



# Vaping: What Do We Know?

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Health Educator - Tobacco Prevention

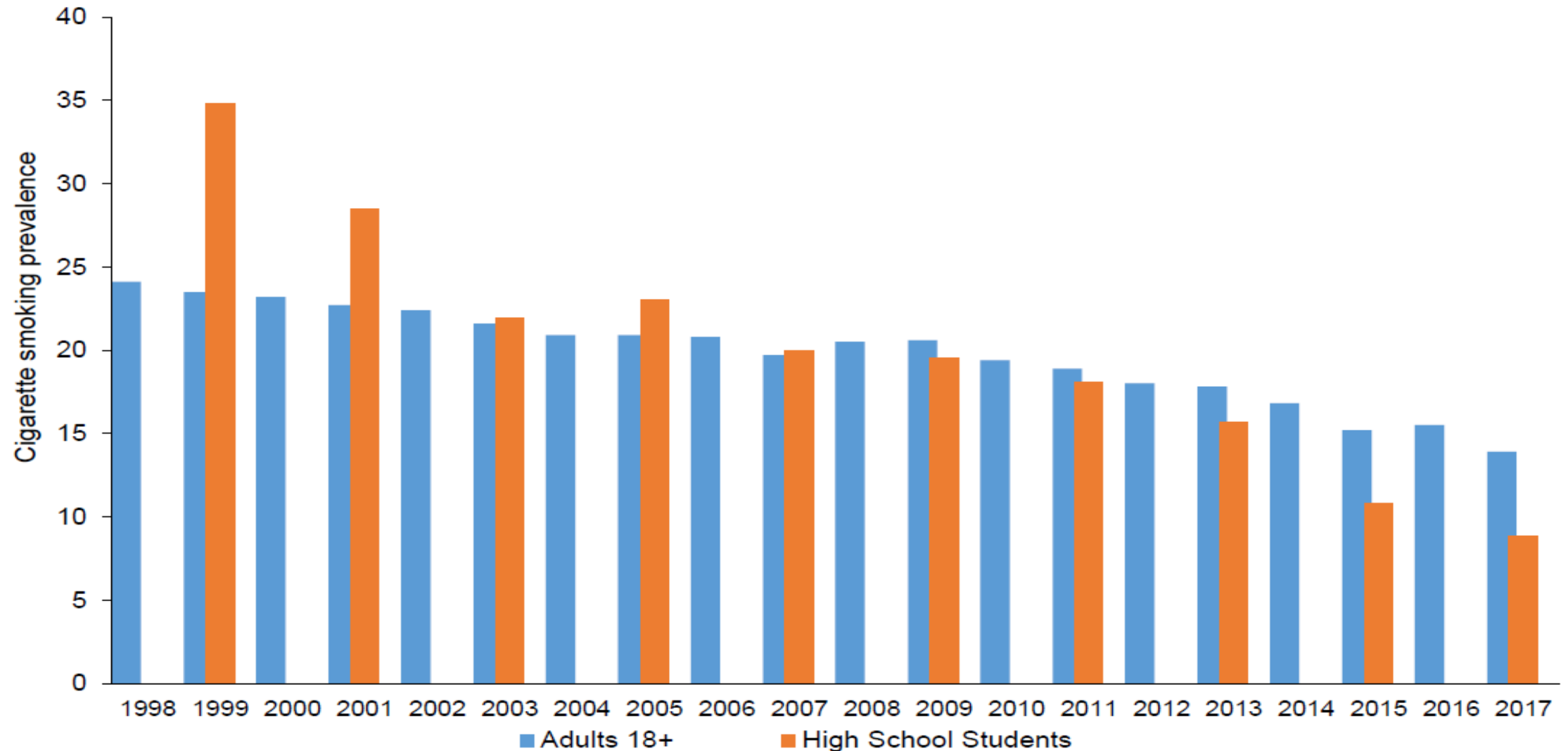


**Warren County  
Health District**

# Discussion Topics

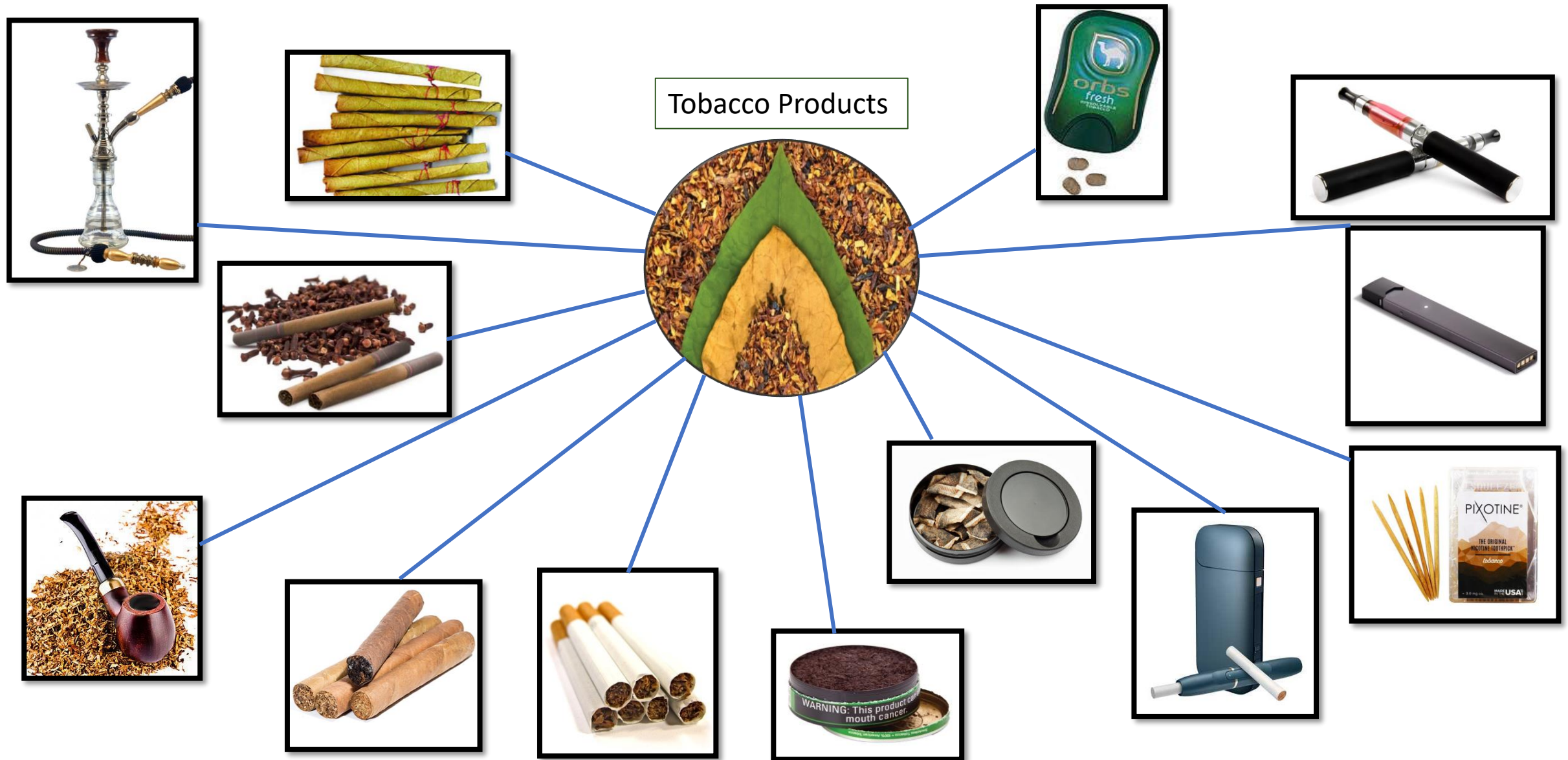
- 1 What is a vaping device? What is the history behind these devices?
- 2 Who is using e-cigarettes (and why)?
- 3 Is e-cigarette use safe?
- 4 What can we do to help prevent e-cigarette use?

# The Good News: Cigarette Smoking Rates Have Decreased



Sources: Adult cigarette smoking prevalence data are from the National Health Interview Survey.  
High school cigarette smoking prevalence data are from the National Youth Risk Behavior Survey.

# The Not So Good News: The Tobacco Landscape is Evolving



# What are E-Cigarettes?

- Electronic Nicotine Delivery System (ENDS): battery operated device that heats up liquid nicotine, which provides an aerosol, or “vapor” for inhalation
- Other names: electronic cigarette, e-cigarette, e-cig, e-hookah, vape, vape pen, vape stick, tank, mod
- Many different brand names: JUUL, VUSE, Blu, Logic, Suorin, etc.



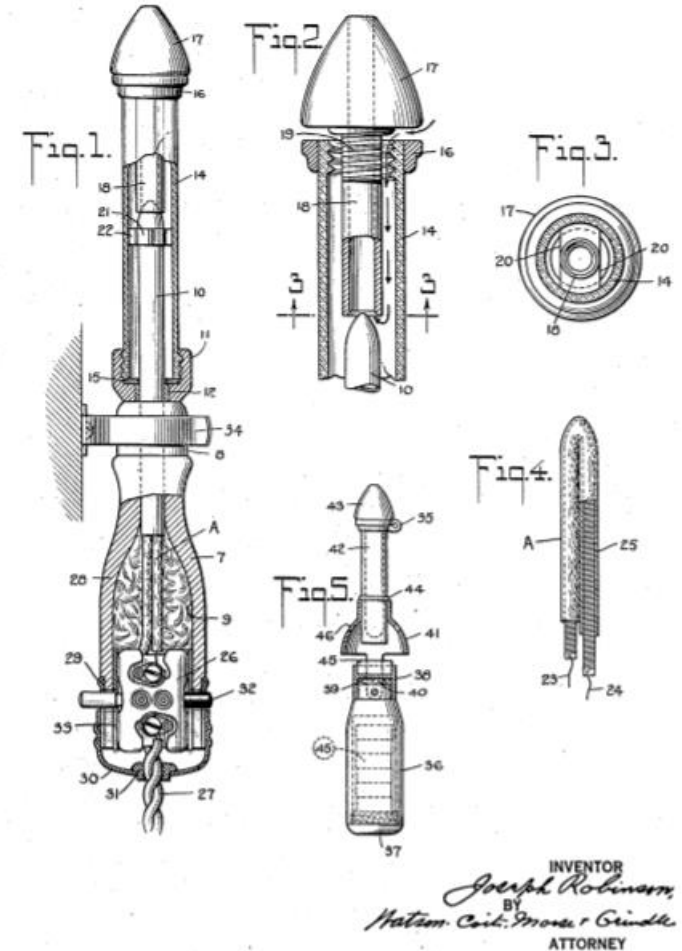
# A Brief History of E-Cigarettes

- Developed to help smokers quit
- Entered the U.S. market in 2006/2007
- Briefly "banned" in 2009, as the FDA classified them as unapproved drug delivery devices
- In 2009 the FDA was given jurisdiction of tobacco products, and e-cigarettes became classified as a tobacco product.

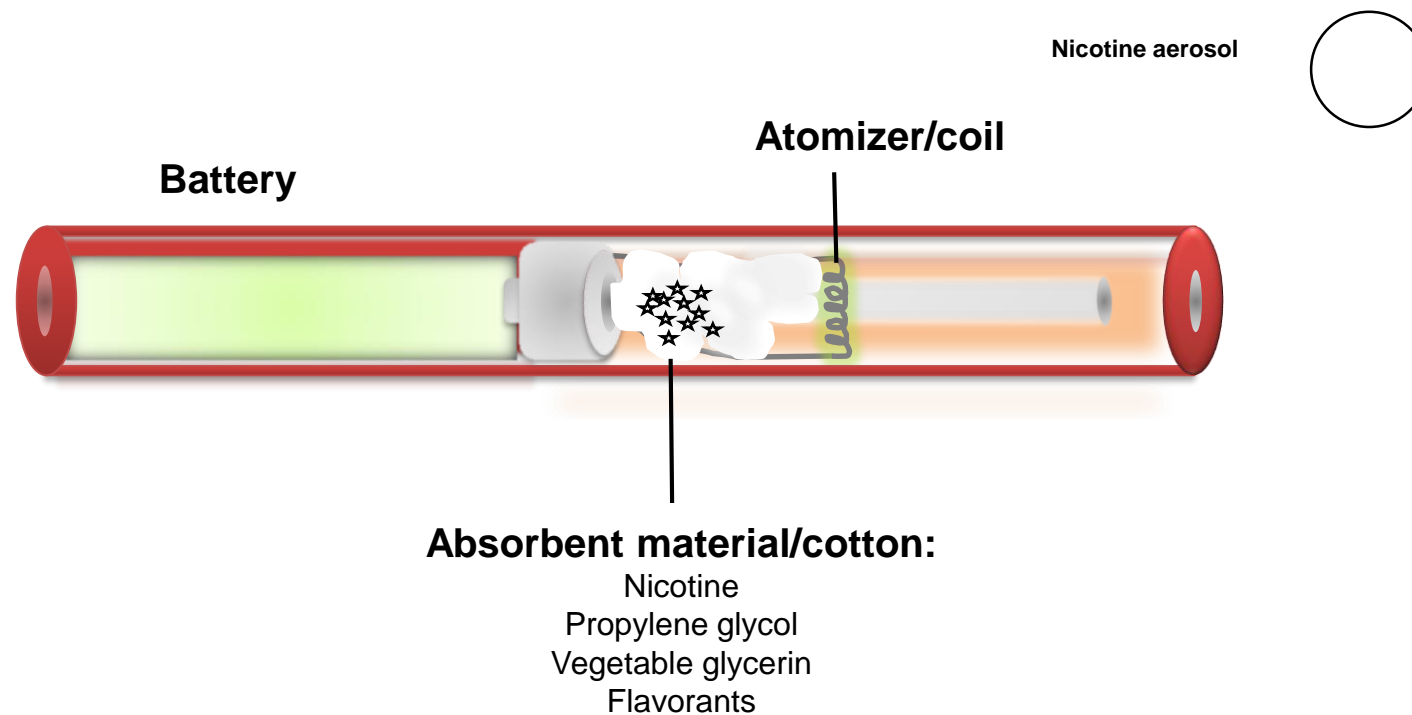
Sept. 16, 1930.

J. ROBINSON  
ELECTRIC VAPORIZER  
Filed May 3, 1927

1,775,947



# Anatomy of an E-Cigarette



**\*99% of e-cigarette liquids contain nicotine**  
Source: American Journal of Public Health, 2015

# E-Cigarette Types

There are 4 basic types of e-cigarettes on the market:

- Minis or Ciglikes (\$7-\$10)



- Mid-size, Re-chargeable, Pen (\$20-\$40)



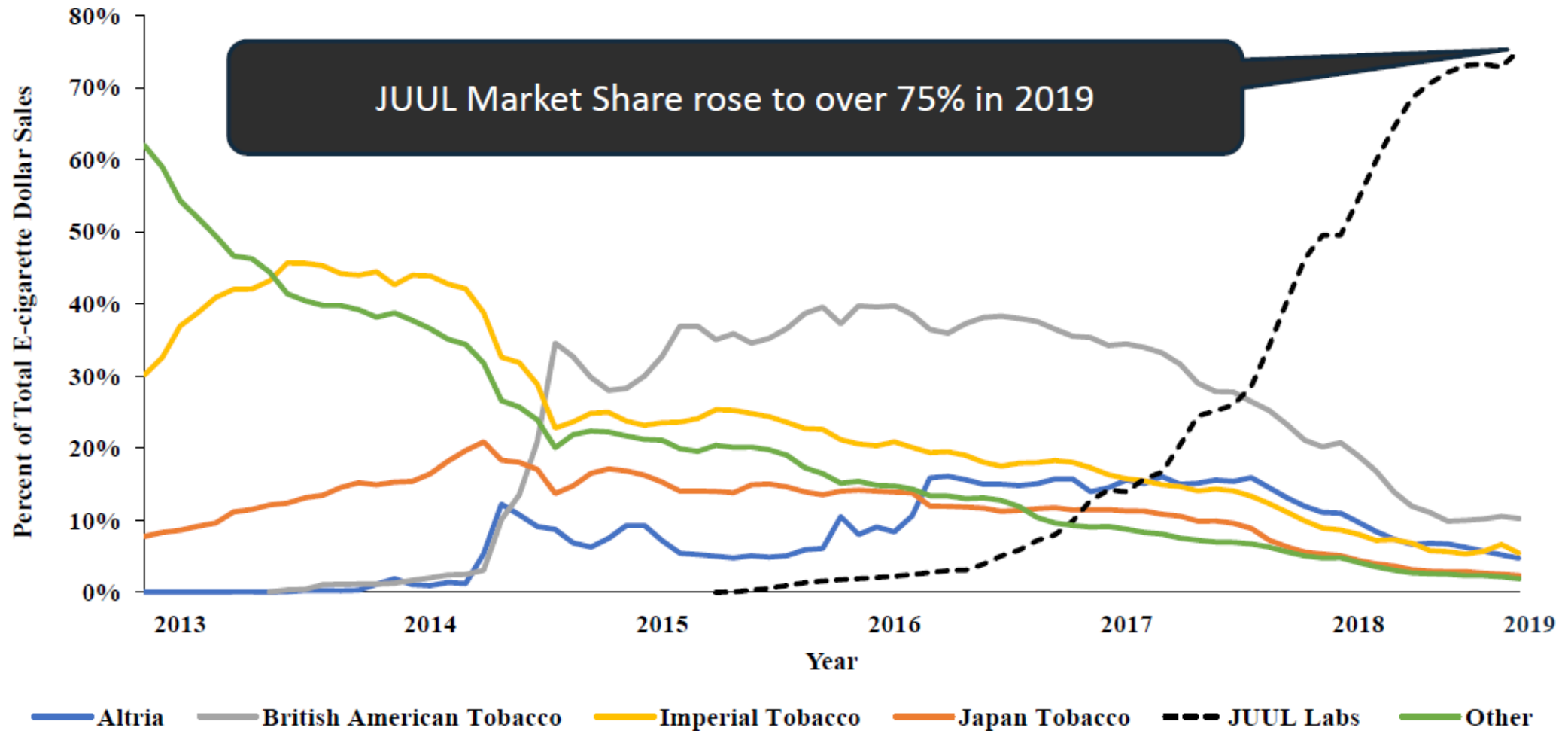
- Mods or Tanks (\$60+)



- Pod Based (\$15-\$50)



# E-Cigarette Market Share, By Dollar Sales, U.S. 2013-2019



# What is JUULing?



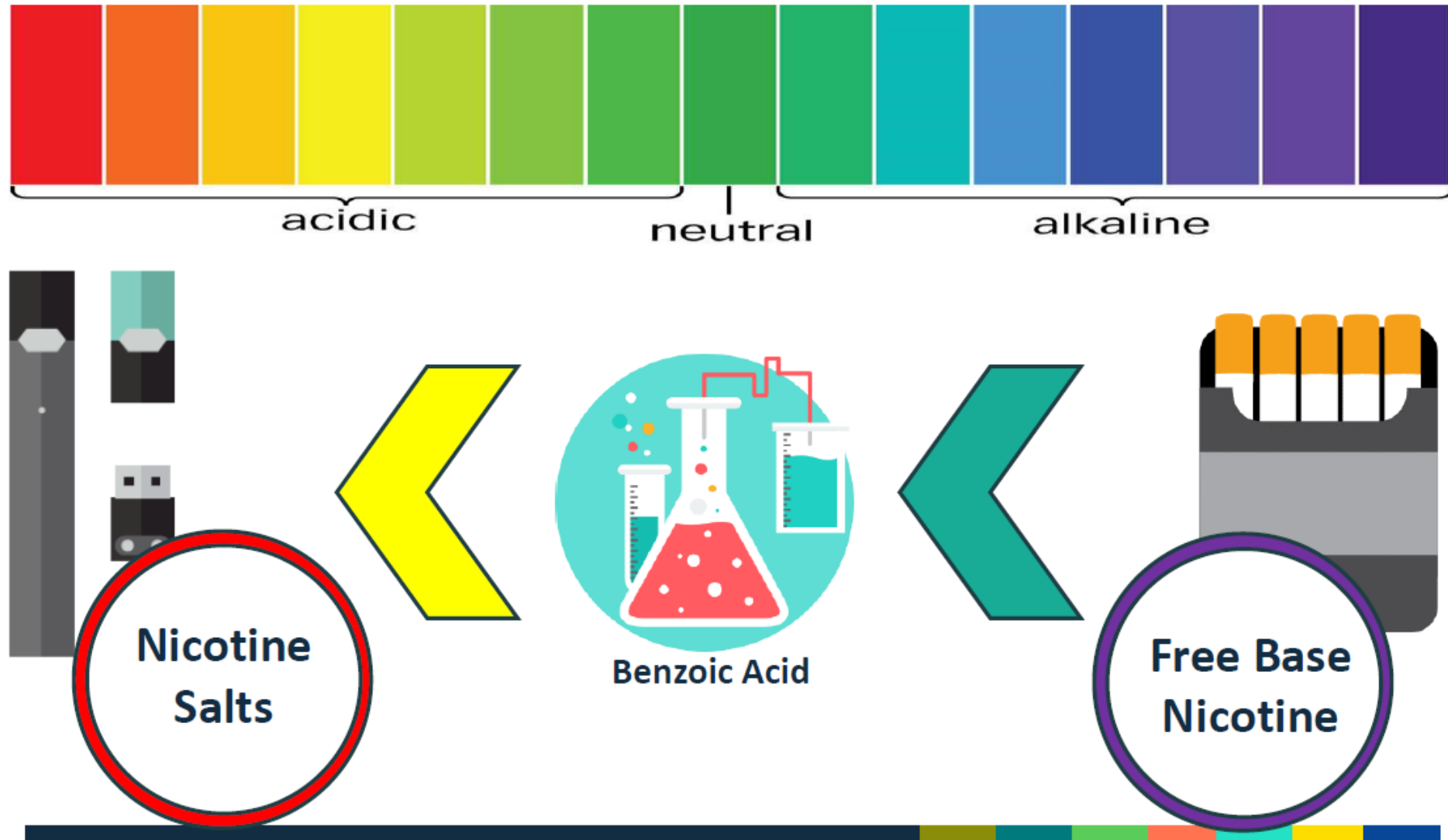
- JUUL, originally developed by Pax Labs, is most popular among students
- Small, sleek design, similar to a USB flash drive
- Produce a very faint aerosol - very discrete
- Comes in multiple flavors: mango, crème brulee, cucumber, cool mint, fruit medley
- Charges on a laptop or through any USB port

# Nicotine in JUULs



- JUUL pods contain 59 mg/ml of nicotine (5% strength)
  - Equivalent to **smoking an entire pack of cigarettes**
- The pods are not refillable
  - However, JUUL pod knock-offs can be purchased online
  - The devices can be “hacked” to include THC, as well as other e-liquids provider’s pods
- JUUL contains salt-based nicotine, instead of “free-base” nicotine
  - This improves the absorption rate of the nicotine, as well as cuts down on the “harshness” of inhaling the nicotine aerosol

# How Nicotine Salts Allow High Levels of Nicotine to Be Inhaled More Easily

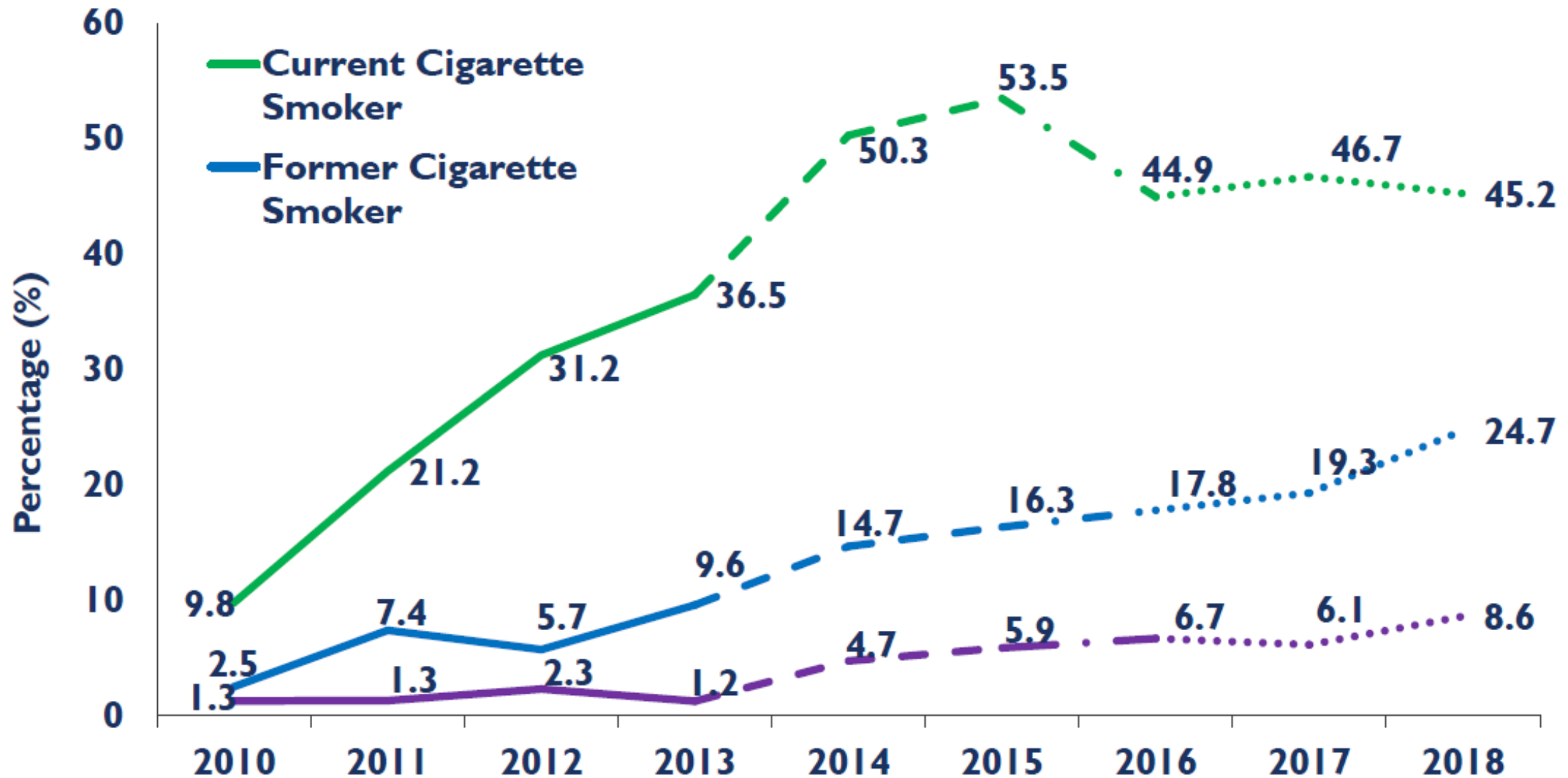




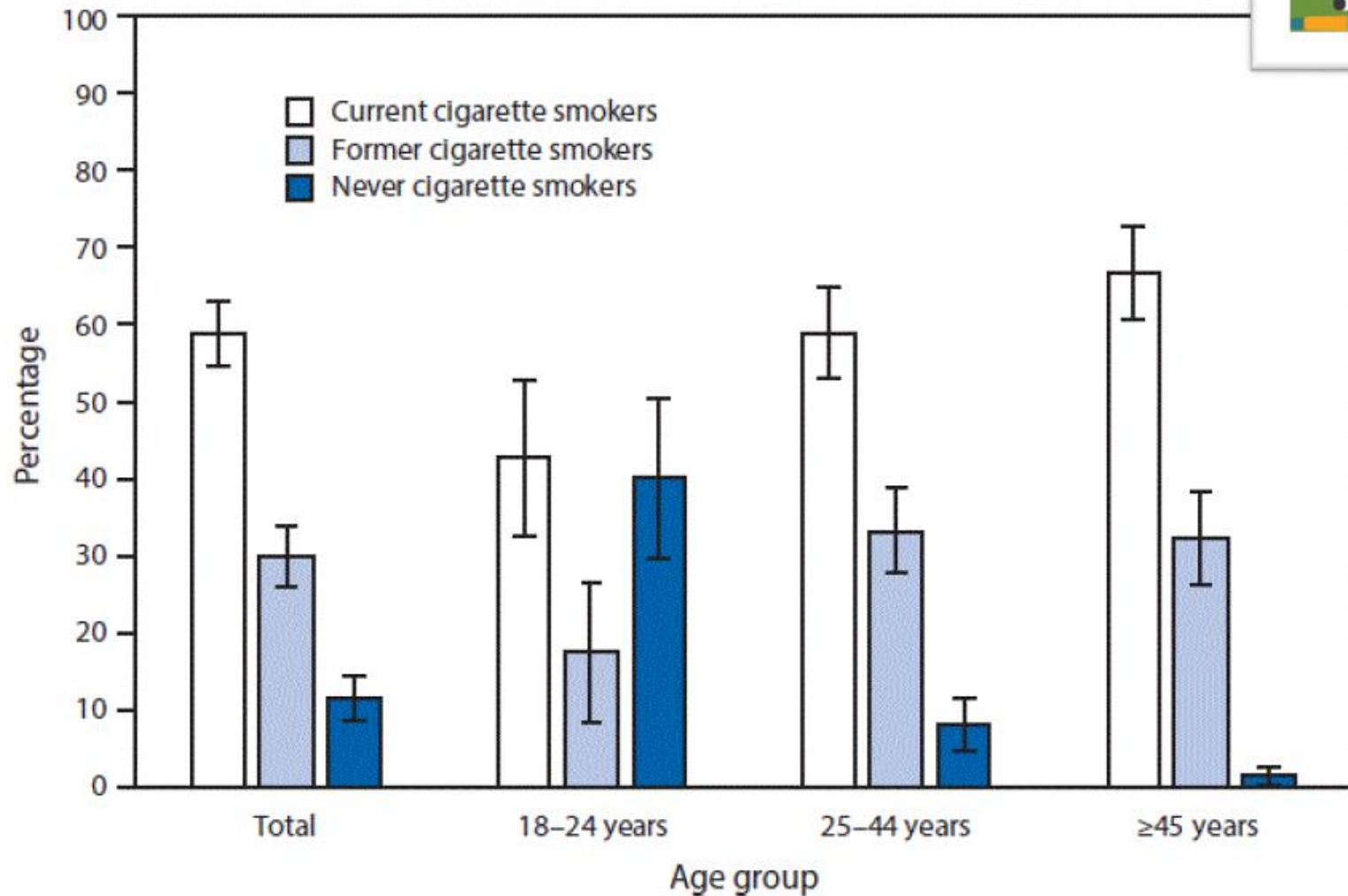
Who is vaping?



## Ever Use of E-cigarettes Among Adults, by Cigarette Smoking Status—U.S., 2010-2018



# RELATIONSHIP BETWEEN CIGARETTE SMOKING AND E-CIGARETTE USE

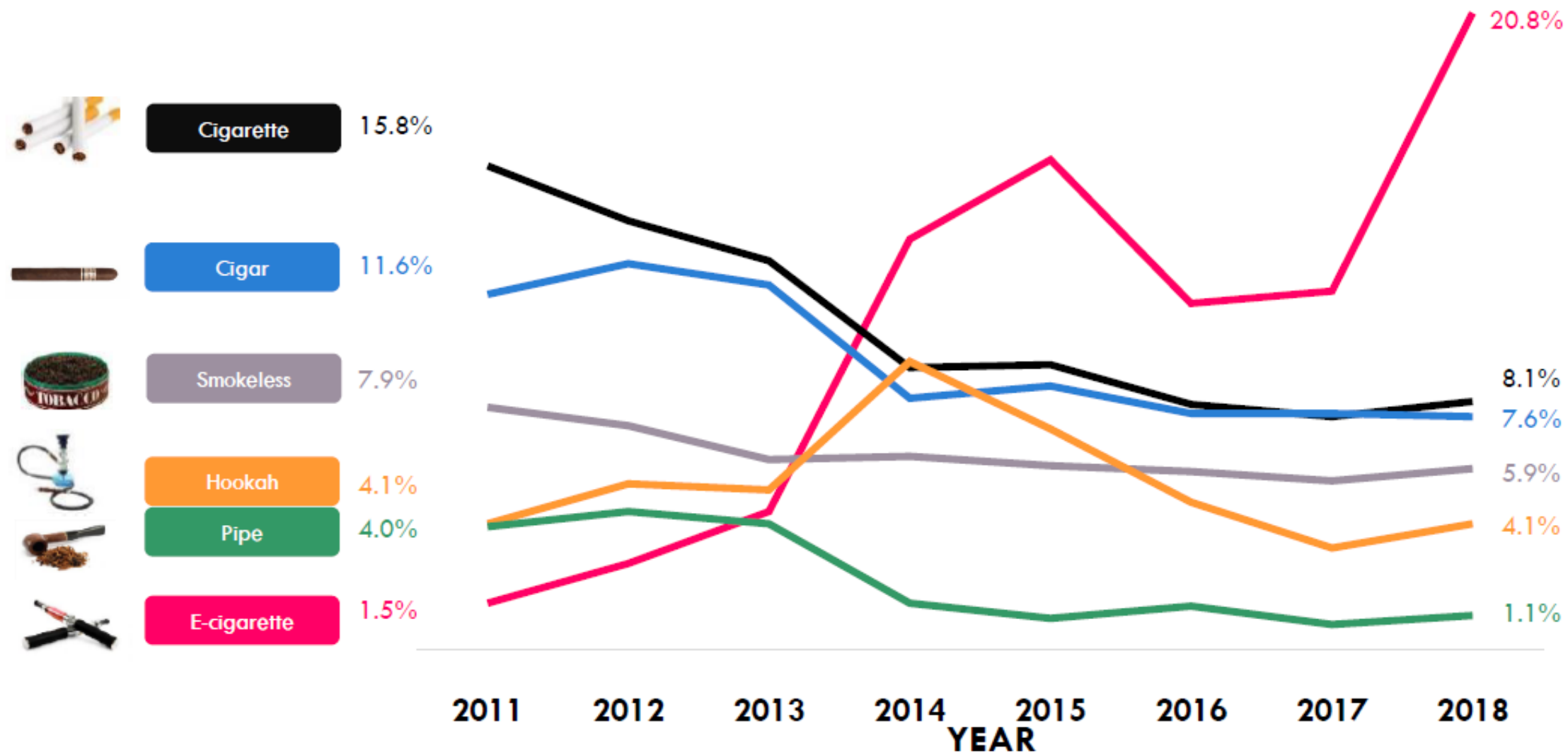


# Youth E-Cigarette Use

- During 2017-2018, tobacco use ***increased*** by **39%** among high school students and **29%** among middle school students.
- Of that increase, e-cigarette use ***increased*** by **78%** among high school students and **49%** among middle school students.
- Nearly **1 in 4** Warren County high school students have used e-cigarettes in the past school year.

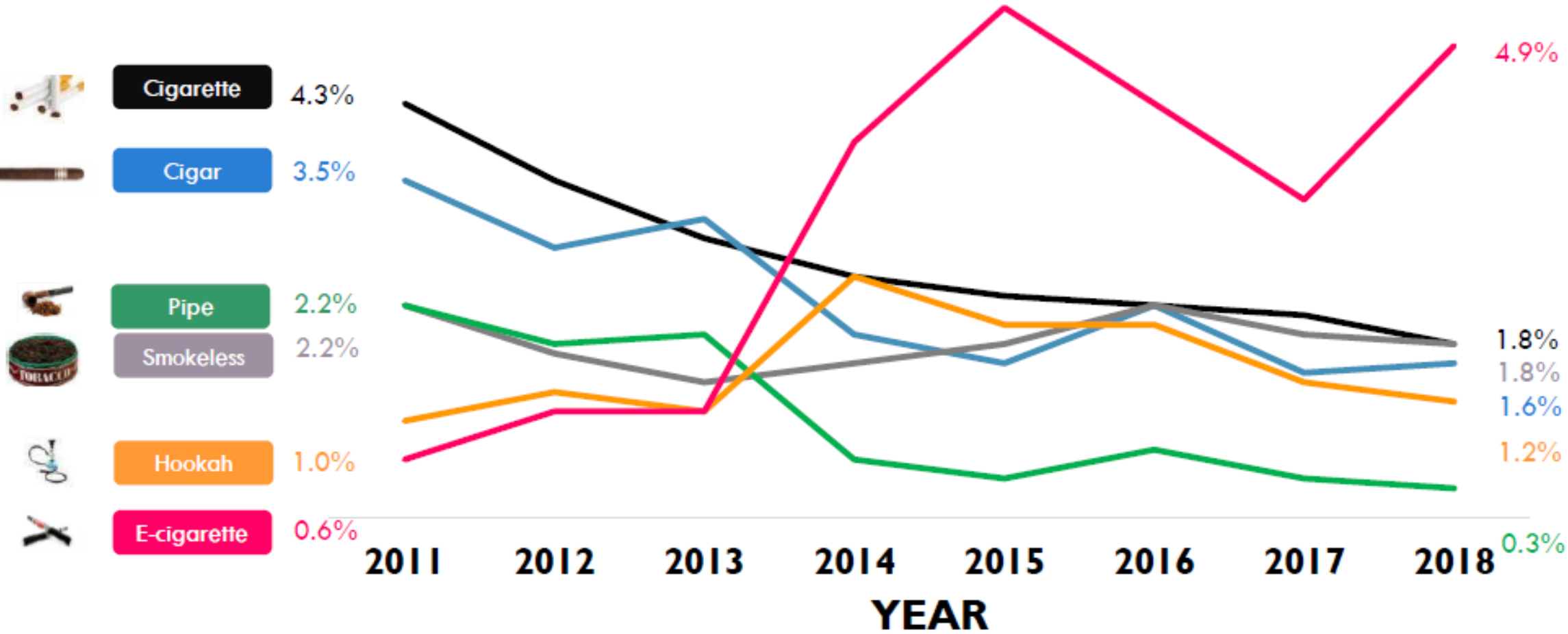


# Current Tobacco Product Use Among U.S. High School Students by Tobacco Product – NYTS 2011-2018



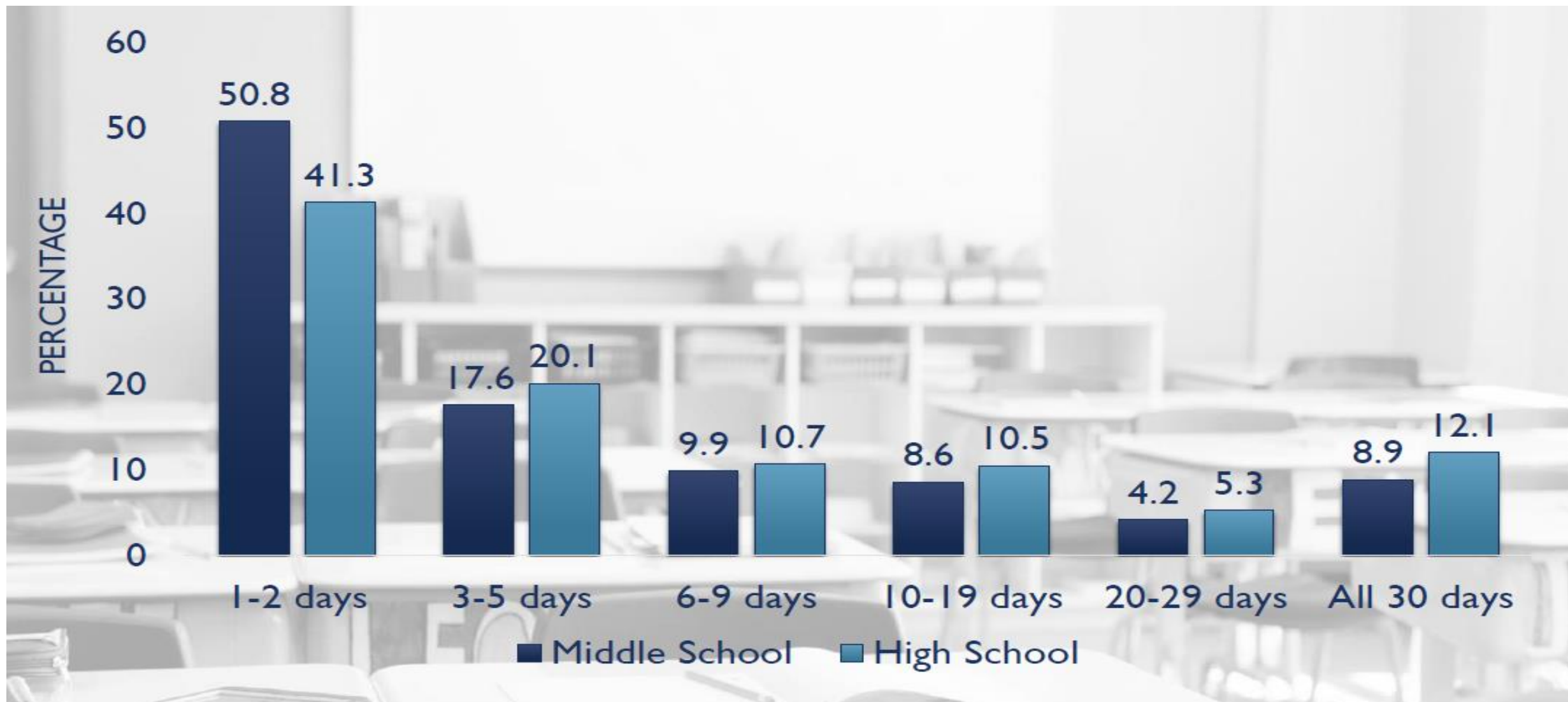
Source: Gentzke AS et al.. Vital Signs: Tobacco Product Use Among Middle and High School Students —United States, 2011–2018. MMWR Morb Mortal Wkly Rep 2019; 68(6):1-8.

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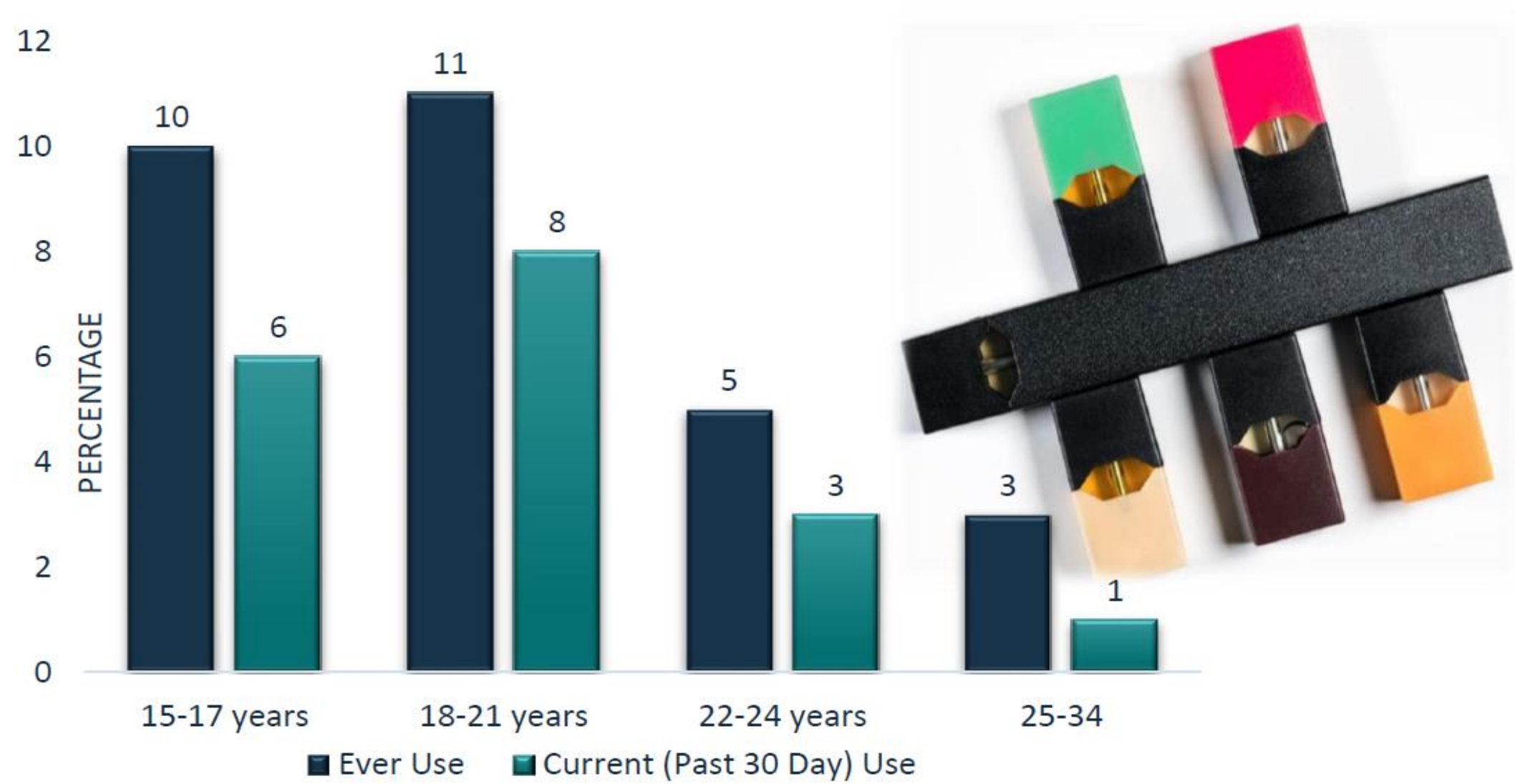


Source: Gentzke AS et al.. Vital Signs: Tobacco Product Use Among Middle and High School Students —United States, 2011–2018. MMWR Morb Mortal Wkly Rep 2019; 68(6):1-8.

# Frequency of Youth E-Cigarette Use, 2015-2017



# JUUL use among young people (February – May 2018)



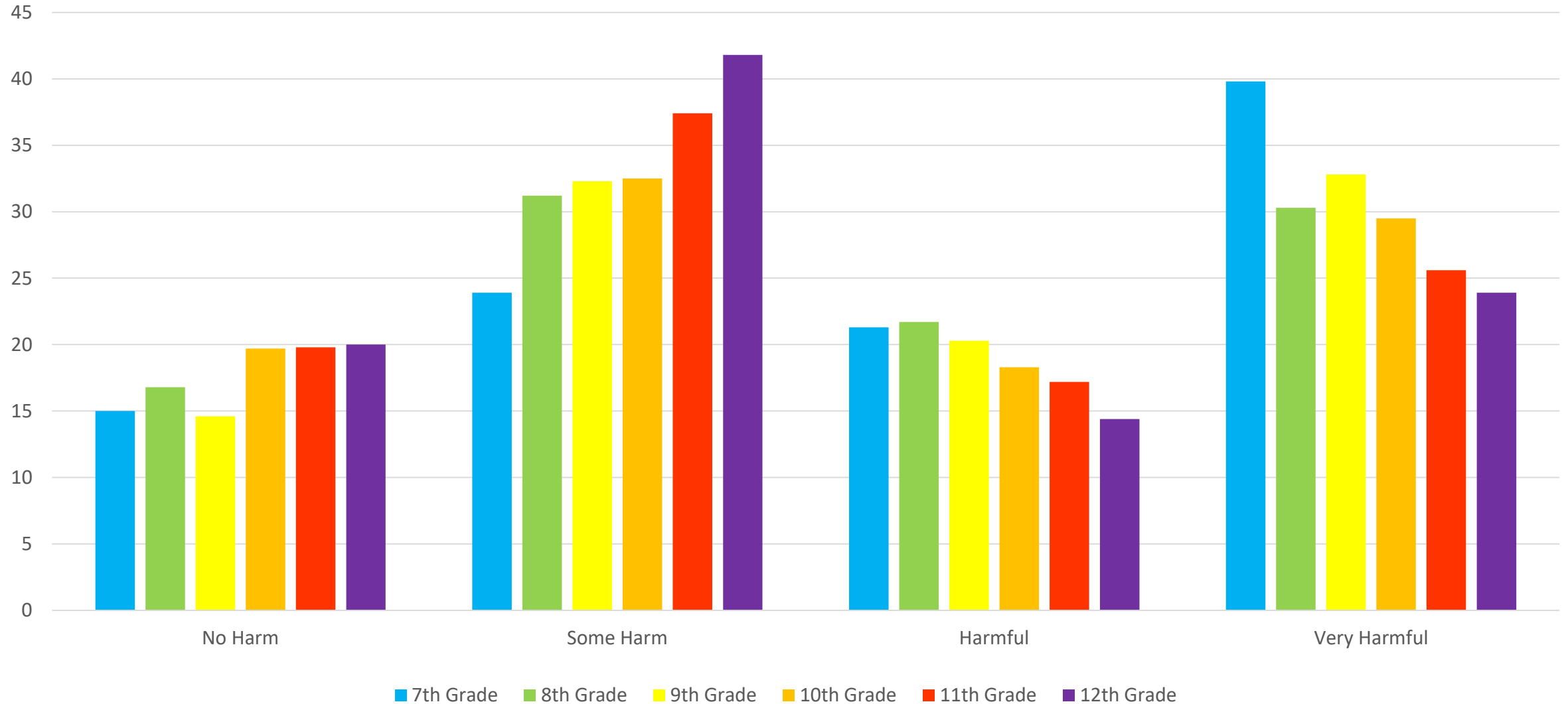
Source: ValloneDM, Bennett M, Xiao H, et al Prevalence and correlates of JUUL use among a national sample of youth and young adults Tobacco Control Published Online First: 29 October 2018.

# Pride Survey Data – Cincinnati Region

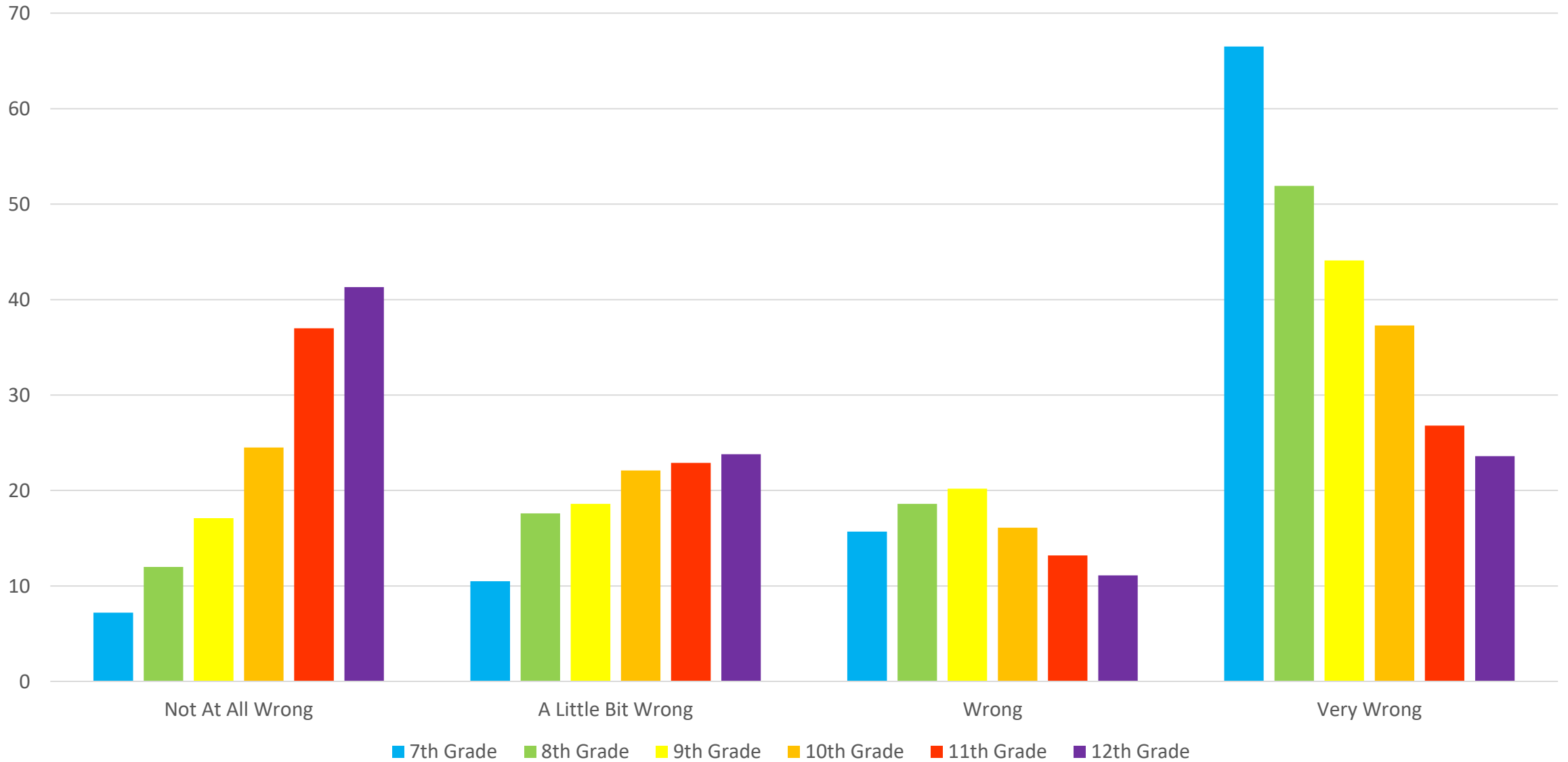
## Availability

<b>2018 Student Drug Use Survey</b>	<b>Fairly Easy/Very Easy</b>
Alcohol	38.7%
Cigarettes/Tobacco	36.2%
Marijuana	27.3%
Prescription Drugs	22.3%
Electronic-Vapor	39.0%

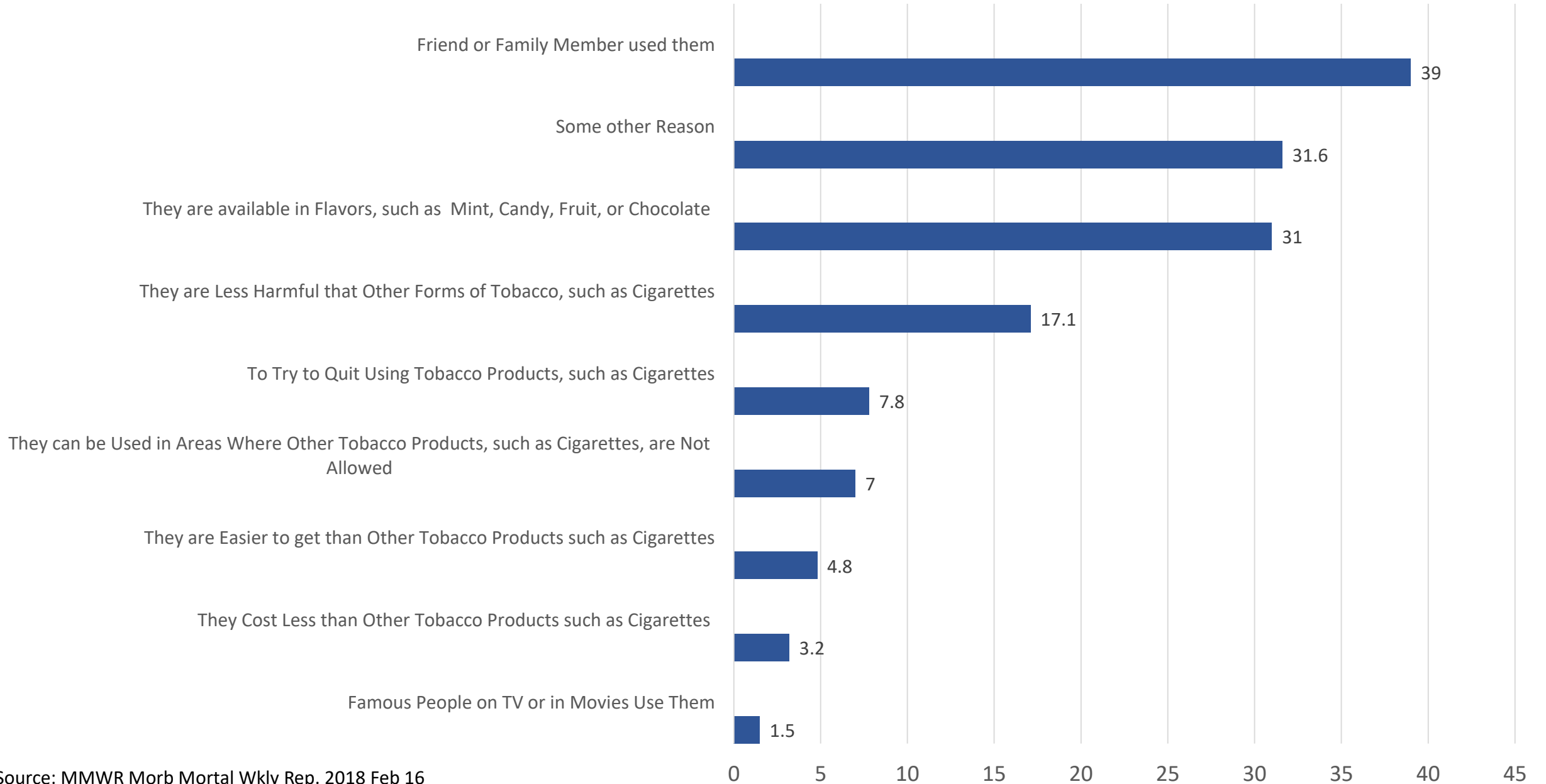
**Perception of Harm – Warren County Pride Survey Data 2017-2018**  
**“Do you feel using an electronic vapor product is harmful to your health?”**



## Perception of Friend's Disapproval: Use of Electronic Vapor Products

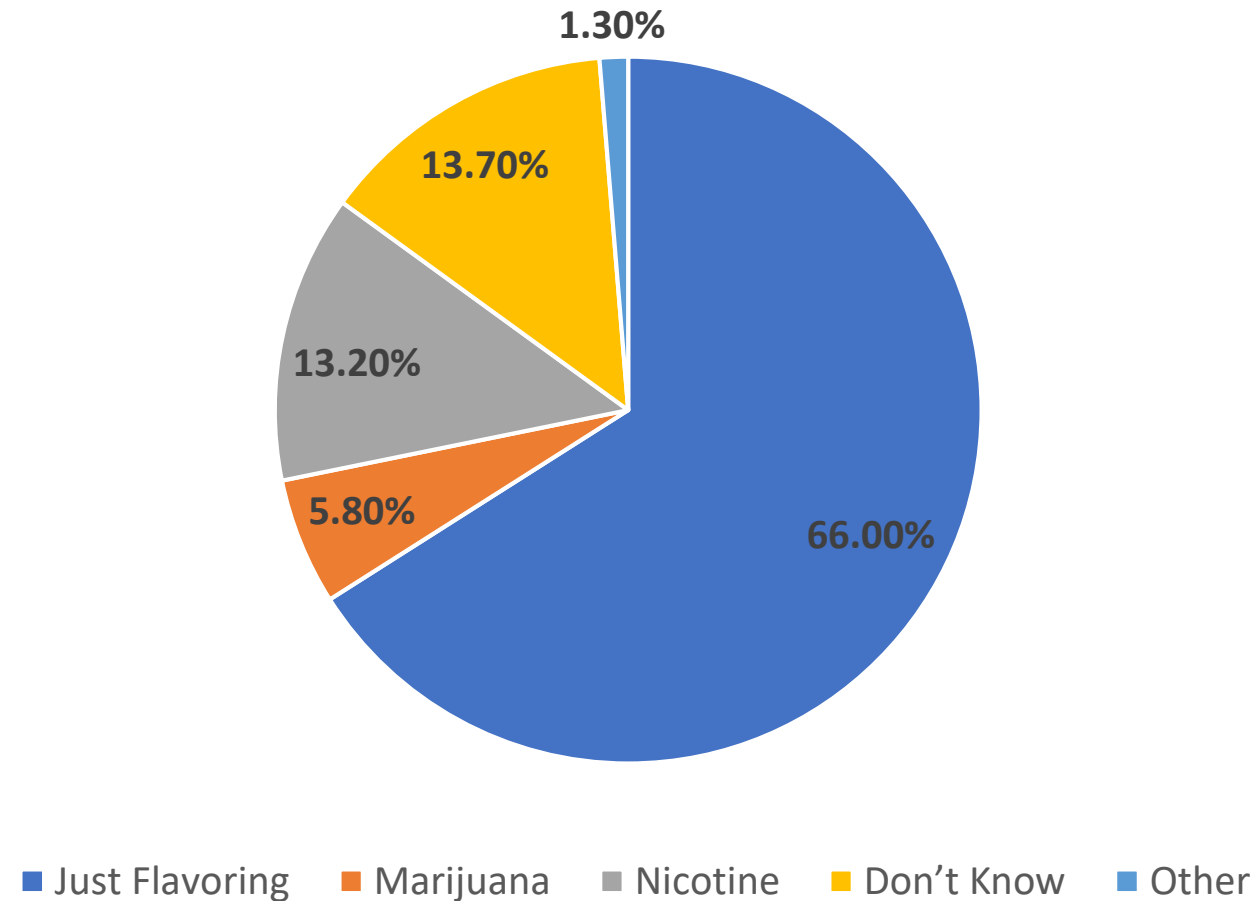


# Reasons for Youth E-Cigarette Use



# Do Teens Know What's In Them?

What Do Teens Say Is In Their E-Cigarette?



# Youth E-Cigarette Initiation and Use

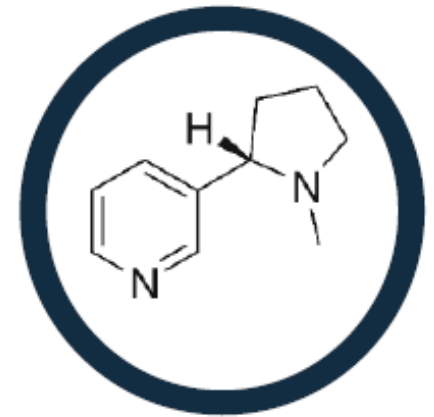
**Advertising**



**Flavors**



**Nicotine**



# Marketing and Youth

- There are few federal restrictions on e-cigarette marketing, which allows companies to market their products through traditional outlets:
  - TV/Movies
  - Radio
- Taking advantage of other marketing outlets:
  - Internet
  - Retail
  - Recreational events and venues
- Other sneaky ways:
  - Offering scholarships
  - Free School Prevention Programming
  - Social media, including social media influencers
  - Sponsorship of music/movie festivals (Sasquatch! and Sundance)
  - Flavors, colors



## 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



RETAIL STORES

68.0% 17.7 MILLION



TELEVISION

37.7% 9.7 MILLION



INTERNET

40.6% 10.6 MILLION



NEWSPAPERS & MAGAZINES

23.9% 6.2 MILLION

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





**\_hannah\_janee** • [Follow](#)

Los Angeles, California

\_hannah\_janee Happy Hump Day! Have you guys tried the @cks\_brand THNDR yet? I'm loving it 🤔 .

📷: @bschilkephotography

#picoftheday #vape #vaping #vapelite  
#lifestyle #ootd #instavape  
#vapecommunity #hypebabe  
#girlswithtattoos #tones #vapefeed #hype  
#vapepics #vapelyfe #promo #style #street  
#agameoftones #calivapers #promomodel  
#vapeporn #streetwear #model  
#vapemodel #vaperz

9southvapes 🔥🔥👤



tittoesalas 🤔🤔🤔🤔🤔🤔



1,582 likes

6 HOURS AGO

Add a comment...





# 85%

of e-cigarette users ages  
12-17 use flavors

menthol  
alcohol  
candy

fruit  
chocolate  
sweets







# Is Vaping Safe?



**Potential Aid for Adult Cessation**



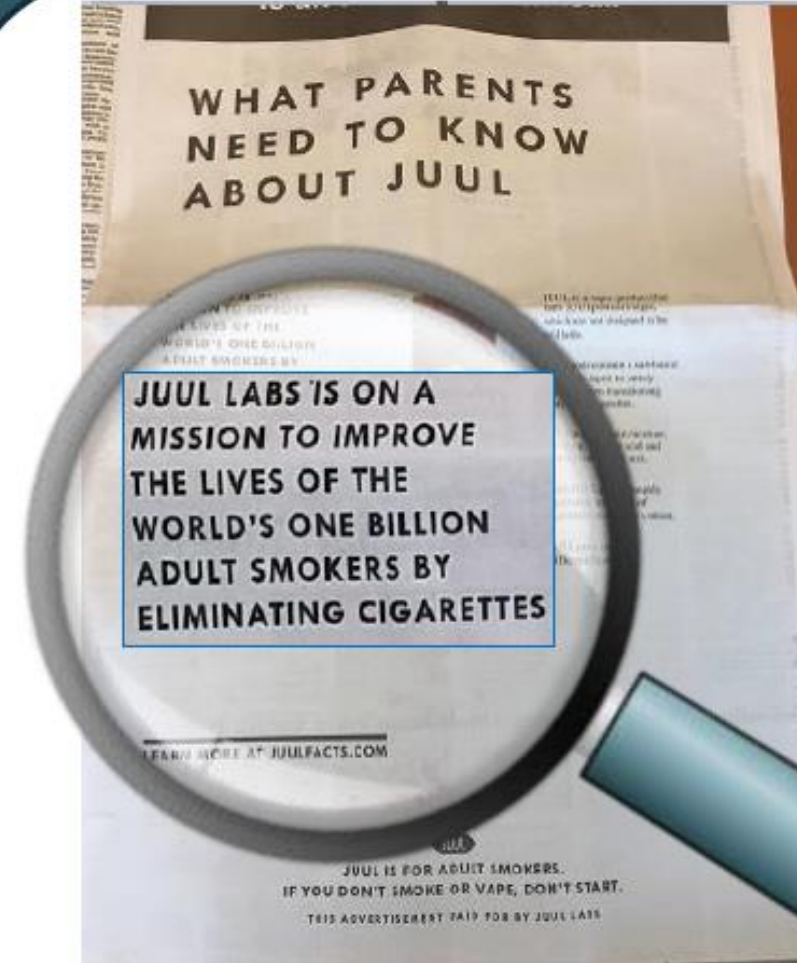
**Youth Initiation**



# JUUL: A Cessation Device? Let's Check...

"We don't think a lot about addiction here because we're not trying to design a cessation product at all...anything about health is not on our mind"

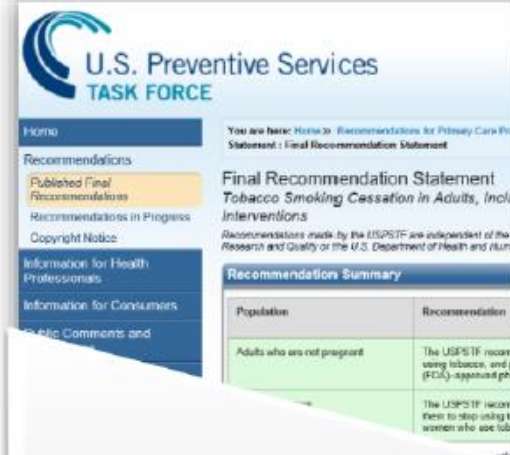
**JUUL R&D Engineer,  
quoted in *The Verge*,  
April 2015**



# E-CIGARETTE USE AS A SMOKING CESSATION TOOL AMONG ADULTS



**"The long-term safety of e-cigarettes is unknown."**



**"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."**



**Conclusion 17-1. Overall, there is limited evidence that e-cigarettes may be effective aids to promote smoking cessation.**

# What's in that e-cig aerosol?

- Propylene glycol
- Glycerin
- Flavorings (many)
- Nicotine
- NNN
- NNK
- NAB
- NAT
- Ethylbenzene
- Benzene
- Xylene
- Toluene
- Acetaldehyde
- Formaldehyde
- Naphthalene
- Styrene
- Benzo(b)fluoranthene
- Chlorobenzene
- Crotonaldehyde
- Propionaldehyde
- Benzaldehyde
- Valeric acid
- Hexanal
- Fluorine
- Anthracene
- Pyrene
- Acenaphthylene
- Acenaphthene
- Fluoranthene
- **Benz(a)anthracene**
- Chrysene
- Retene
- Benzo(a)pyrene
- Indeno(1,2,3-cd)pyrene
- Benzo(ghi)perylene
- Acetone
- Acrolein
- Silver
- Nickel
- Tin
- Sodium
- Strontium
- Barium
- Aluminum
- **Chromium**
- Boron
- Copper
- Selenium
- Arsenic
- Nitrosamines,
- Polycyclic aromatic hydrocarbons
- Cadmium



- Silicon
- Lithium
- **Lead**
- Magnesium
- Manganese
- Potassium
- Titanium
- Zinc
- Zirconium
- Calcium
- Iron
- Sulfur
- Vanadium
- **Cobalt**
- Rubidium

All **bolded** compounds have been determined by the FDA to be harmful substances

# Toxic Flavors: Yum?



# 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**

# 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

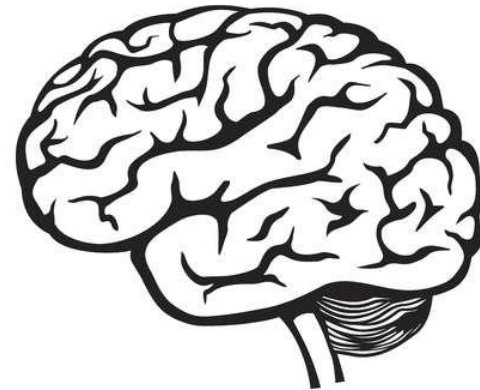
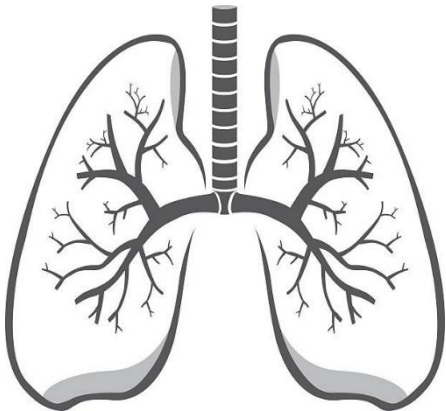
1. Nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.

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.

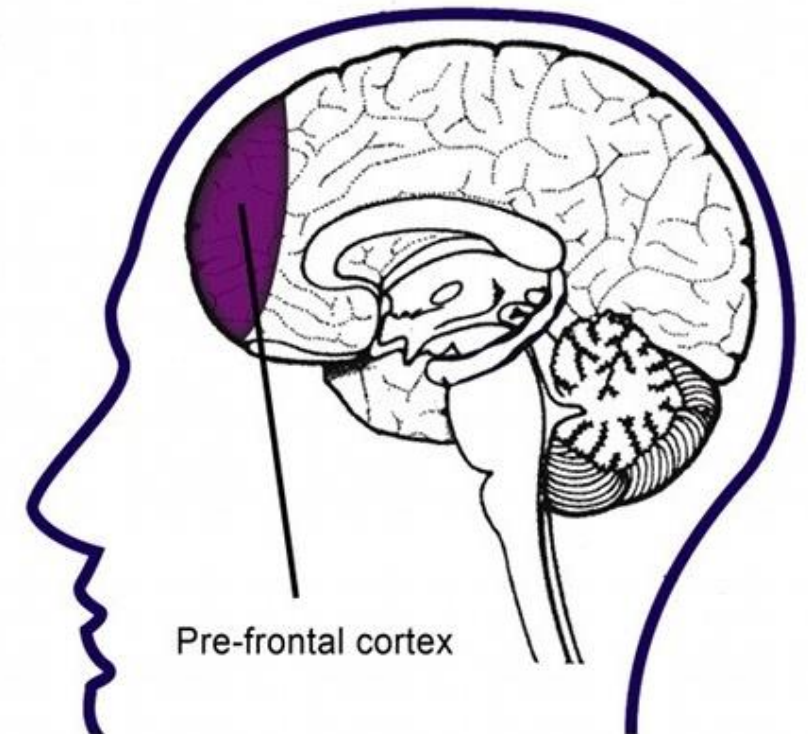
# Short and Long Term Health Effects

- Causes irritation in the nose, throat and lungs
- Increased likelihood to develop bronchitis, pneumonia and sinus infections
- Can cause coughing, shortness of breath and wheezing
- Can cause cracking and drying skin
- Can cause addiction and affect brain development
- ???



# Nicotine Addiction in Adolescence

- The brain continues to develop up until about age 25
- Adolescents are more likely to develop addictions than adults because of this period of brain growth
- The pre-frontal cortex is the last area of the human brain to develop. This part of the brain is responsible for:
  - Weighing outcomes
  - Forming judgements
  - Controlling impulses and emotions
- The adolescent brain also forms strong connections based on experiences – and the more a behavior is repeated, the stronger that connection in the brain.



- Nicotine is an addictive drug, and exposure to it in adolescence can harm brain development.

This includes:

- More risky behavior
  - Development of mood disorders
  - Permanent lowering of impulse control
  - Can disrupt the growth of brain circuits that control attention and learning
  - Increase susceptibility to develop other addictions to drugs, such as cocaine
- Many youth and young adults who try e-cigarettes are more likely to try other tobacco products, such as regular cigarettes, cigars, hookah and smokeless tobacco.
  - Some evidence shows that e-cigarette use is linked to alcohol use and other substance use, such as marijuana.



# Teens Who Start Out on E-Cigs, Don't End Up Staying on E-Cigs...

New Online

Views 7,055 | Citations 0 | Altmetric 752

Original Investigation

October 23, 2017

## Associations of Electronic Cigarette Use With

## Youth Who Use Vaping Products Are More Likely to Smoke Cigarettes, Increase Use of Both Over Time

January 2, 2018

Stanton A. Glantz, PhD

Youth Using Alternative Tobacco Products  
like 1 Year Later,  
and Smokeless



FOR RELEASE

Tuesday

October 2, 2018

Adolescents who use vaping products are not only more likely to smoke cigarettes but are also likely to increase their use of both products over time, according to a new RAND Corporation [study](#).

### Media Resources

RAND Office of Media Relations

(703) 414-4795

(310) 451-6913

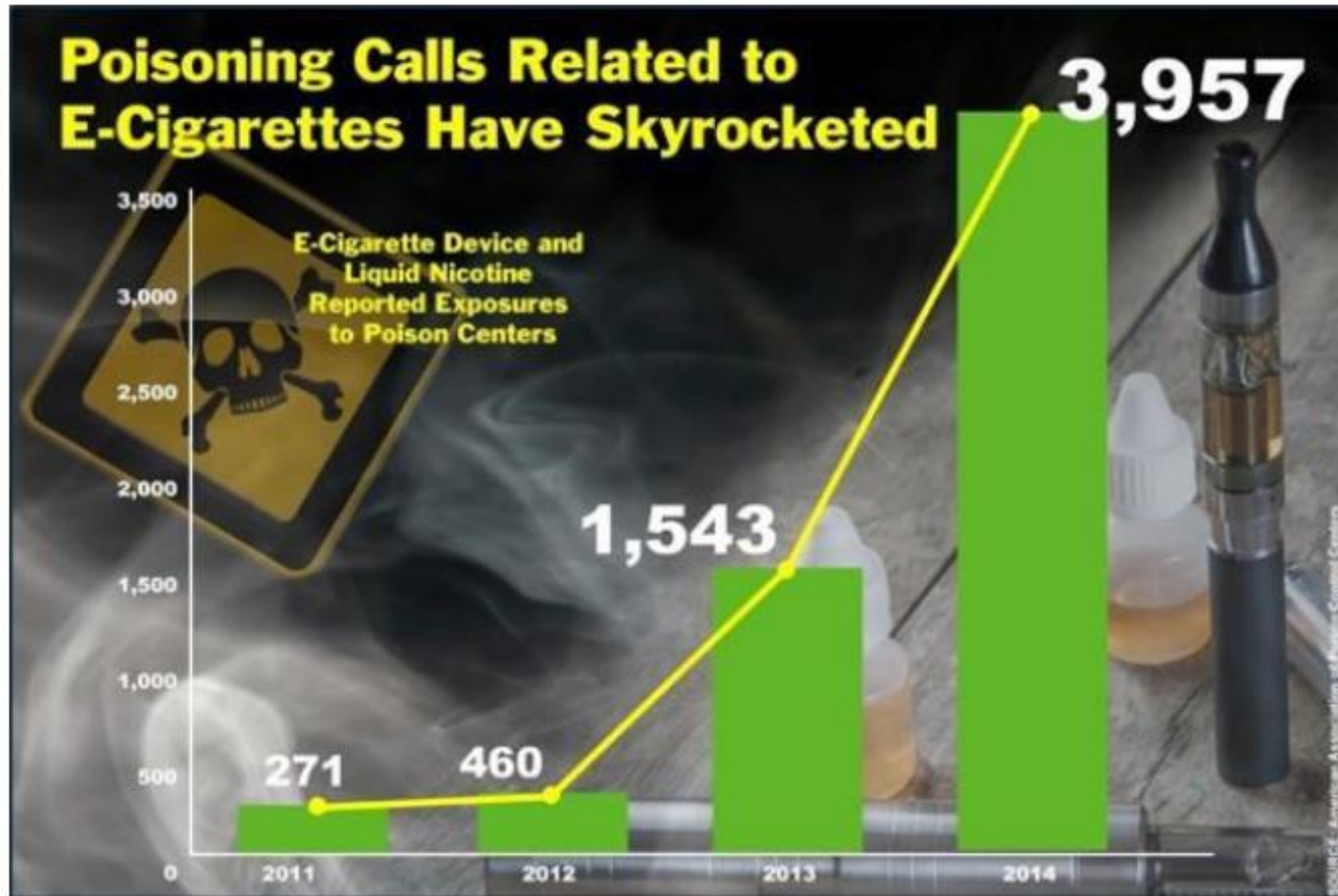
[media@rand.org](mailto:media@rand.org)

TEENS ARE MORE LIKELY TO START SMOKING.\*<sup>2</sup>

Start Smoking Within 6 Months

association of Noncigarette Tobacco Product Use With the PATH Study, use of any non-cigarette tobacco product, including e-cigarettes, later. Importantly, the effects of these different products are independent of each other, which means that dual and triple use is more than using one product alone. This is very common among young people.

# E-Cigarette Poisonings



# Exploding Devices

**REPLACE** the  
batteries in your  
vape if they get  
**damaged or wet.**

Find more tips on avoiding vape battery  
explosions at [www.fda.gov/tobacco](http://www.fda.gov/tobacco).

CENTER FOR TOBACCO PRODUCTS

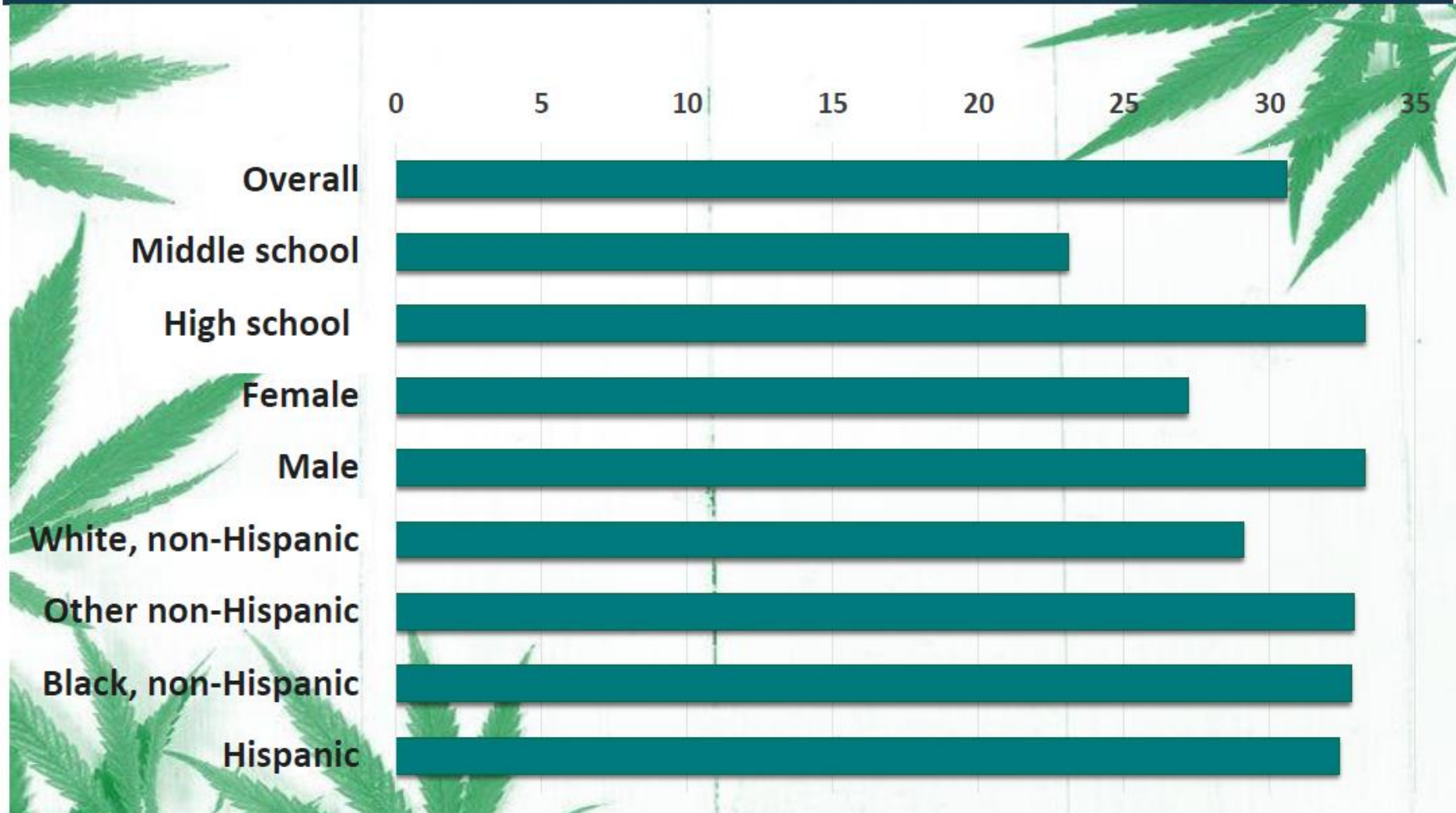


# Marijuana in e-cigarettes?



- Some liquids contain THC, the psychoactive drug that produces the feeling of being high
- Nearly 1 in 11 U.S. students, including 1/3 of those who ever used e-cigarettes, had used cannabis in e-cigarettes in 2016.
- E-cigarettes can be used as a delivery system for cannabinoids and potentially for other illicit drugs.

## EVER USE OF CANNABIS IN AN E-CIGARETTE AMONG YOUTH E-CIGARETTE USERS - NYTS, 2016



# THC Concerns

THC exposure can cause:

- Addiction
- Learning and memory problems
- Problems with coordination
- Poor judgement and decision making
- Increased risk for mental health problems and psychosis
- Poisoning
- Increased risk of using other drugs
  - Cancer, respiratory problems, increased heart rate





# POTENTIAL HEALTH RISKS OF E-CIGARETTES



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

# The Bottom Line...

- It is not "safe" to use e-cigarettes
  - Both the CDC and the Surgeon General advises that NO ONE use e-cigarettes, especially youth, young adults, pregnant women and anyone who is not a current cigarette smoker
- Flavorings contain chemicals that can be toxic when inhaled
  - Propylene glycol, glycerol, benzoic acid, acetone, ethylbenzene, formaldehyde, rubidium, nicotine
- Vapes can produce second and thirdhand smoke
- Nicotine affects the brain AND body
- Vaping teens are more likely to move onto combustible cigarettes and other tobacco products.

# What Can We Do About It?

**Every one of us has a role to play**



# State and Local Regulation

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



# What Parents Can Do:

- Learn about the different types of e-cigarettes and the risks and have educational conversations
  - <https://e-cigarettes.surgeongeneral.gov/>
- Set a Positive Example
  - 1-800-QUIT-NOW
- Adopt tobacco-free rules in your home and vehicle
- Ask your child's healthcare provider to also provide education
- Ask your school how you can help support tobacco-free policies and curriculum
- Encourage your child to get tips for quitting
  - [Teen.smokefree.gov](https://teen.smokefree.gov) or text "DITCHJUUL" to 88709 (Truth's App)



# What can we do as a Community?

- Provide educational opportunities to both adults and youth
  - Encourage Parents to talk to youth about the dangers
- Advocate for local and state policy improvement
  - School Policy
  - Tobacco-Free Parks and Green Spaces
  - Tobacco Retailer Licensing
  - Tobacco Tax Increases
  - Beautification Ordinances
- Support and organize enforcement efforts
  - Compliance Checks
- Collaborate with your local prevention coalition
- Utilize Youth-Led Prevention Efforts
  - <https://preventionactionalliance.org/connect/ohio-youth-led-prevention-network/>



# Partner with your Local Prevention Coalition

## **Substance Abuse Prevention Coalition of Warren County**

**SAPCWARRENCOUNTY.ORG**

**Follow us on Facebook and Twitter!**



**@SAPCOW**



**@SAPCWC**



# Roadmap to a Tobacco-Free Generation

PASS SMOKE-FREE LAWS

FUND PREVENTION PROGRAMS

RUN HARD-HITTING MEDIA CAMPAIGNS

BAN ALL FLAVORED TOBACCO PRODUCTS

RAISE THE TOBACCO AGE TO 21

INCREASE TOBACCO TAXES



LEARN MORE AT  
[TOBACCOFREEKIDS.ORG](http://TOBACCOFREEKIDS.ORG)

# Takeaways:

- E-cigarettes are tobacco products that produce an aerosol by heating a liquid containing nicotine, flavorings and other chemicals.
- JUULs contain especially high levels of nicotine and are the most popular device used by youth and young adults.
- E-cigarette use among teens has been increasing significantly; factors that contribute to their popularity include advertising and the large variety of flavors.
- E-cigarette use comes with many risks, especially for those under the age of 25. Youth use of e-cigarettes is unsafe, and adult smokers must completely quit in order to receive the benefits from e-cigarettes.
- Education and environmental changes are the most effective methods in preventing tobacco and e-cigarette use among youth and adults.

# Other Resources

- Stanford University Tobacco Prevention Toolkit

- <https://www.fda.gov/tobacco-products/youth-and-tobacco/fdas-youth-tobacco-prevention-plan>

- CATCH (Combined Approach to Child Health) My Breath Program and Curriculum

- <https://catchinfo.org/modules/e-cigarettes/>

- ASPIRE – Interactive Online Learning Tool for E-Cigarettes

- <https://www.mdanderson.org/about-md-anderson/community-services/aspire.html>

- Centers for Disease Control and Prevention – E-Cigarette Data, Facts and Prevention Information

- [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/index.htm](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm)

- Counter Tools – Environmental Scan Tools for Your Community

- <https://countertobacco.org/>

- TRUTH Initiative - Provides education, research, community activism/engagement and tobacco dependence treatment

- <https://truthinitiative.org/>

# Other Resources Continued

- The Real Cost – educational campaign provided by the US Department of Health and Human Services
  - <https://therealcost.betobaccofree.hhs.gov/>
- Campaign for Tobacco Free Kids – centered on creating a world free from tobacco use through communication and policy advocacy campaigns
  - <https://www.tobaccofreekids.org/>
- Tobacco 21
  - <https://tobacco21.org/>
- Ohio Department of Health – Tobacco Use Prevention Program – Model policies, School District Rankings and more
  - <https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/tobacco-use-prevention-and-cessation/prevention/>
- Food and Drug Administration – Youth Tobacco Prevention Plan
  - <https://www.fda.gov/tobacco-products/youth-and-tobacco/fdas-youth-tobacco-prevention-plan>
- My Life, My Quit – Text line for teens to help quit vaping – Text “Start My Quit” to 855-891-9989
  - <http://mylifemyquit.com/>

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Questions?

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513-695-2427

## **Warren County Health District**

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**Public Health**  
Prevent. Promote. Protect.