids"). The analysis excluded accessories that do not contain e-liquid.

### Nicotine Content

Each product was classified into 3 mutually

**E**lectronic cigarettes (e-cigarettes) are devices capable of delivering aerosolized nicotine, flavorings, and other substances to the user. E-cigarettes were the most commonly used tobacco product among US youths in 2015 and are more commonly used among high school students and young adults than 25 years.<sup>1–4</sup> Youth use of e-cigarettes is a public health concern because nicotine

(e-liquid) flavors and nicotine concentrations, including zero nicotine.

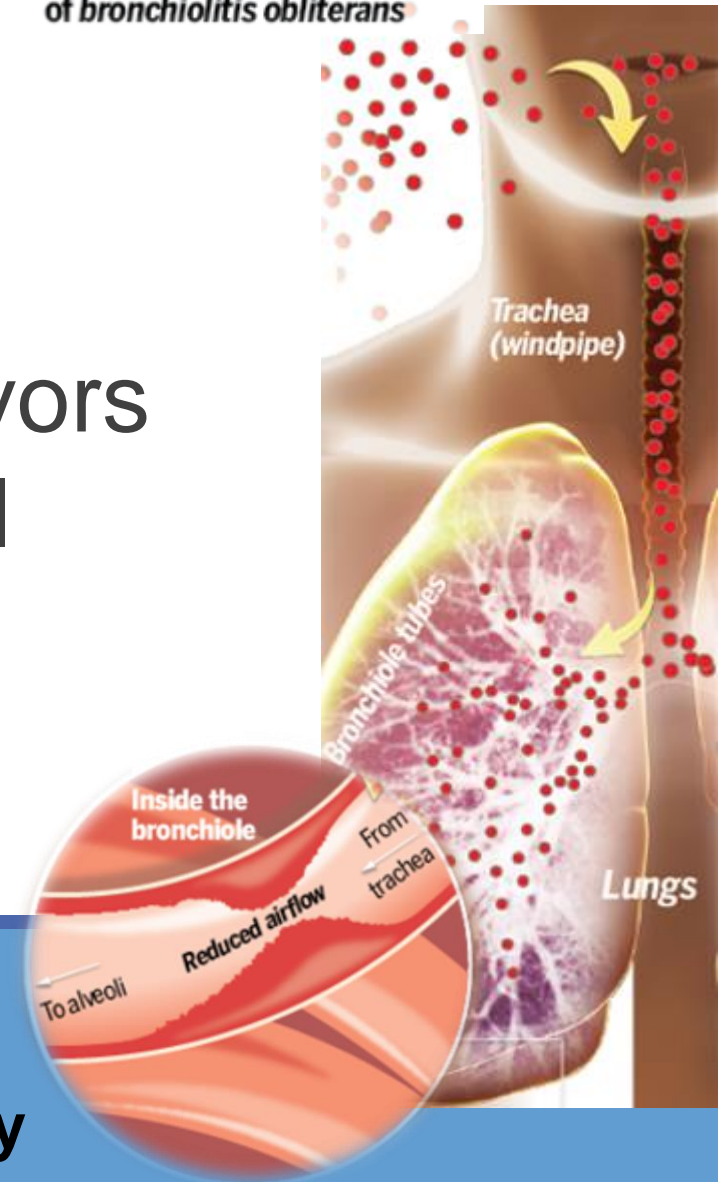
Demand for nicotine-containing e-cigarette products relative to zero-nicotine products is currently unknown but is of public health importance given the consequences of nicotine exposure given the consequences of nicotine exposure for young people.<sup>1,5</sup> More than 80% of 266 e-cigarette brands analyzed in 2014 offered zero-nicotine varieties,<sup>6</sup> and studies of self-reported use of e-cigarettes



# Flavorings

75% of e-cigarette flavors tested contain diacetyl

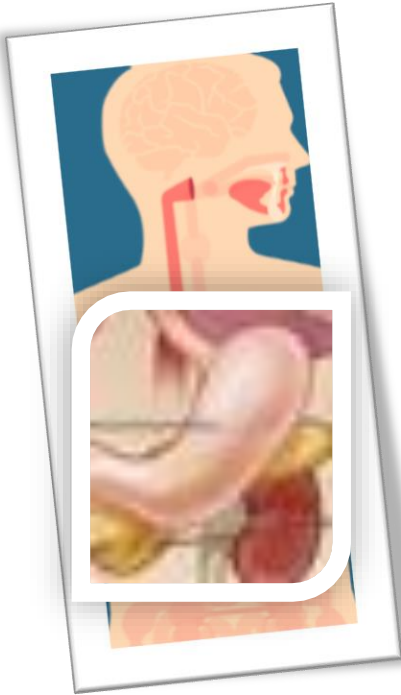
Exposure to diacetyl and onset of bronchiolitis obliterans



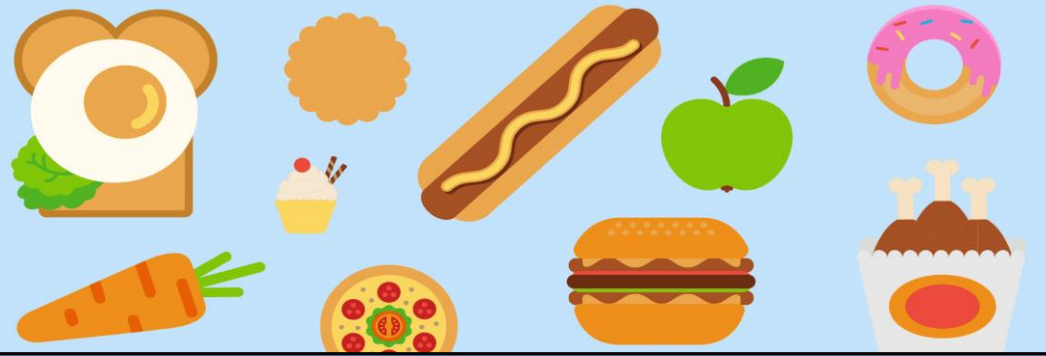
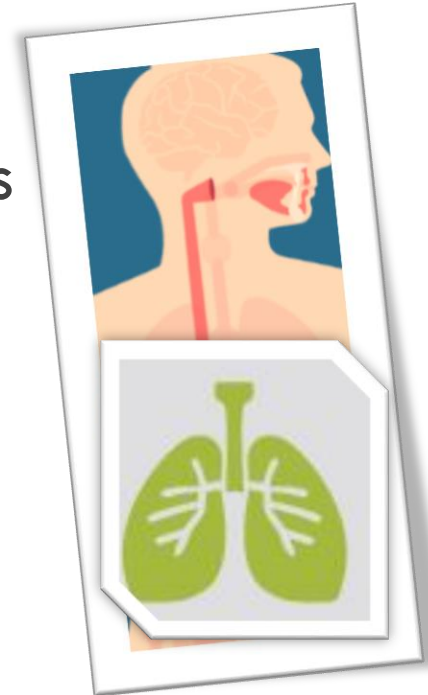
**Diacetyl is associated with bronchiolitis obliterans, a respiratory disease known as “popcorn lung.”**



# Your Gut Can Handle More Than Your Lungs



Some e-cigarette manufacturers claim flavorings are safe because they meet the FDA definition of “Generally Recognized as Safe” (“GRAS”)



**GRAS does not apply to products that are not food**

# E-cigarettes and Cannabinoids



## E-Cigarette Use Among Youth and Young Adults

A Report of the Surgeon General



U.S. Department of Health and Human Services

**Conclusion:** E-cigarette products can be used as a delivery system for cannabinoids and potentially for other illicit drugs.”



Cigars/Cigarillos/  
Filtered Little Cigars

# Flavored Little Cigars



Cigar Images Courtesy of Legacy®

## What's the Difference?



## “Cigarettes in Disguise”



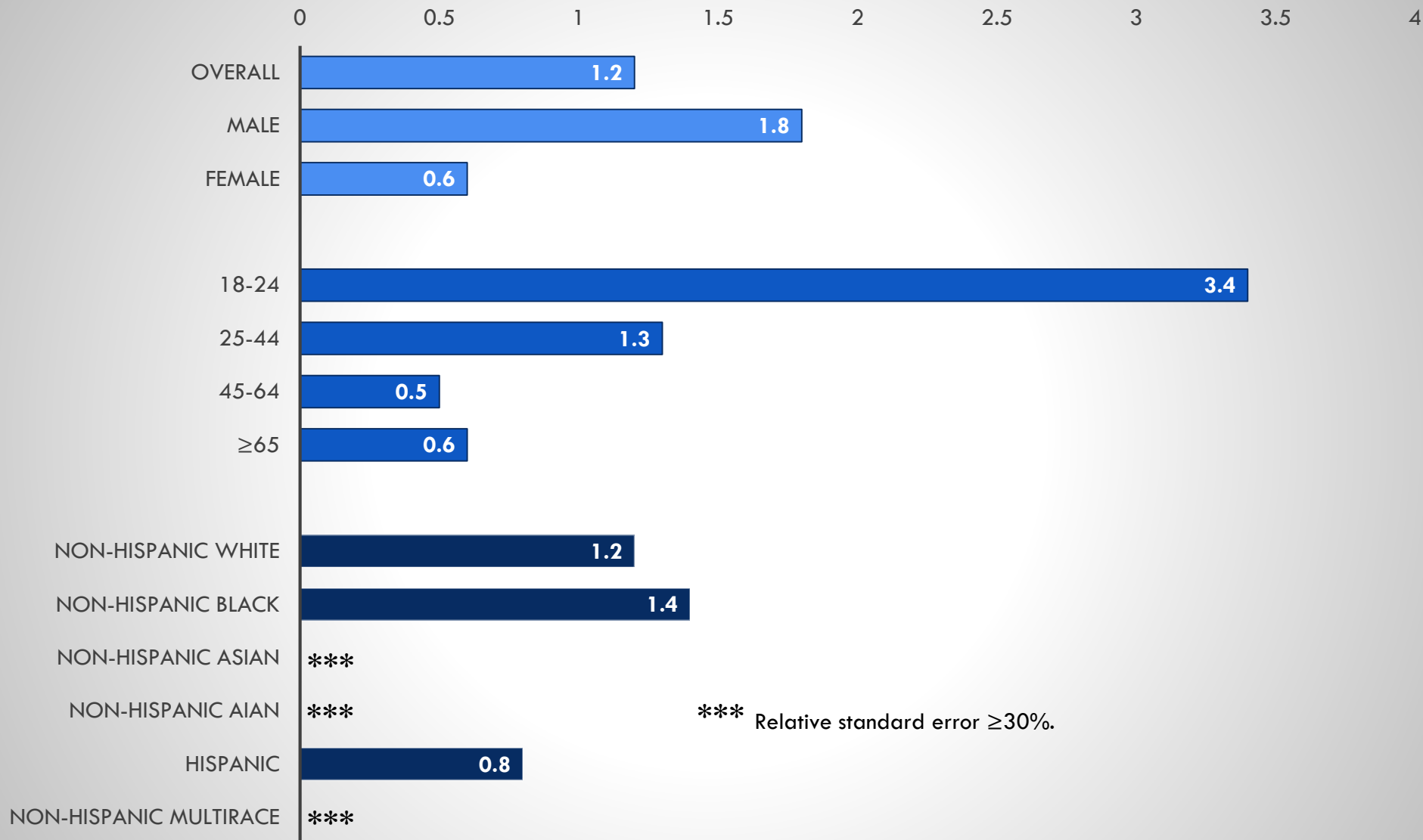




Hookah/Water Pipes

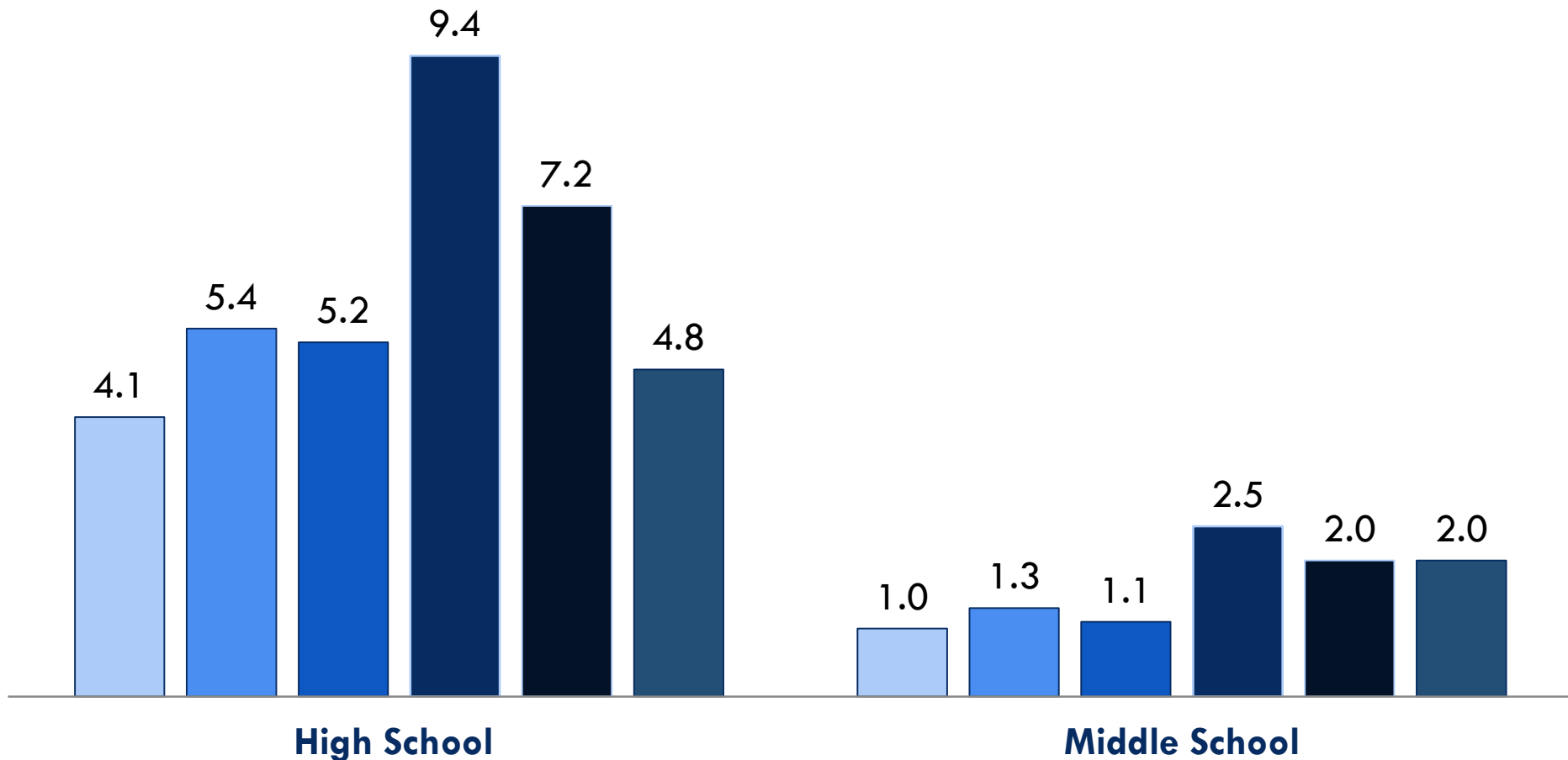


# Percentage of U.S. Adults Aged $\geq 18$ Who Reported Regular Pipe/Water Pipe/Hookah Use “Every Day” or “Some Days”, 2015



# Past 30 Day Use of Hookah among U.S. Middle & High School Students, 2011-2016

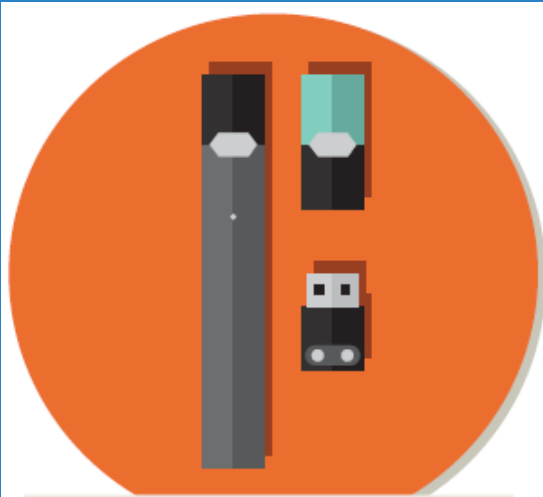
2011 2012 2013 2014 2015 2016



# The Evolving Landscape of Tobacco Use and Control



# The Rise of JUUL



An increasingly popular e-cigarette, called JUUL, is shaped like a USB flash drive.



## JUUL craze getting teens hooked on high levels of nicotine, health officials fear



### USA TODAY

## Juuling, 'peanut butter cup'-flavored vapes: Young adults experiment with e-cigarettes

Rachel Bluth, Kaiser Health News Published 10:24 a.m. ET March 28, 2018



The U.S. Surgeon General warns e-cigarette use is a growing public health concern. Sean Dowling (@seandowlingtv) has more. Buzz60

## The New York Times 'I Can't Stop': Schools Struggle With Vaping Explosion



NEW YORK TIMES

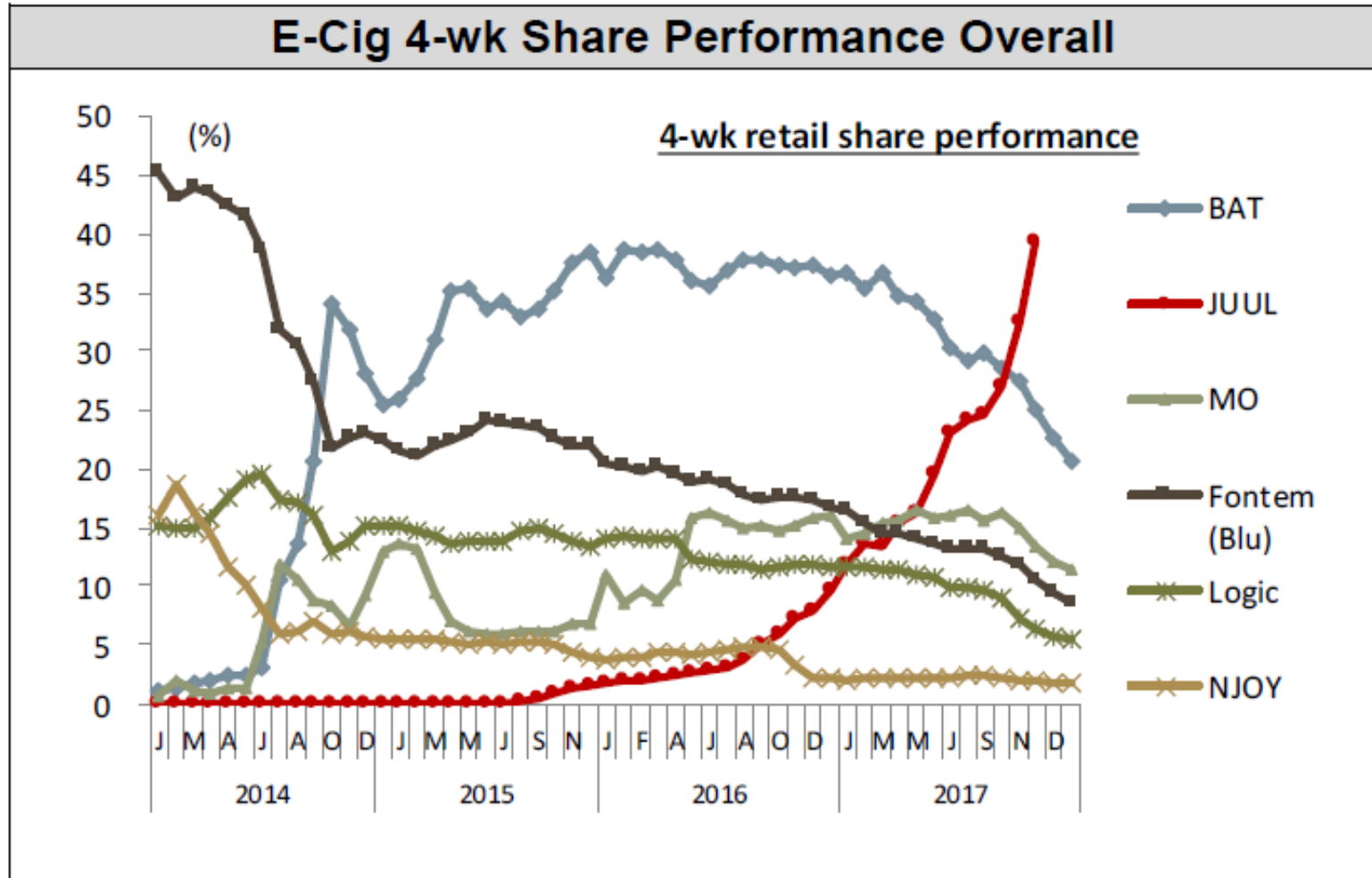
## Juul emerges as vape of choice among teens

New York Times | April 6, 2018 | Updated April 6, 2018 11:57am



Here's the biggest news you missed this weekend  
usatoday.com | 21 hours ago

# Top Selling E-cigarettes in the U.S.





# “Heat Not Burn” Products

- Contain Tobacco
- “Throat-Hit” similar to cigarettes
- Positioned to appeal to smokers who have tried and rejected e-cigarettes



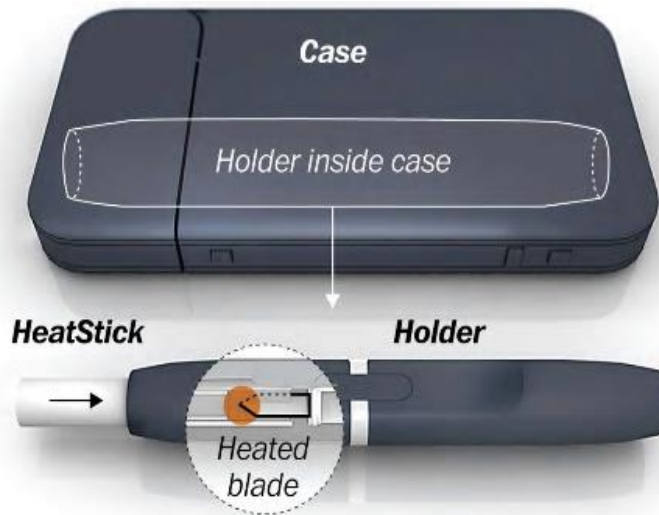
Above: Revo Cigarettes



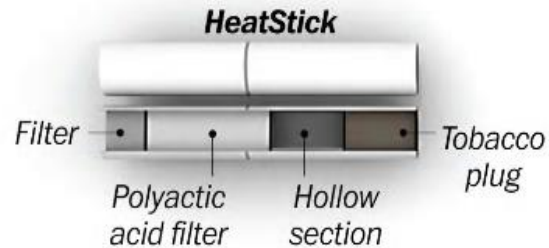
Above: Eclipse Cigarettes

# iQOS Up Close

The battery case contains and charges the IQOS holder after each use.



A “HeatStick” is inserted into the holder. An electronically powered blade within the holder pierces the HeatStick and heats up the tobacco inside to roughly 570 degrees.



The HeatStick contains tobacco powder and a hollow area to cool down the air being inhaled. Because tobacco is heated instead of burned, there is no smoke and fewer carcinogens, the company says.

## **Traditional cigarette**



# Pending FDA Pre-Market Approval

A scientific advisory committee met to discuss the MRTP application in January 2018.

Philip Morris International submitted applications to FDA for approval to:

- Market iQOS (“Premarket Tobacco Product Application” or PMTA)
- Make health claims (“Modified Risk Tobacco Product” application or MRTP)



# The Evolving Landscape of Tobacco Use and Control

A graphic illustration featuring a dark grey road with white dashed lines that curves from the bottom left towards the top left. The background is a light beige color with a subtle, mottled texture. On the right side of the road, there is a yellow diamond-shaped sign with a black border. The word "Conclusions" is written in bold black text in the center of the sign. There are two small black dots near the top and bottom center of the sign's border.

**Conclusions**

# Barriers to Reducing Tobacco Use





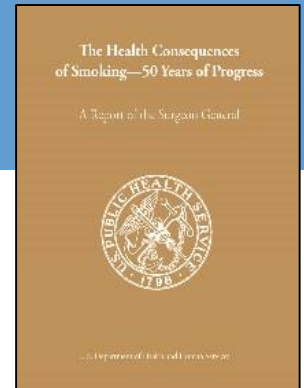
# Tobacco Control Works:

## MAJOR CONCLUSION #8

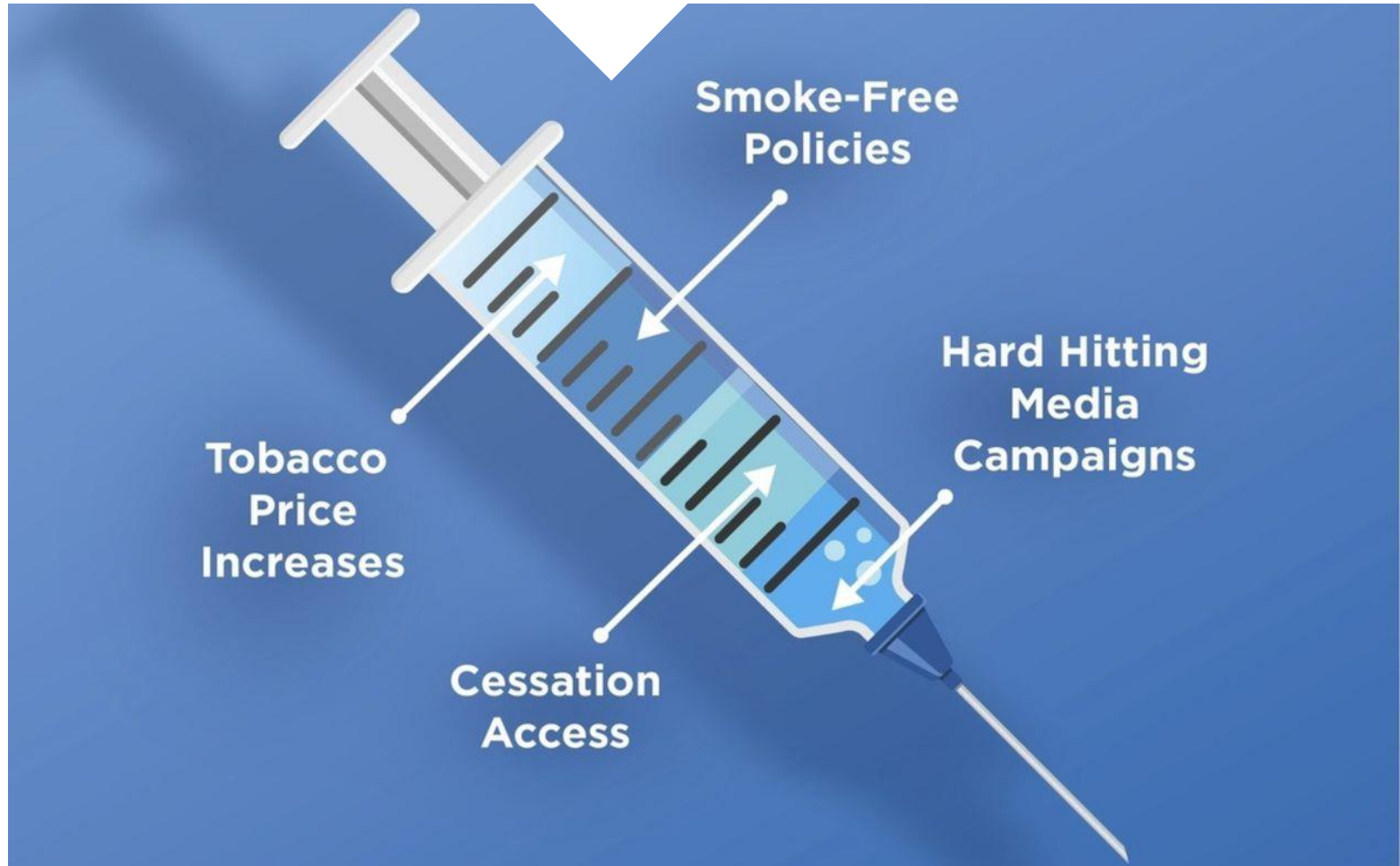
**“Since the 1964 Surgeon General’s report, comprehensive tobacco control programs and policies have been proven effective for controlling tobacco use. Further gains can be made with the full, forceful, and sustained use of these measures.”**

Since 1964 tobacco control:

- **Prevented over 8 million early deaths**
- **Saved 157 million life years**



# Tobacco Control Vaccine





# Major Conclusion

#7



“Action can be taken at the national, state, local, tribal, and territorial levels to address e-cigarette use among youth and young adults. **Actions could include incorporating e-cigarettes into smoke-free policies,** preventing access to e-cigarettes by youth, price and tax policies, retail licensure, regulation of e-cigarette marketing likely to attract youth, and educational initiatives targeting youth and young adults.”

# Public Health Actions to Address E-Cigarettes

## Federal Regulation

### *Family Smoking Prevention and Tobacco Control Act*

- Signed into law on June 22, 2009
- Granted FDA the authority to regulate tobacco products
- Enhances the ability to intensify policy to reduce tobacco industry influence
  - Manufacturing
  - Marketing
  - Sale

## State, Local, Territory

### *Potential Sub-National Action:*

- Including e-cigarettes in smokefree indoor air policies
- Restricting youth access to e-cigarettes in retail settings
- Licensing retailers
- Establishing specific package requirements
- Setting price policies

# New FDA Manufacturer Requirements:



Registering manufacturing establishments and providing product listings to the FDA



Reporting ingredients, and harmful and potentially harmful constituents



Requiring premarket review and authorization of new tobacco products by the FDA



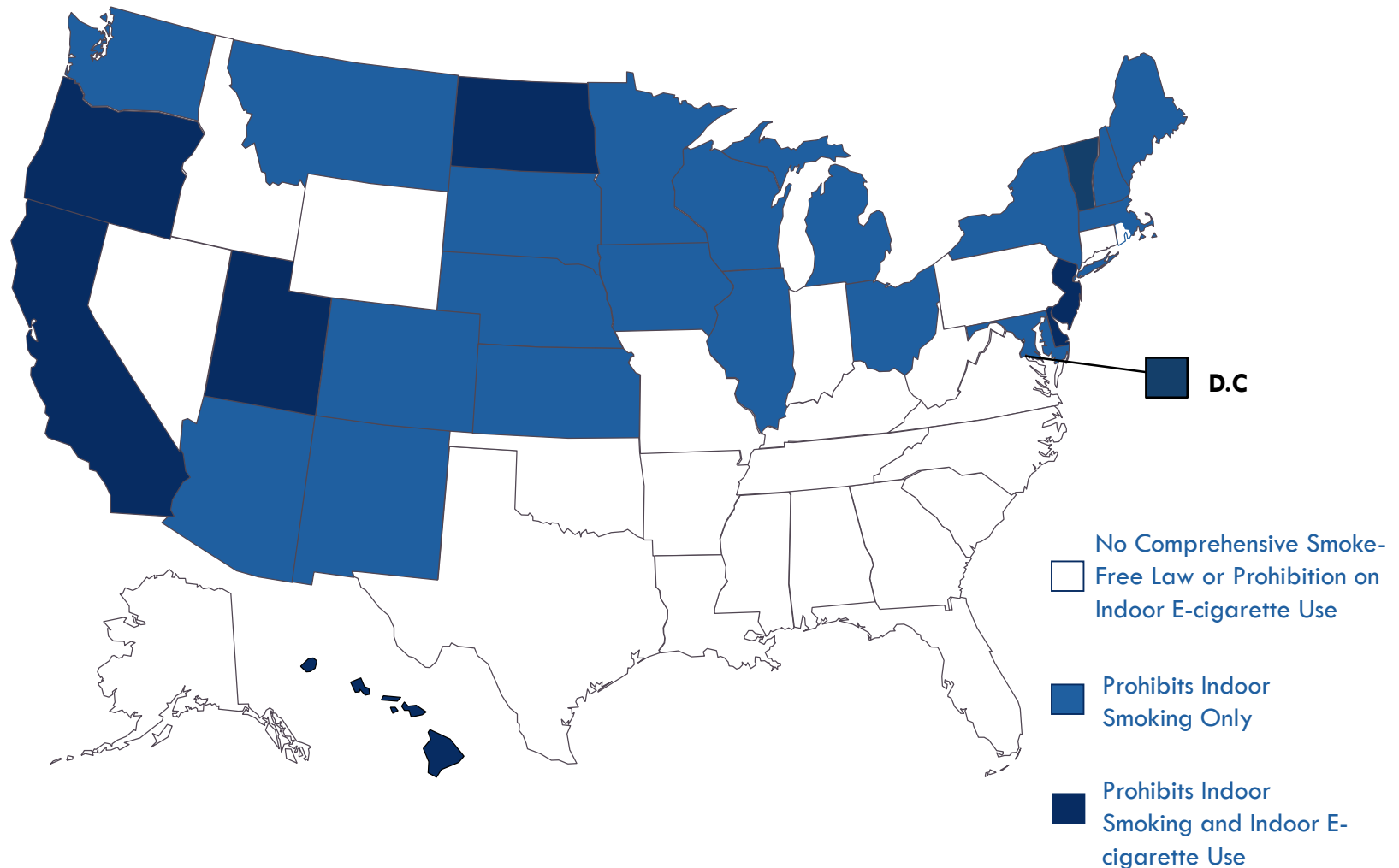
Placing health warnings on product packages and advertisements



Not marketing newly deemed tobacco products (including e-cigarettes) with modified risk claims unless authorized by the FDA.



# States With & Without Laws Prohibiting Smoking & Use of E-cigarettes in Indoor Areas of Private Worksites, Restaurants, & Bars – U.S., December 2017



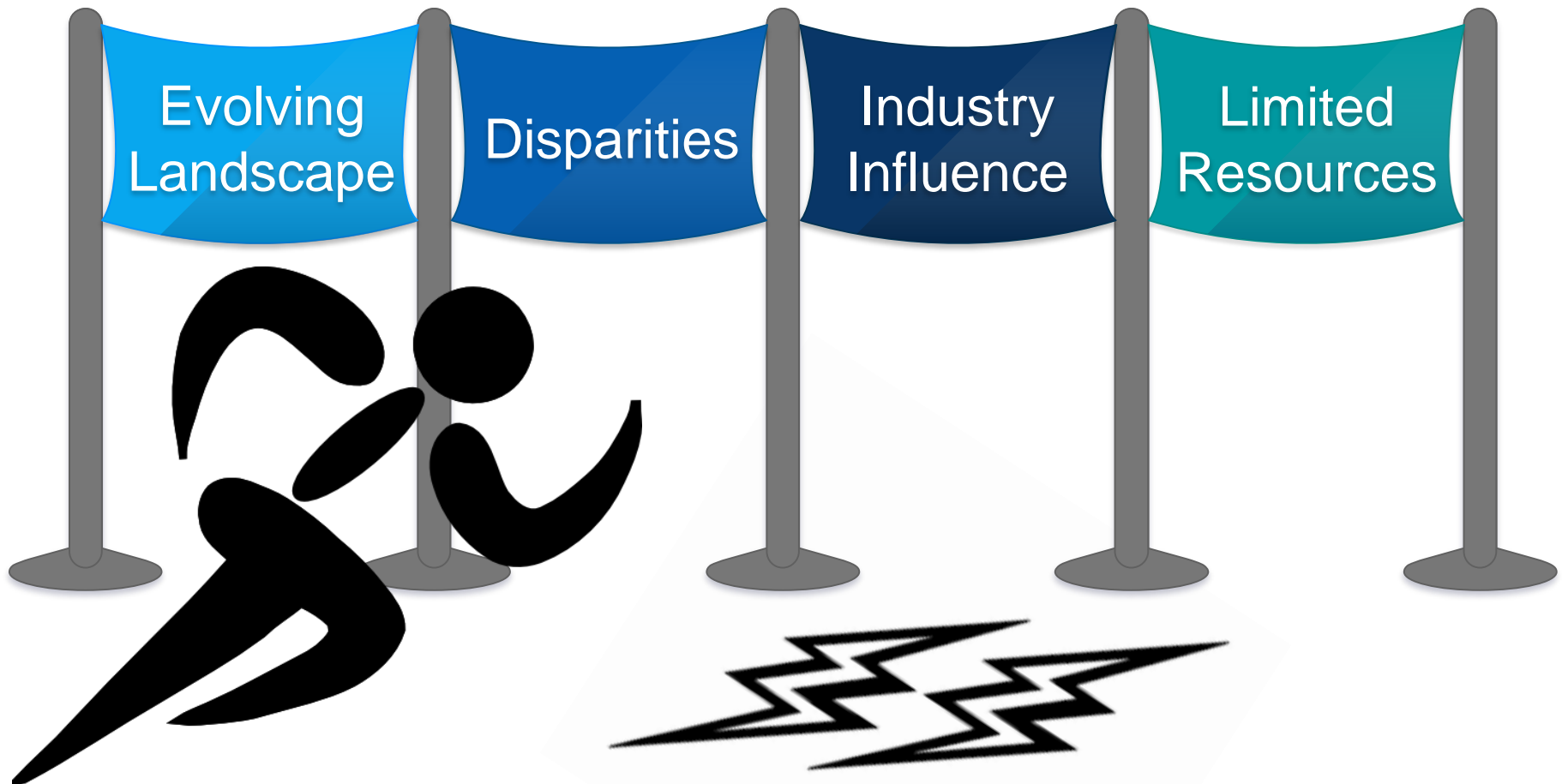
# TOBACCO ~~eighteen~~ twenty-one

Including  
**5** with  
Statewide  
T21 laws

## 300+ Cities & Counties in **19** States



# Tobacco Control Hurdles



# Tobacco Industry's Role

## MAJOR CONCLUSION #2

The Health Consequences  
of Smoking—50 Years of Progress

A Report of the Surgeon General



U.S. Department of Health and Human Services

**“The tobacco epidemic was initiated and has been sustained by the aggressive strategies of the tobacco industry, which has deliberately misled the public on the risks of smoking cigarettes.”**



Source: U.S. Department of Health and Human Services. The health consequences of smoking—50 years of progress: A report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2014.





## Takeaways

**1** The tobacco product landscape has and continues to diversify over time.

**2** The burden of cigarettes smoking is declining, but disparities remain.

**3** Recently, the electronic product landscape has diversified to include new products, including JUUL and heated tobacco products.

**4** As the tobacco product landscape continues to diversify, it's critical to modernize tobacco control strategies to adapt to these changes.



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[www.cdc.gov/tobacco](http://www.cdc.gov/tobacco)



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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.