

# Vaping and Lung Injury

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Fairfax County Health Department

November 2019

# EVALI – E-cigarette and vaping product use associated lung injury

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# Case Study

- 32 yr old male began vaping 1 year ago to quit cigarettes
- Vapes nicotine and THC products (“Dank Vapes” from DC pop-up shop)
- Developed fever, nausea, vomiting, diarrhea; next day began to have cough, chest pain and shortness of breath
- Admitted to hospital ICU and intubated
- Chest x-ray shows diffuse infiltrates & chest CT “ground glass” appearance
- Treated with steroids and improved but unable to work and remains on portable oxygen

Chest CT  
from a  
patient with  
EVALI

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# EVALI Case Definition



Use of an e-cigarette (“Vaping”) or dabbing in the 90 days before symptom onset; and



Pulmonary infiltrate on chest x-ray or ground glass opacities on chest CT; and



Absence of pulmonary infection on work-up (negative flu test and viral panel, and other clinically indicated tests); and



No evidence of an alternative diagnosis

# EVALI Case Numbers

(as of Nov 20, 2019)



2,290 cases reported from 49 states, DC, and 1 US territory



47 deaths from 25 states (including one in VA)



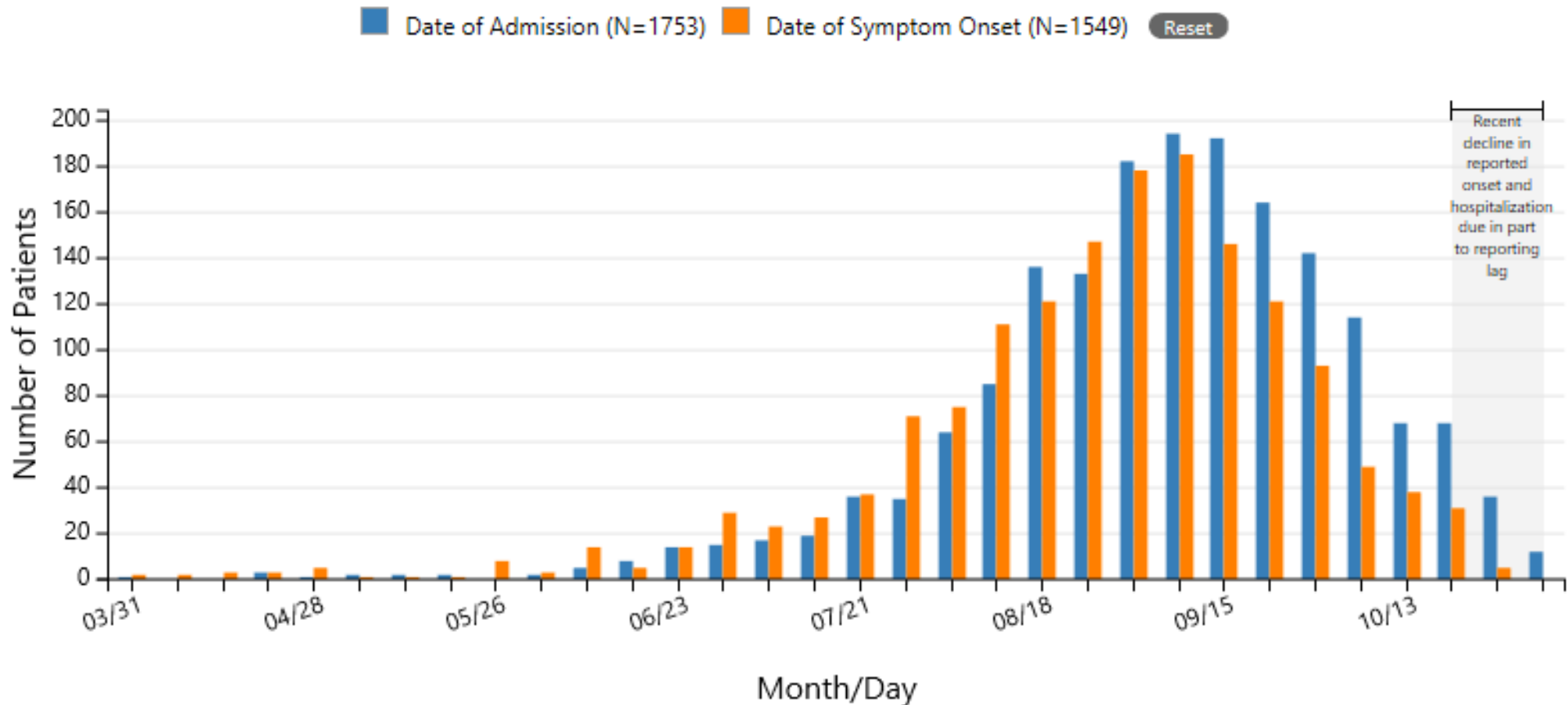
Of 2,016 patients with data available

68% male

Median age 24 years (range 13-78)

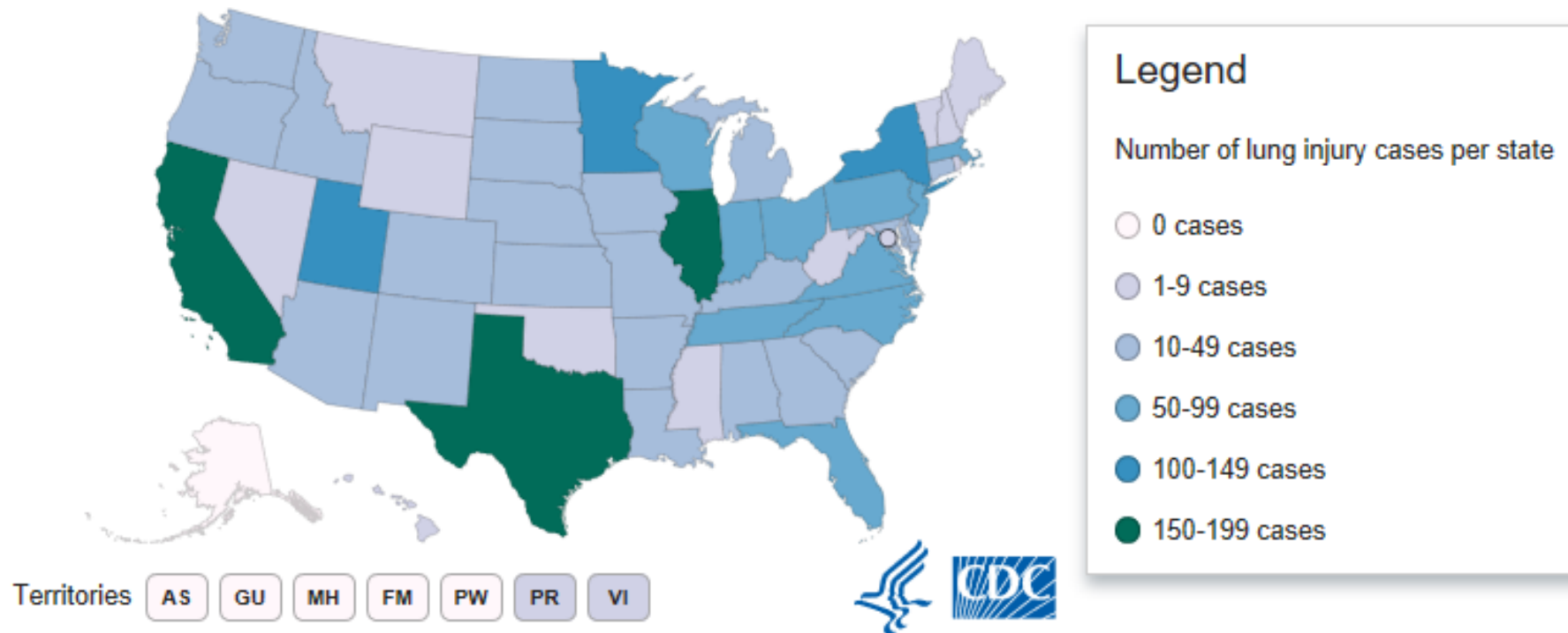
15% of patients are <18 years old

# Timeline of EVALI



# EVALI Cases by State *(as of Nov 13, 2019)*

Number of Lung Injury Cases Reported to CDC as of November 13, 2019





## EVALI Symptoms

### Respiratory (95%)

- Cough, chest pain, shortness of breath

### Gastrointestinal (77%)

- Abdominal pain, nausea, vomiting, diarrhea

### Constitutional (85%)

- Fever, chills, unexpected weight loss

# EVALI in VA and in Fairfax

## Virginia

- 87 definite & probable cases and 1 death (as of Nov. 26)
- 38 in Northern region

## Fairfax

- 20 cases (14 confirmed & 6 probable); and 2 cases under investigation
- 75% male
- Age range 14 – 62 years old (2 cases 14 yrs old, and 3 cases 18 yrs old)

# Vaping Products Used By EVALI Patients

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- Data from 1,184 patients with information on substance used in vaping products during the 3 months before symptom onset
  - 83% reported THC containing products; 35% exclusive use
  - 61% reported nicotine containing products; 13% exclusive use

# Products Used by Utah EVALI Patients, Apr – Oct 2019

**TABLE 2. Self-reported product use behaviors in the 3 months before injury onset in interviewed patients with electronic cigarette (e-cigarette), or vaping, product use–associated lung injury (N = 53) — Utah, April–October 2019**

Product use and behavior	No. (%)
<b>THC-containing product use</b>	
Any use	49 (92)
Exclusive use	17 (32)
<b>THC-containing cartridge brands used</b>	
Dank Vapes	21 (40)
Rove	19 (36)
Golden Gorilla	11 (21)
Two or more of the above	17 (32)
<b>Nicotine-containing product use</b>	
Any use	35 (66)
Exclusive use	3 (6)
<b>Both THC- and nicotine-containing product use</b>	32 (60)

Abbreviation: THC = tetrahydrocannabinol.

# Products Used by Utah EVALI Patients, Apr – Oct 2019

**TABLE 3. Characteristics of tetrahydrocannabinol (THC)- or nicotine-containing products used in the 3 months preceding illness onset in patients with electronic cigarette (e-cigarette), or vaping, product use–associated lung injury (N = 131) — Utah, April–October 2019**

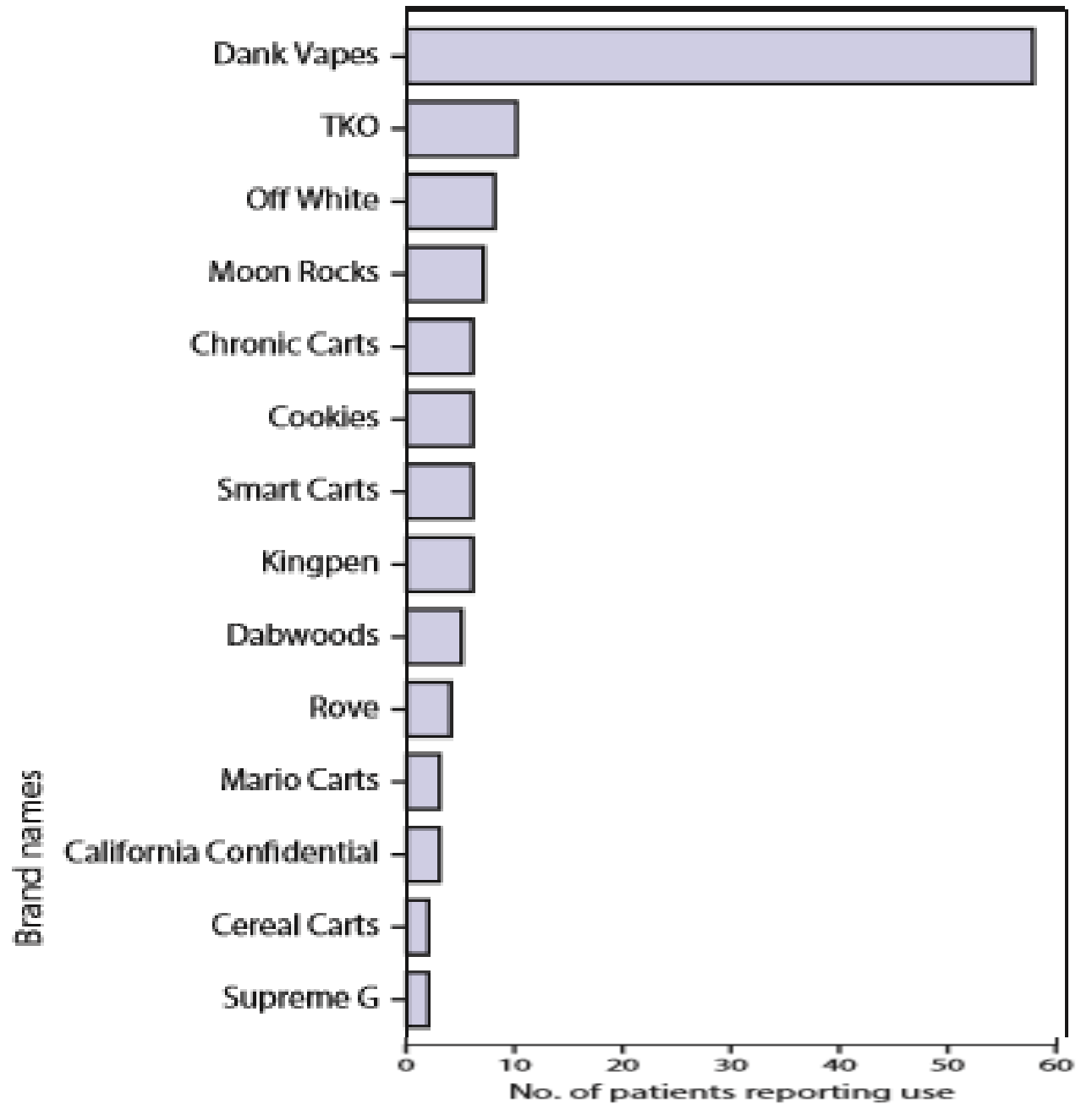
Characteristic	No. (%)	
	THC-containing products (N = 84)	Nicotine-containing products (N = 47)
<b>Method of acquisition</b>		
Friend	37/84 (44)	9/47 (19)
Dealer	21/84 (25)	0/47 (0)
Online dealer	20/84 (24)	7/47 (15)
Out-of-state dispensary	5/84 (6)	1/47 (2)
In-state vape shop	1/84 (1)	23/47 (49)
Convenience store/gas station	0/84 (0)	7/47 (18)
<b>Frequency of use (times per day)</b>		
<1	8/70 (11)	3/29 (10)
1–5	38/70 (54)	5/29 (17)
6–25	7/70 (10)	5/29 (17)
>25	17/70 (24)	16/29 (55)
<b>Testing</b>		
Products tested at UPHL*	19/84 (23)	20/47 (43)
Products found to contain THC	19/19 (100)	0/20 (0)
Products found to contain nicotine	1/19 (5)	20/20 (100)
Products found to contain vitamin E acetate	17/19 (89)	0/20 (0)



**Abbreviation:** UPHL = Utah Public Health Laboratory.

\* THC-containing cartridges tested came from six patients and nicotine-containing vaping liquids came from eight patients. Test results might therefore represent clusters of purchase or use by these patients rather than fully independent samples.

# THC Products Used by EVALI Patients, WI & IL, Apr – Sept 2019



“Dank Vapes appears to be the most prominent in a class of largely counterfeit brands, with common packaging that is easily available online and that is used by distributors to market THC-containing cartridges with no obvious centralized production or distribution,”

CDC, MMWR Oct 4, 2019

## EVALI and THC-Containing Products

# Illicit THC Vaping Cartridges

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Recently bought together



This item: Coolpen plastic Tubes empty Clear 0.5ml 1ml Tank cart  
 35TEAN Syringe Blunt Tip Needles Caps Refilling and Measuring E-  
 100 Plastic Clear Transparent Storage Tubes with Caps | Cartridge |

Quantity Variety Pack Dank Vape Box Packaging for Oils - (4 Flavors) Packaging ONLY!!!!  
 Be the first to review this item



Acid Wizard • 408K views • 10 months ago  
 This is a short and easy way to make your own Dab/THC/Distillate cartridges for discreet use and great hits anywhere.



How to Make Organic THC Vape Cartridges  
 Nugsmasher • 409K views • 2 months ago  
 GIVEAWAY - nugsmasher.com/dankgiving What You Need From This Video: NugSmasher OG Basic Bundle ...



Marijuana E Liquid ADVANCED Tutorial HOW TO MAKE Cannabis E Juice from weed or keif  
 760 Glass • 1.5M views • 2 years ago

DIY: From Amazon and YouTube

# Waynesboro, VA, Sept 25, 2019

As they searched the home, police say they recovered \$46,389 in cash, 2.5 pounds of marijuana, half an ounce of psychedelic mushrooms, a gram and a half of "dab" (refined marijuana), one loaded AR-15 with a drum magazine, one loaded 9mm. handgun, five ecstasy tablets, and 1,081 "Dank" brand vape pen vials, each containing about 1 gram of 90% pure liquid THC.



“We’ve received about 300 samples,” he said. “We’ve tested about 150. I would say the answer is about 70 percent are THC products. The rest are nicotine products or something else. A significant fraction of the THC products, like maybe half of them, are contaminated with vitamin E acetate.”

Vitamin E acetate is a skin oil and has “no business” being in a product that people inhale, Dr. Sharpless said, adding that the product is added to dilute or “cut” THC before it is sold.

NY Times, Sept 27, 2019

# FDA Testing of EVALI Vape Cartridges

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# Results from Lung Fluid of Patients



29 lung fluid (BAL) specimens from 10 states tested at CDC



Assays tested for vitamin E acetate, medium chain triglycerides, plant oils, petroleum distillates, diluent terpenes, cannabinoids and nicotine



**Vitamin E acetate was identified in all specimens;** other tests were negative

# **CDC Recommendations**

**Do not use e-cigarette or vaping products that contain THC**

**Do not buy any e-cigarette or vaping product off the street, especially products containing THC**

**Do not modify any e-cigarette or vaping product**

**The only way to ensure you are safe is refraining from use of all e-cigarette or vaping products**

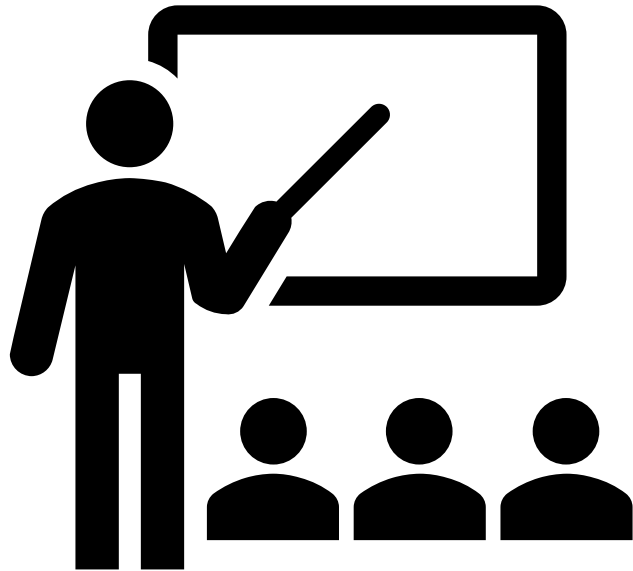
**Regardless of the ongoing investigation, e-cigarette or vaping products should never be used by youths, young adults, or women who are pregnant**

# Fairfax County Health Dept. Outreach



- Health Advisories to all Fairfax County clinicians (Aug & Oct 2019)
- Letter from the Director to all FCPS parents (co-signed with the Superintendent) and letter to private school parents
- Information on vaping and lung injury on the Health Dept. webpage
- Facebook live presentations & posts
- School health display
- School Health Promotion Toolkit





# Vaping in the 2018-19 Fairfax County Youth Survey

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# Objectives

Estimate the prevalence of recent vaping in the school population of 8th+ graders

Identify risk groups

Understand the relationships between recent vaping and risk/protective factors

Inform the targeting and focus of interventions

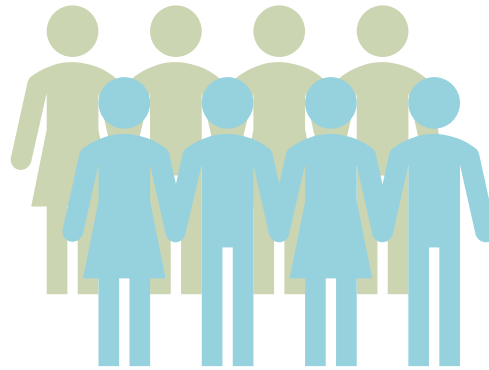
Identify further data needs



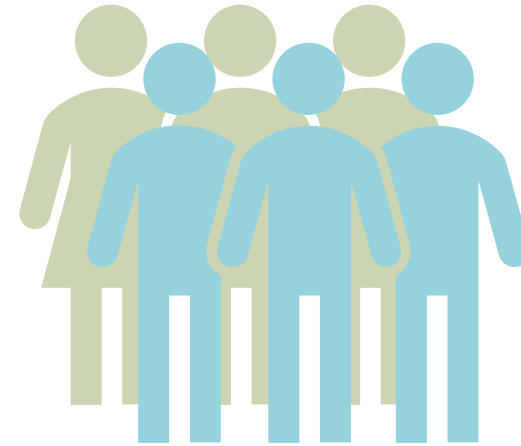
# Fairfax County Public Schools



**Total  
Enrollment:  
178,830**

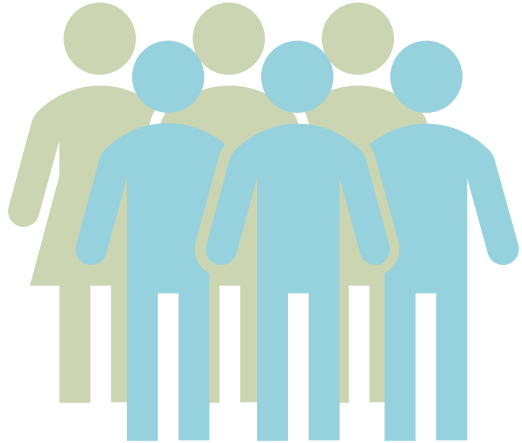


**8<sup>th</sup> through 12<sup>th</sup>  
Grade: 63,336**



**Valid Survey  
Responses:  
32,904**

# Who Responded?



32,904



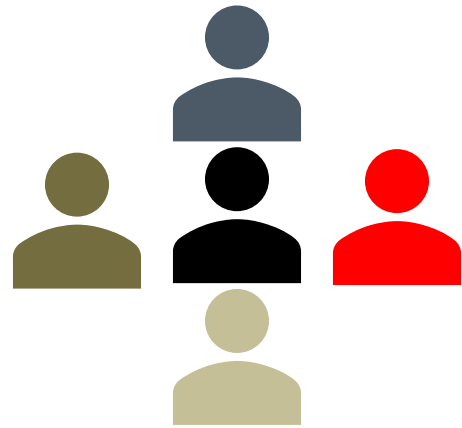
FEMALE: 50.1%

MALE: 49.2%



WHITE: 37%  
BLACK: 10%  
HISPANIC: 23%  
ASIAN/PACIFIC ISLANDER: 22%  
OTHER/MULTIPLE: 8%

# Who Vaped Recently?



32,904

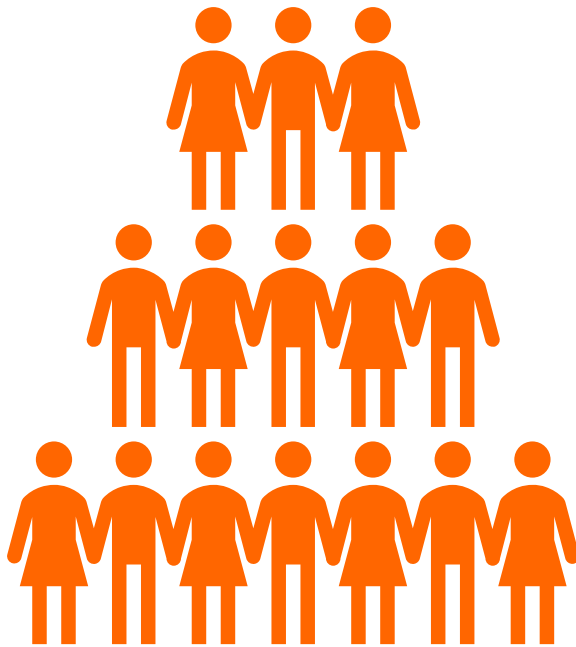
1 in 5 Vaped Recently

6,377

4 in 5 Did Not Vape Recently

22,478

# Who Vaped Recently?



Vaped Recently  
6,377



WHITE: 42%  
BLACK: 9%  
HISPANIC: 27%  
ASIAN/PACIFIC ISLANDER: 13%  
OTHER/MULTIPLE: 9%

# Who Vaped Recently?



All Responses  
**WHITE: 37%**  
BLACK: 10%  
**HISPANIC: 23%**  
**ASIAN/PACIFIC ISLANDER: 22%**  
OTHER/MULTIPLE: 8%

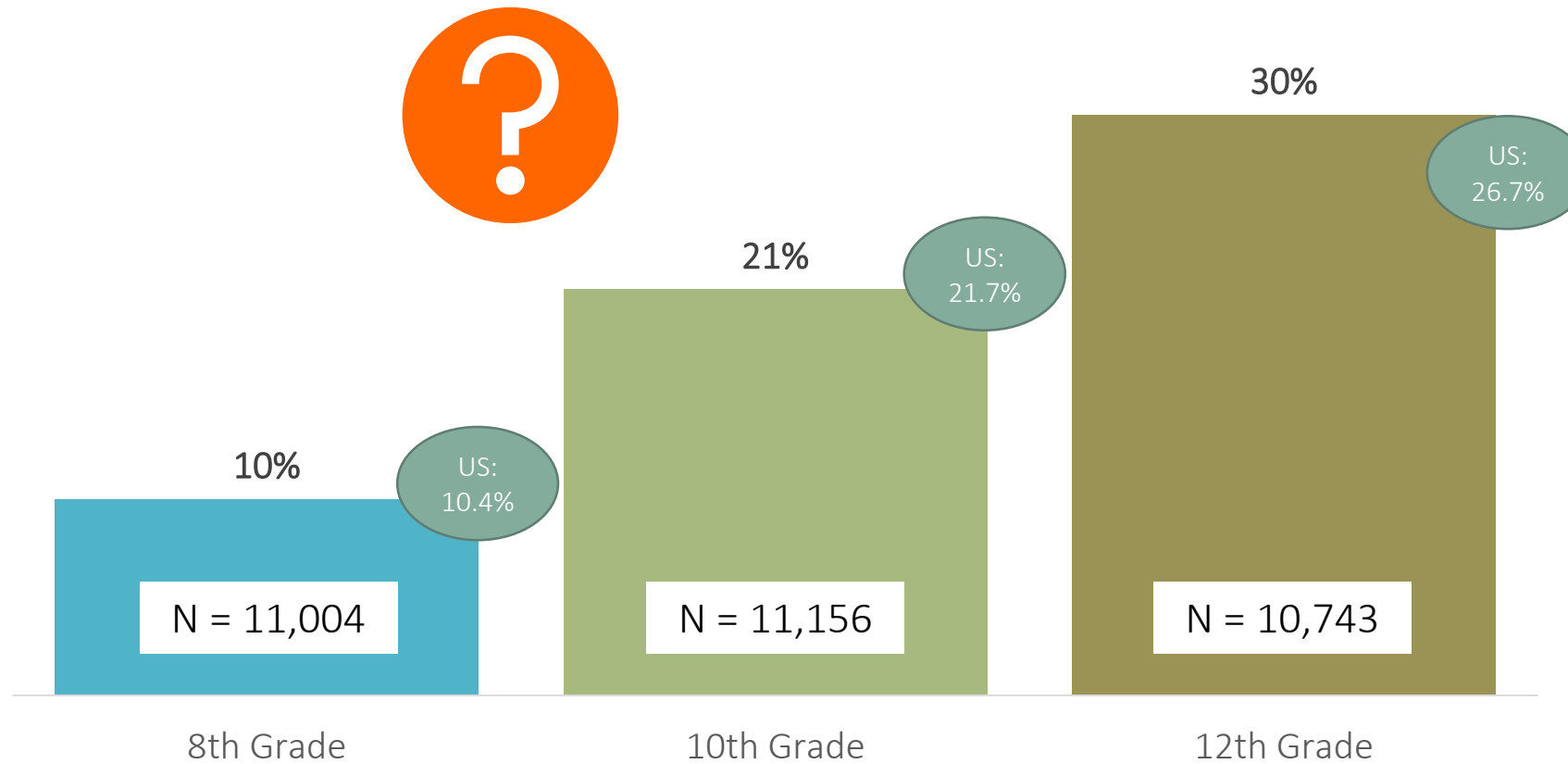
Recent Vapers  
**WHITE: 42%**  
BLACK: 9%  
**HISPANIC: 27%**  
**ASIAN/PACIFIC ISLANDER: 13%**  
OTHER/MULTIPLE: 9%

# Vaping by Race/Ethnicity

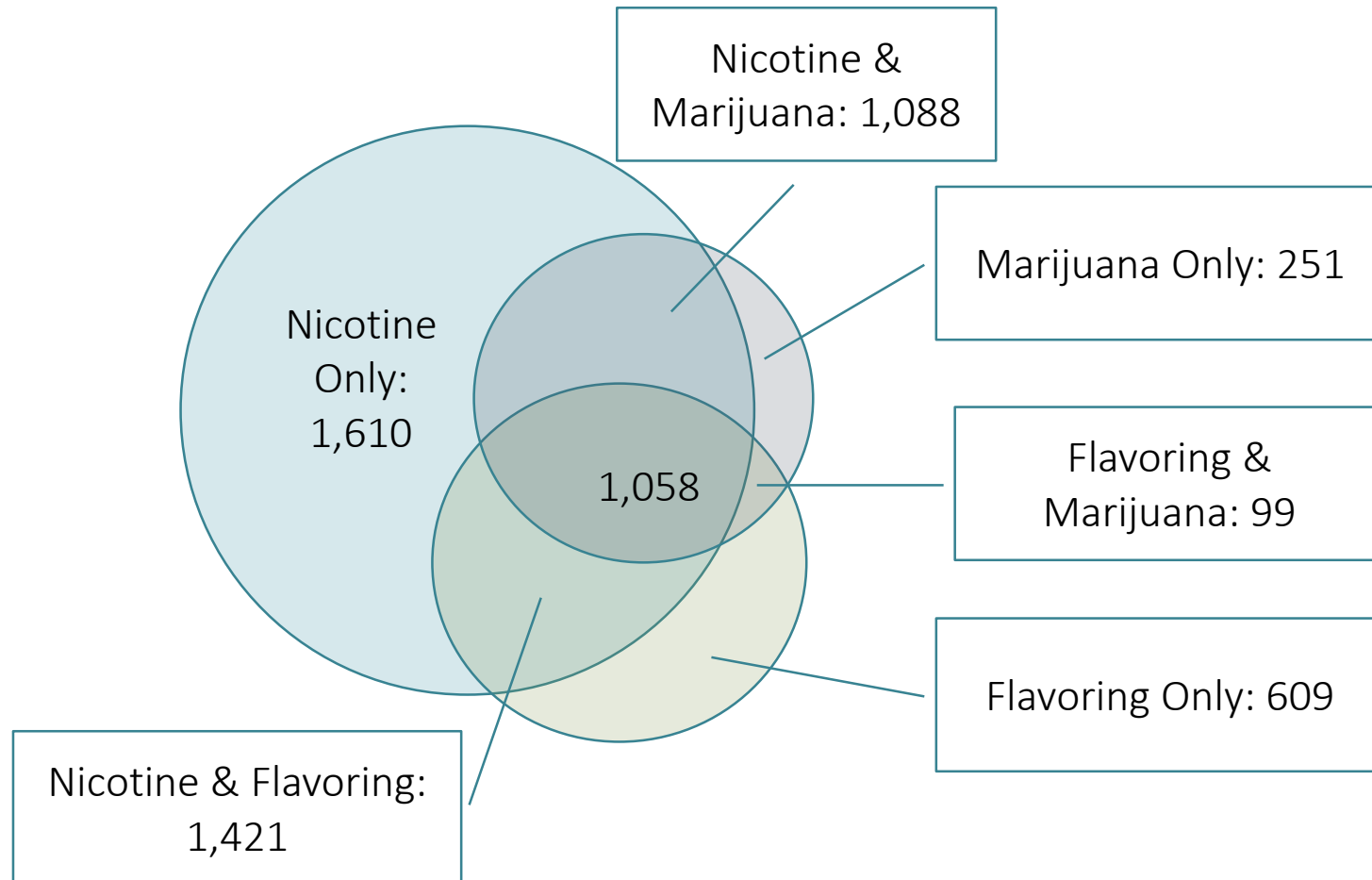


Race/ Ethnicity	Vaping Rate per 1,000 Students
White	217
Black	176
Hispanic	239
Asian/Pacific Islander	116
Other/Multiple	214

# Vaping by School Grade



# What Are You Vaping?





# What Are You Vaping?

81% of students vaping  
recently vaped NICOTINE

43% of students vaping  
recently vaped MARIJUANA



50% of students vaping  
recently vaped FLAVORING

# Who Is Vaping Nicotine?

81% of students vaping  
recently vaped NICOTINE



Race/ Ethnicity	Vaping Rate per 1,000 Students
White	188
Black	137
Hispanic	190
Asian/Pacific Islander	91
Other/Multiple	181

# Who Is Vaping THC?

43% of students vaping  
recently vaped MARIJUANA

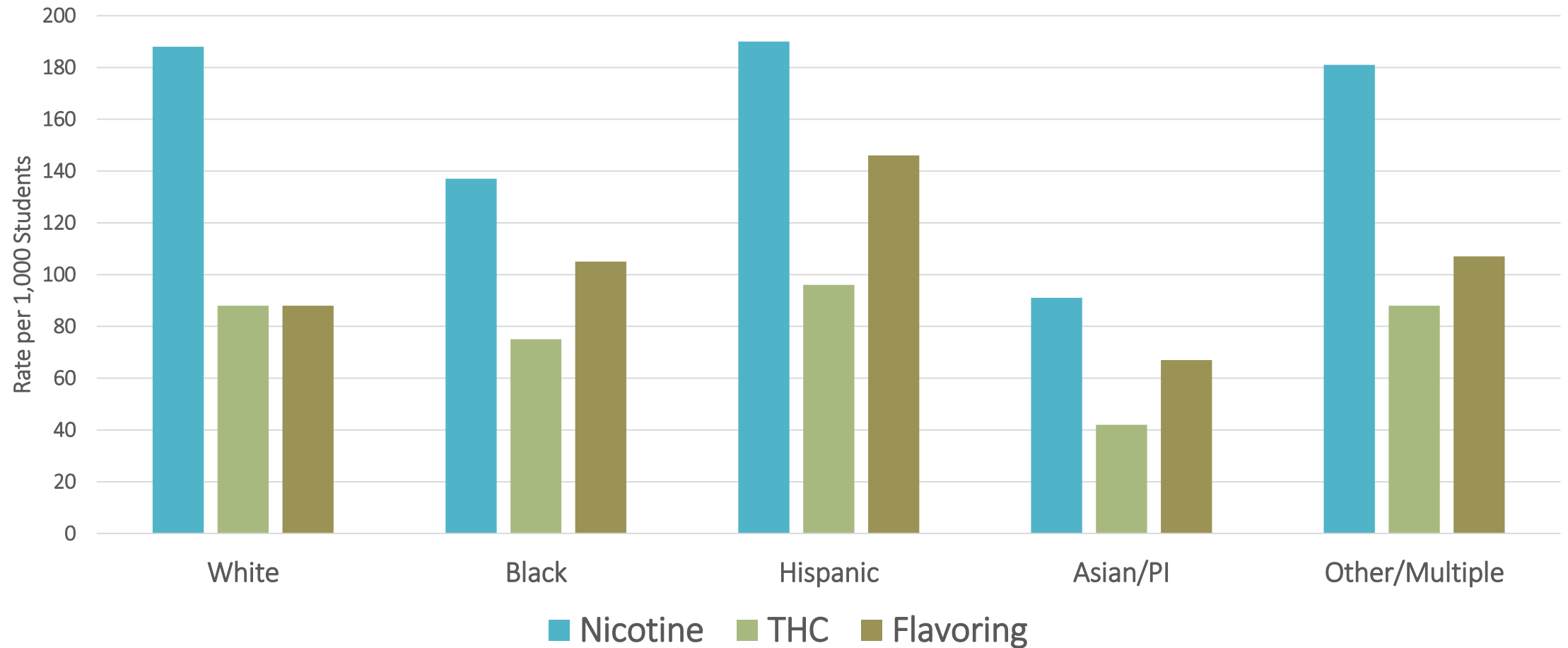


Race/ Ethnicity	Vaping Rate per 1,000 Students
White	88
Black	75
Hispanic	96
Asian/Pacific Islander	42
Other/Multiple	88

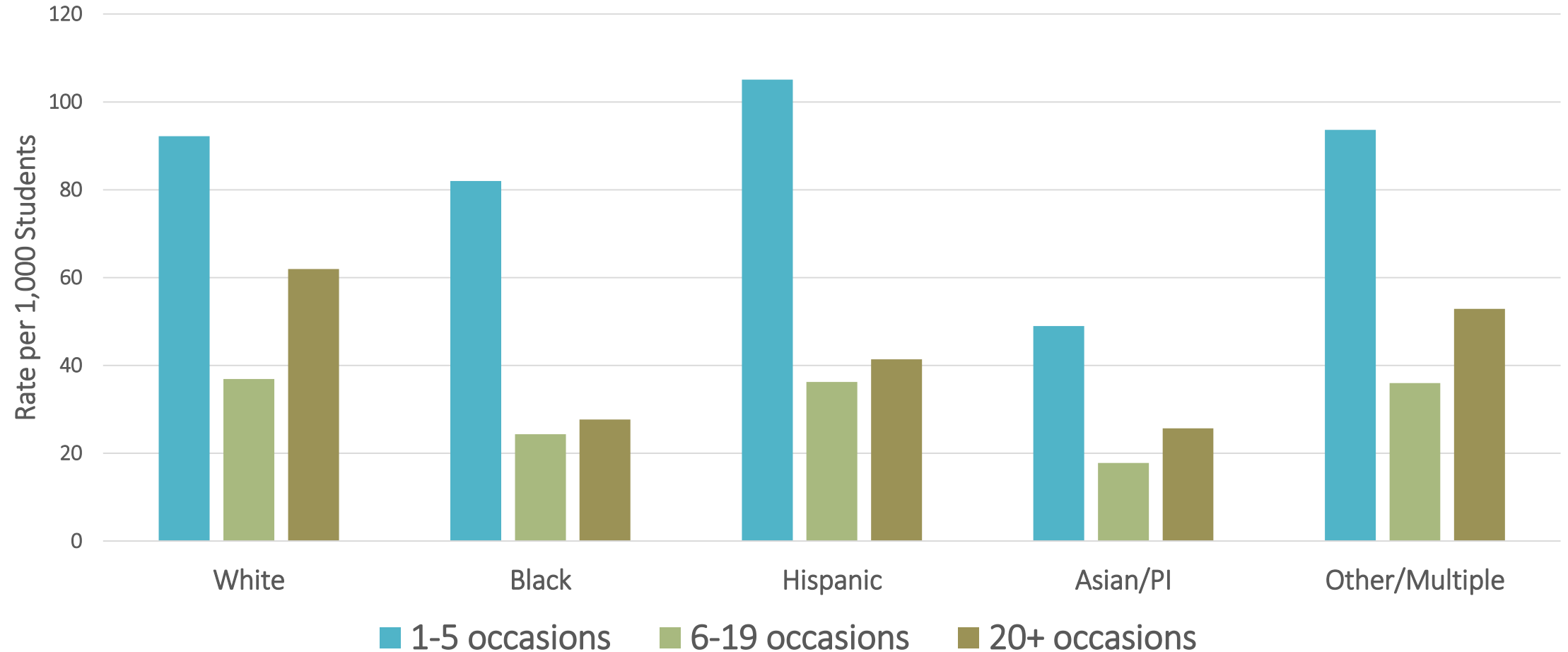
# Vaping - Summary

Race/ Ethnicity	Vaping Rate per 1,000 Students	Vaping NICOTINE Rate per 1,000 Students	Vaping THC Rate per 1,000 Students	Vaping FLAVORING Rate per 1,000 Students
White	217	188	88	88
Black	176	137	75	105
Hispanic	<b>239</b>	<b>190</b>	<b>96</b>	<b>146</b>
Asian/Pacific Islander	116	91	42	67
Other/Multiple	214	181	88	107

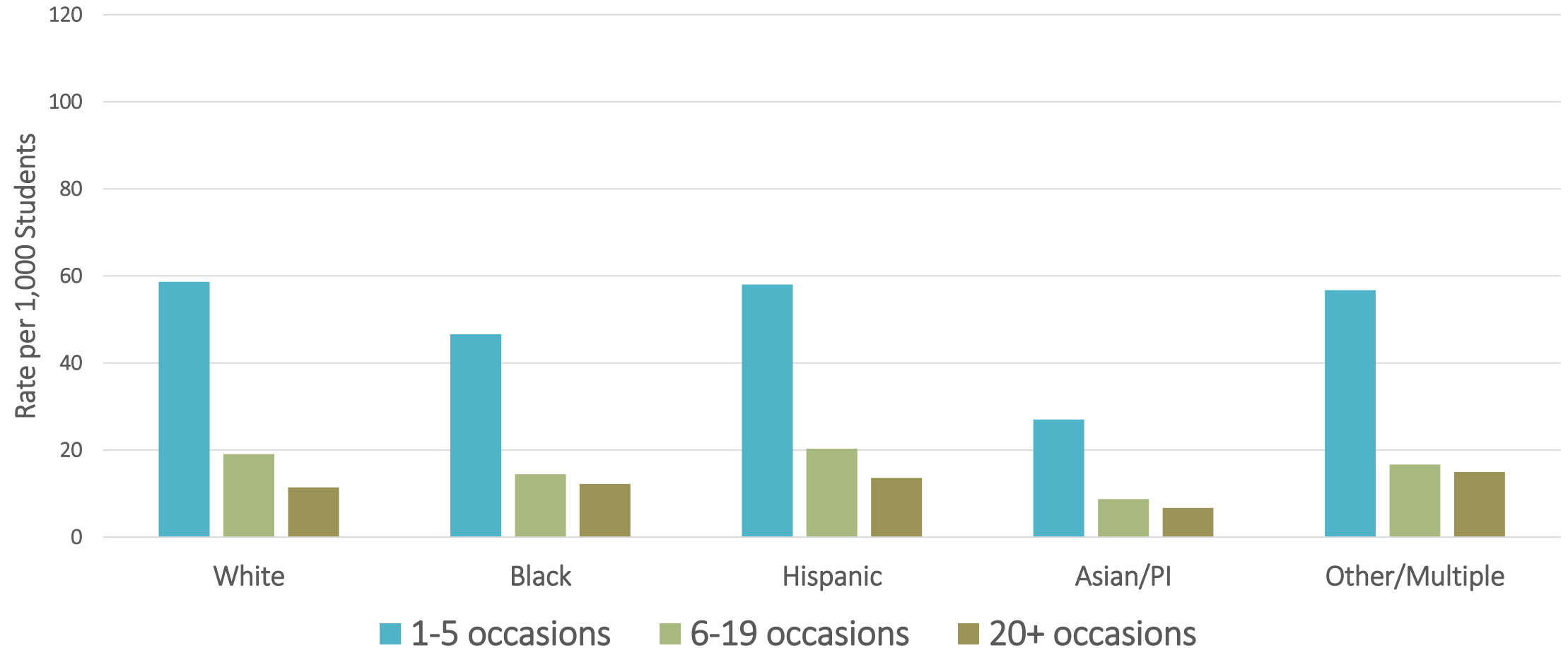
# Vaping - Summary

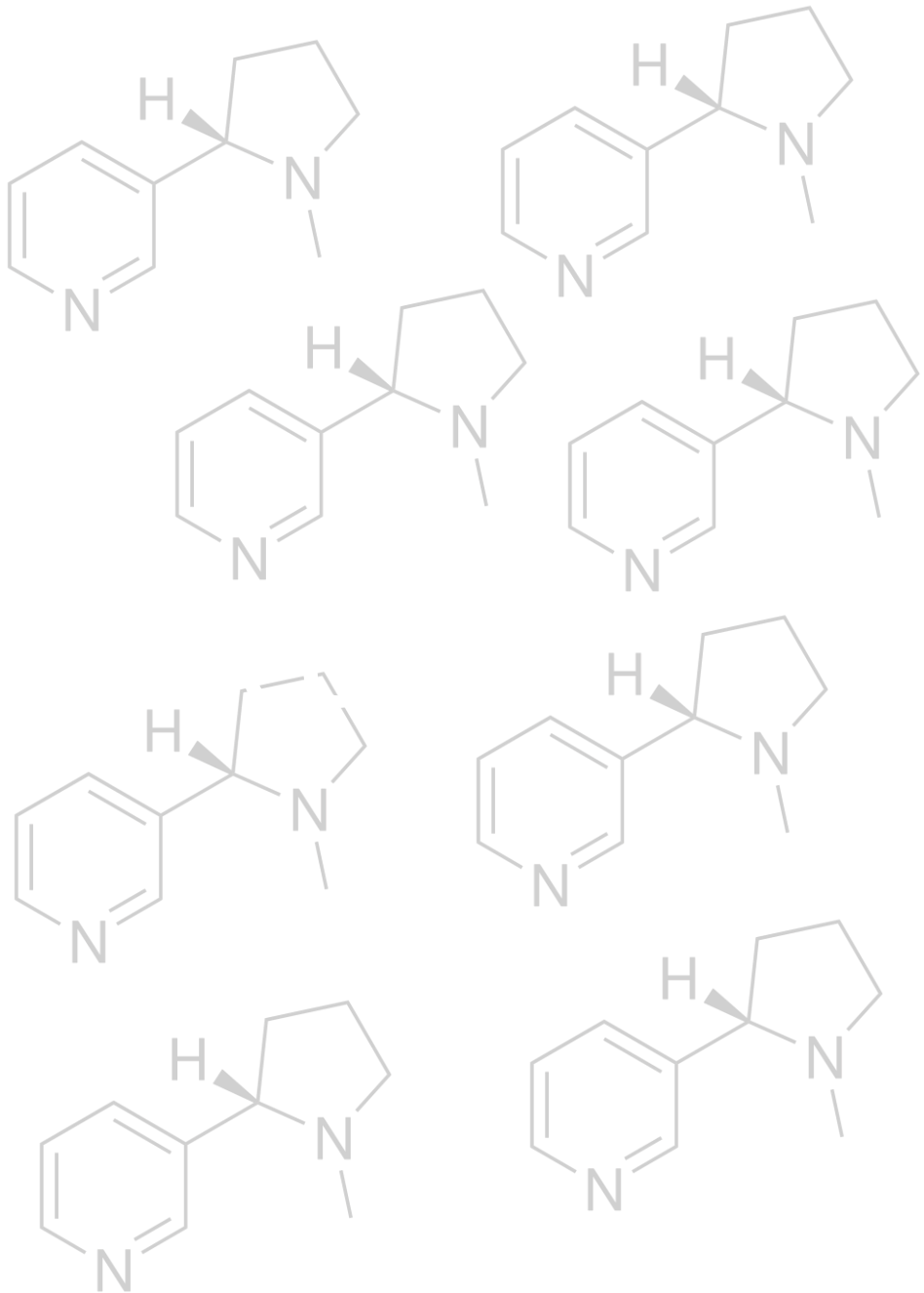


# How Often Are They Vaping Nicotine?



# How Often Are They Vaping Marijuana?





Highly Addictive



Short Term: Increased Blood Pressure, heart rate, narrowing of arteries



Long Term: Atherosclerosis, Heart Disease



# Nicotine in the Developing Brain



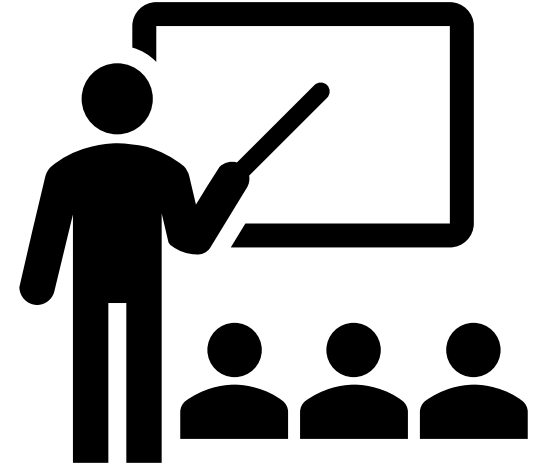
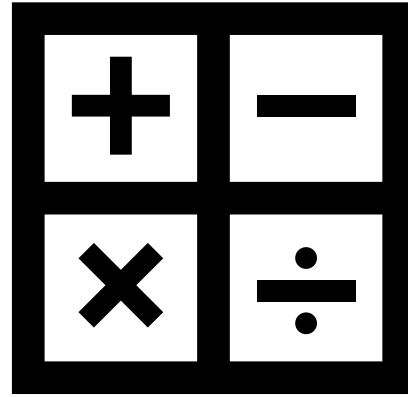
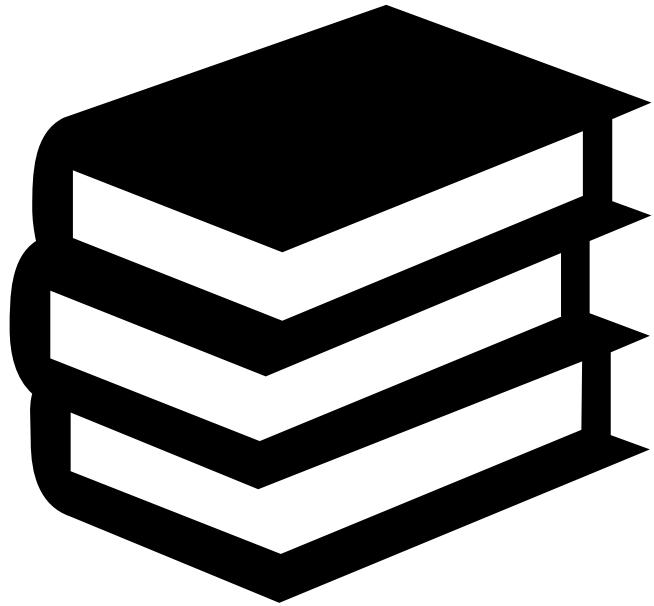
Harm to attention, learning, mood and impulse control centers of the brain

Difference in how new brain cell connections are made

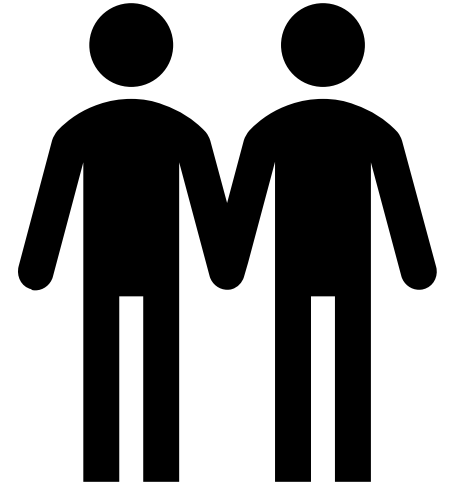
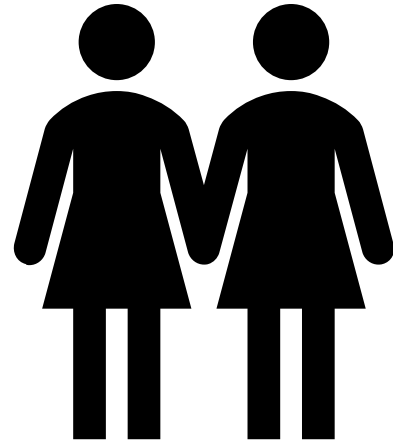
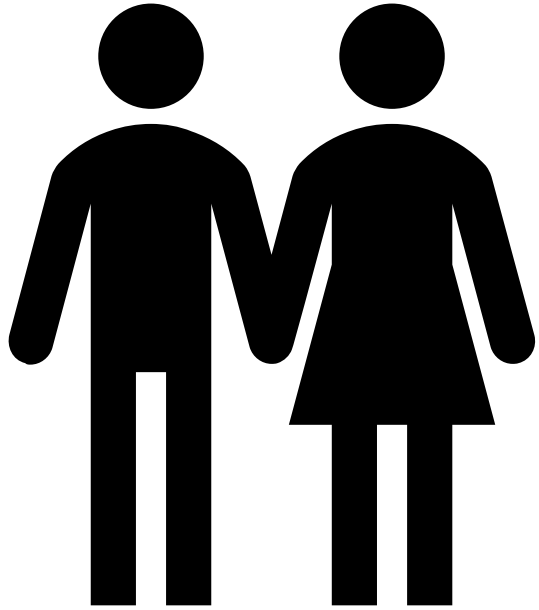
Increased risk of future addiction



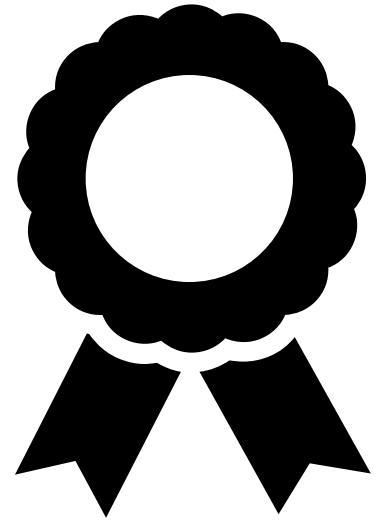
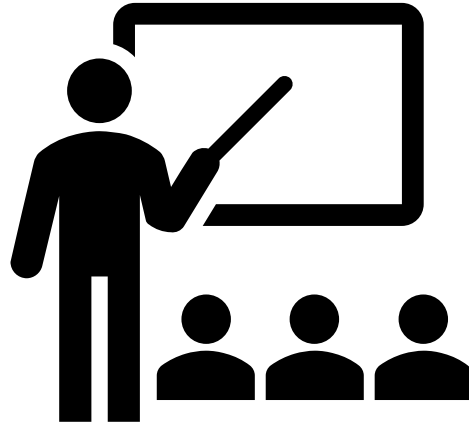
Three to  
Succeed



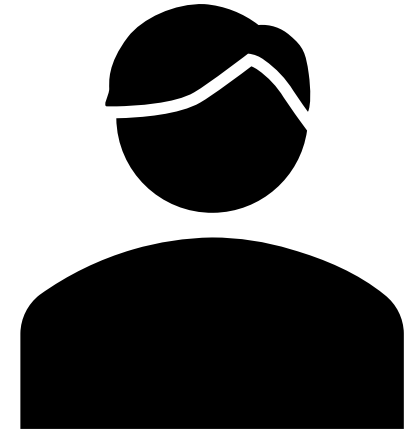
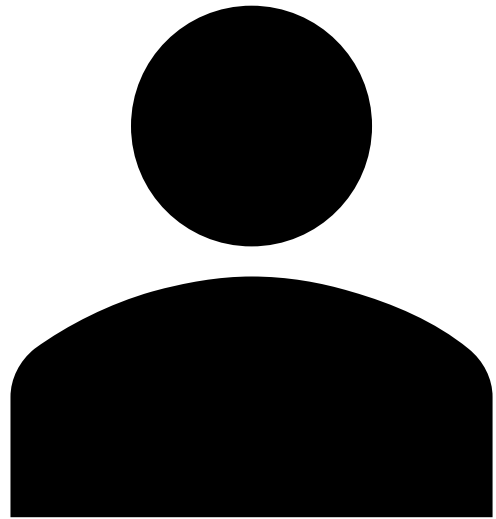
“I [don't] think it's okay to cheat at school.”



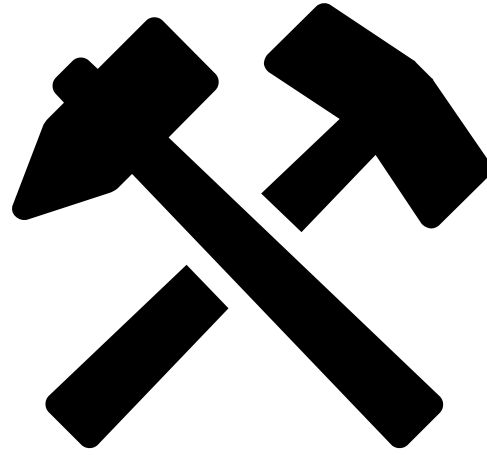
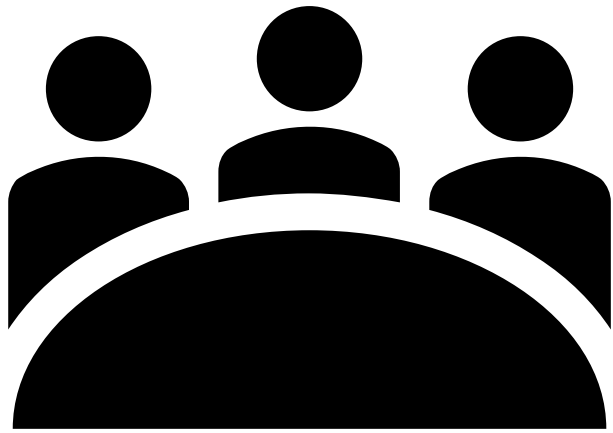
“If I had a personal problem, I could ask my mom or dad for help.”



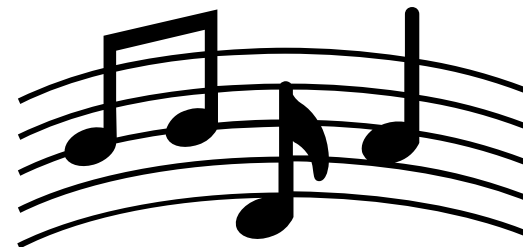
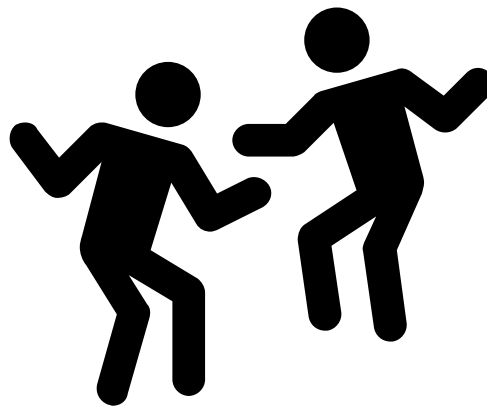
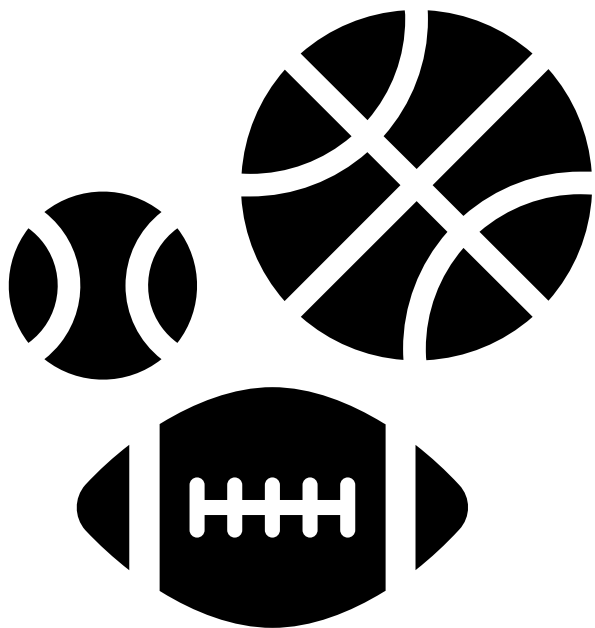
“My teacher notices when I am doing a good job and lets me know about it.”



“There are lots of adults in my neighborhood I could talk to about something important.”



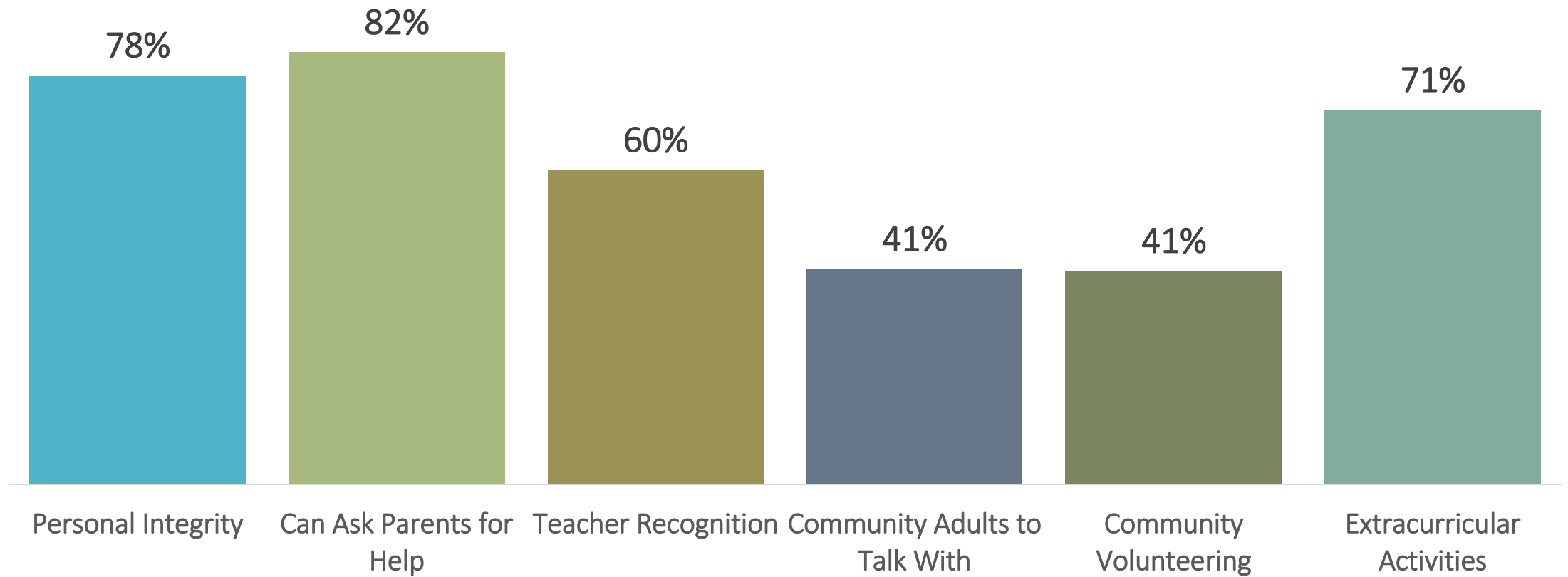
“How many times have you volunteered to do community service?”



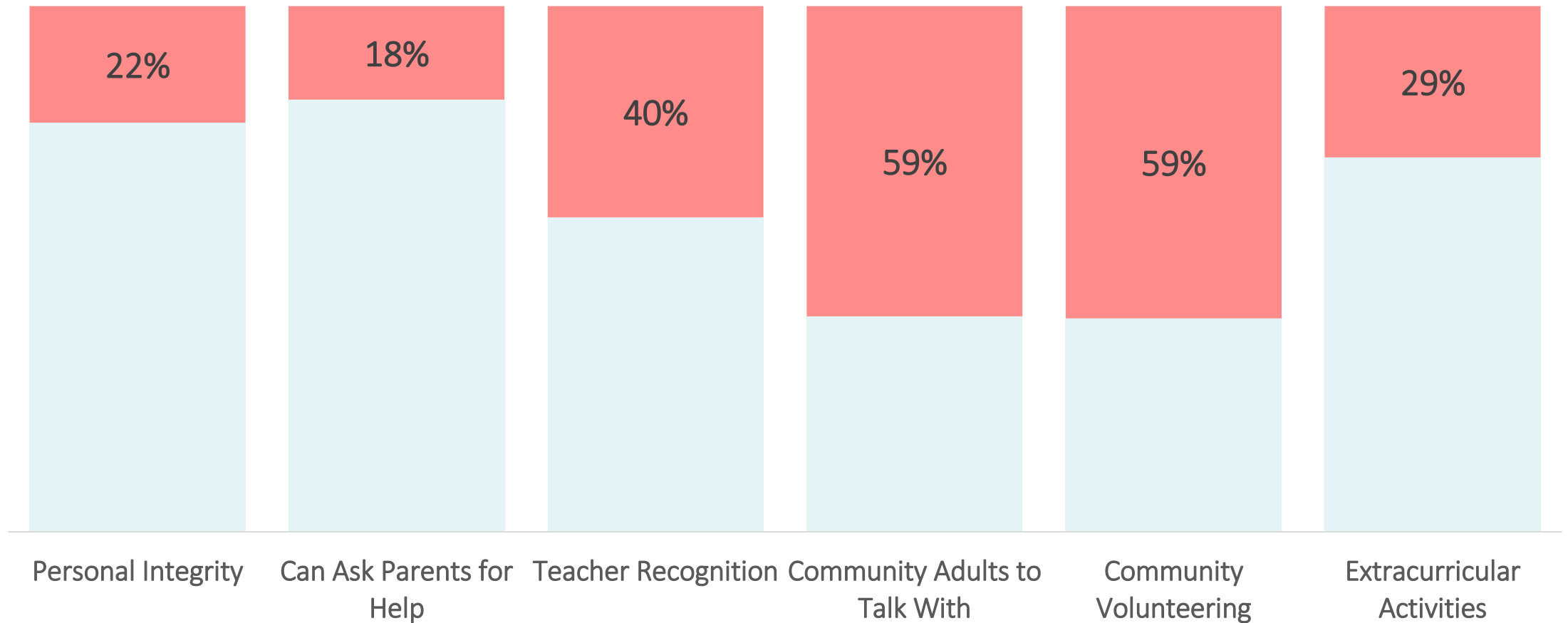
“How many times have you participated in school or non-school-based activities after the regular school day ended?”



# Prevalence of Protective Factors, All Responses



# Prevalence of Protective Factors, All Responses



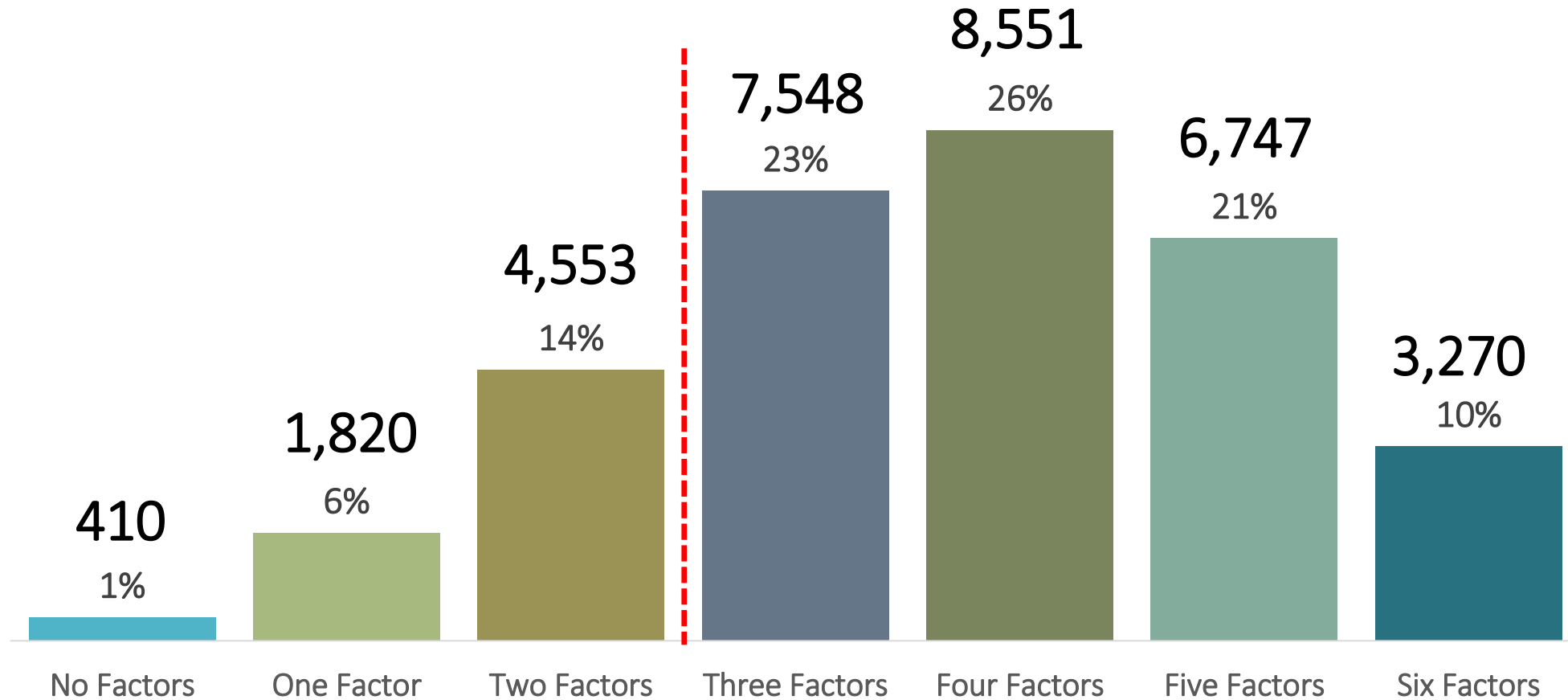
# How Many Factors Do You Have?



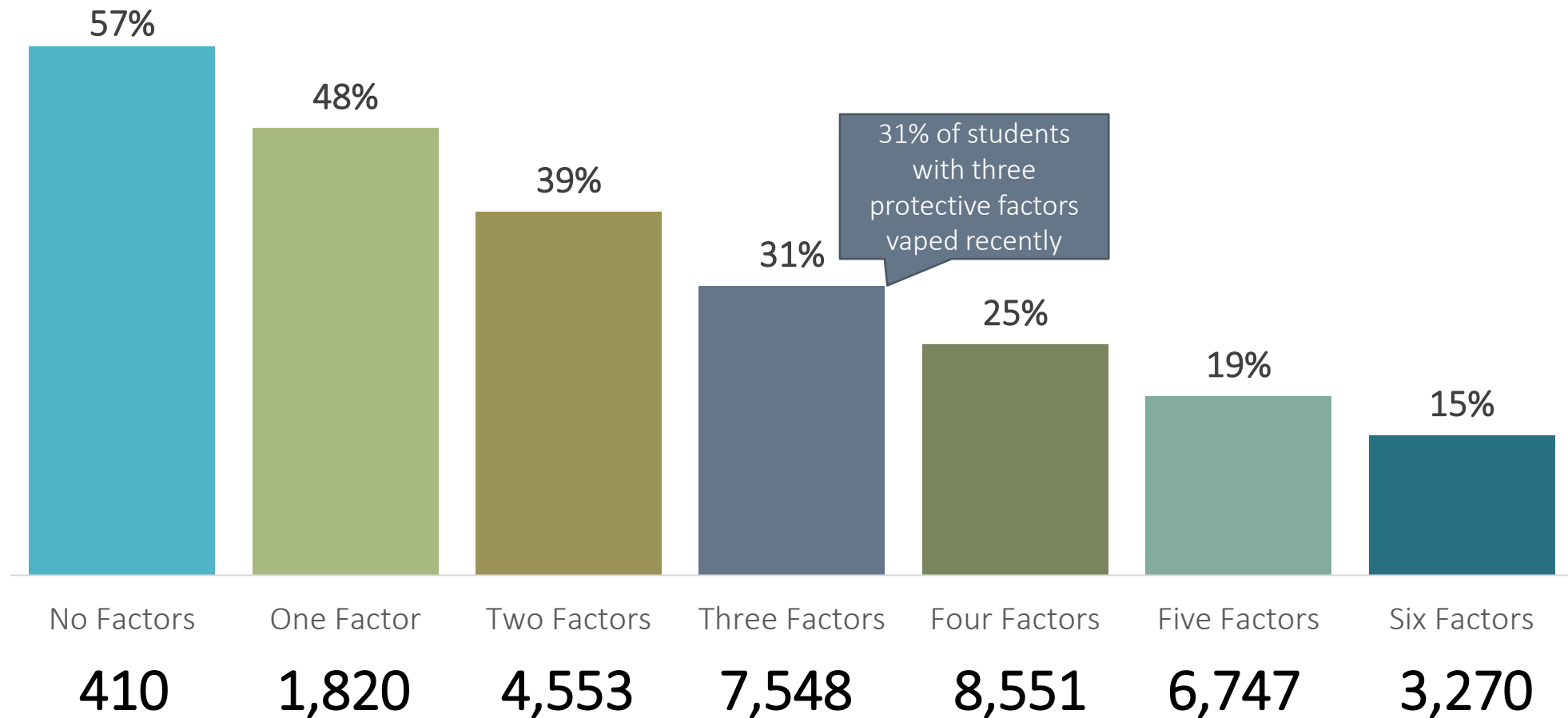
Zero to Two

Three or More

# How Many Factors Do You Have?



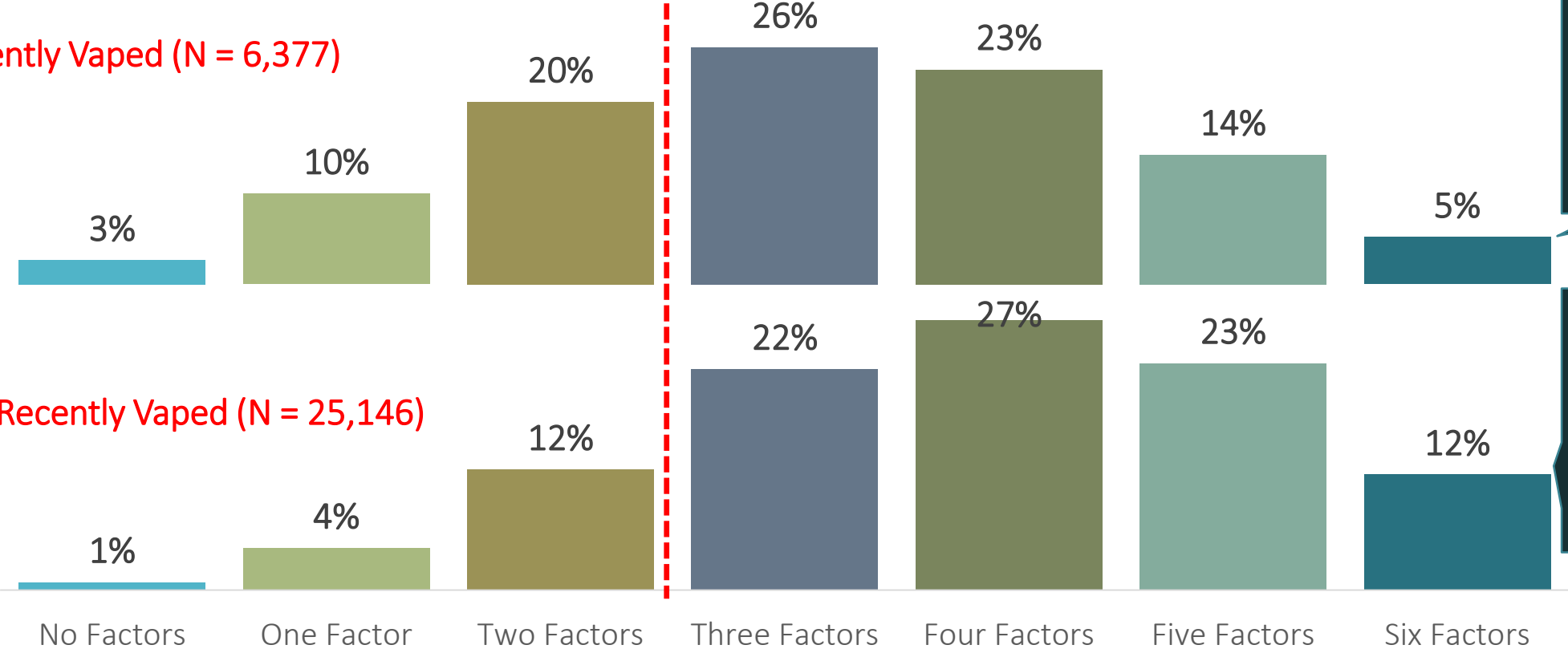
# Protective Factors and Recent Vaping



# Protective Factors by Vaping Status

Recently Vaped (N = 6,377)

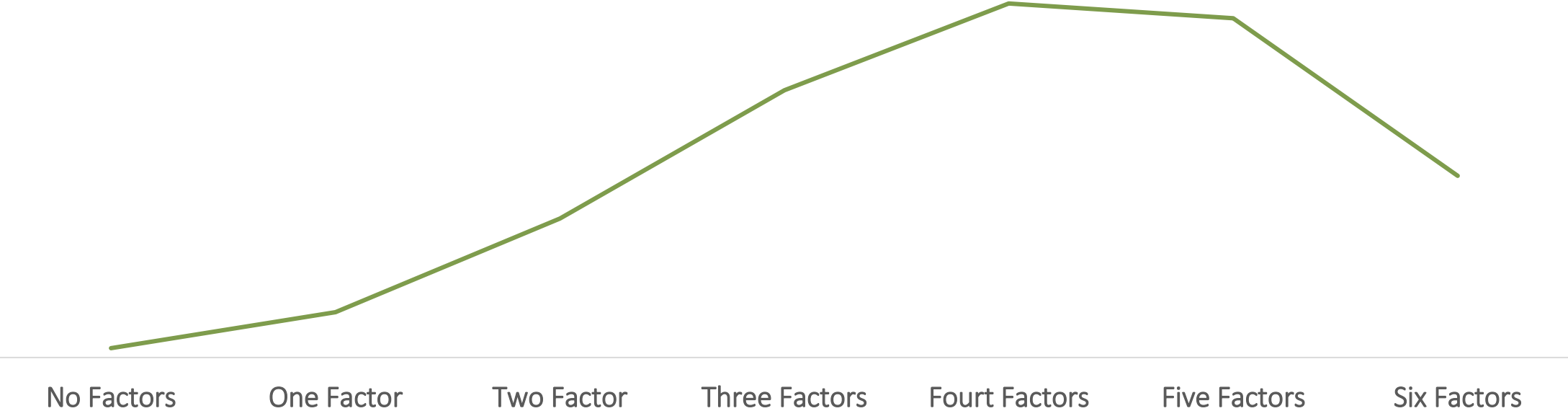
Not Recently Vaped (N = 25,146)



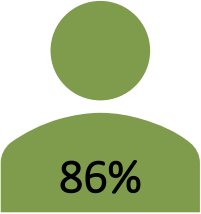
5% of students who recently vaped had all 6 protective factors

12% of students who did not recently vape had all 6 protective factors

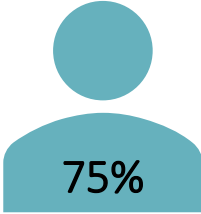
# How Many Factors Do You Have?



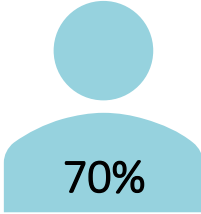
3 or More Proportion:



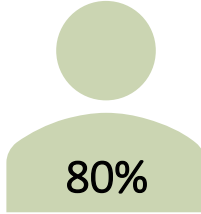
White



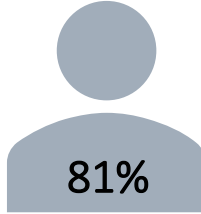
Black



Hispanic

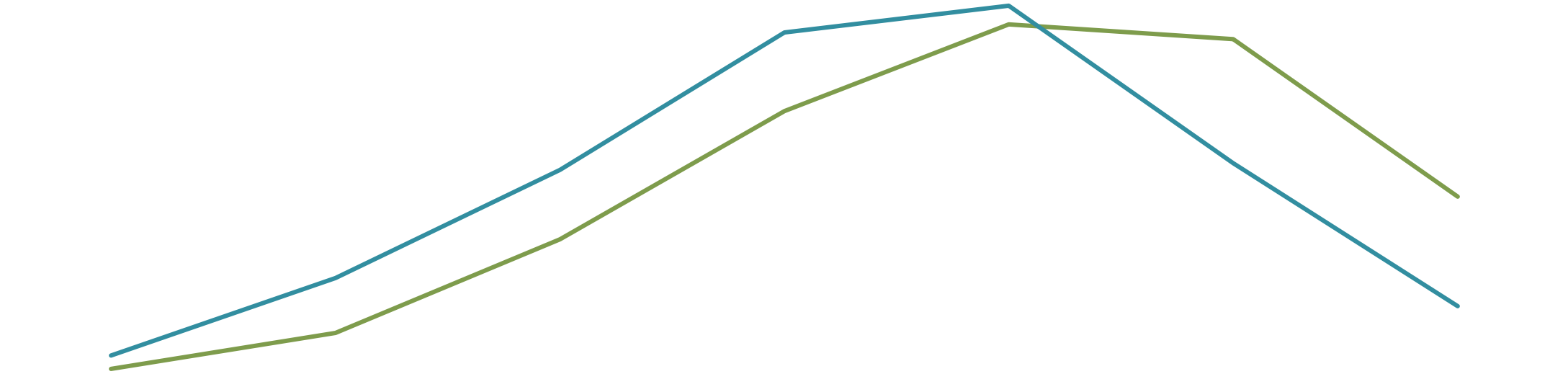


Asian/PI



Other/Multiple

# How Many Factors Do You Have?

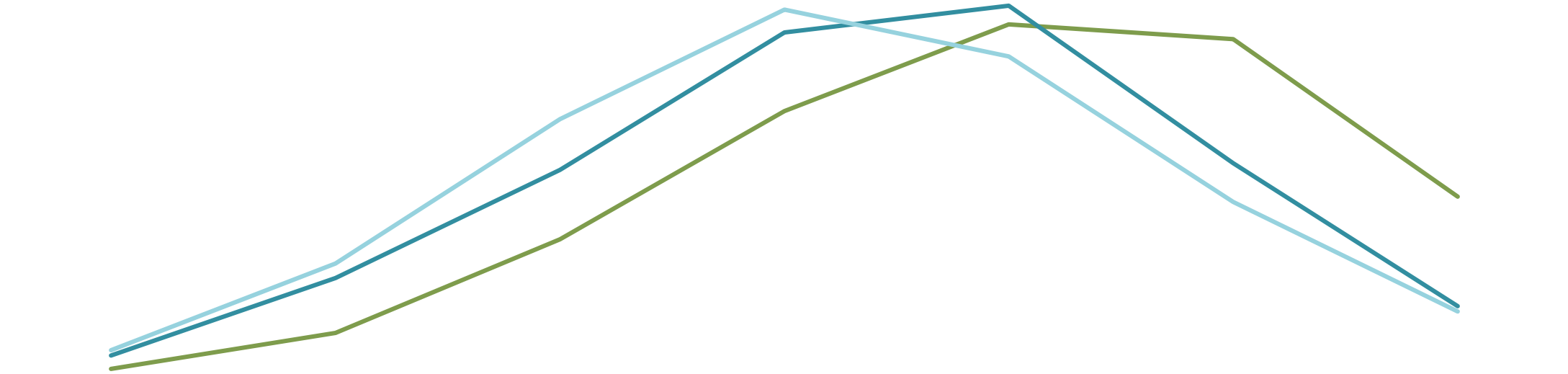


3 or More Proportion:

Group	Proportion
White	86%
Black	75%
Hispanic	70%
Asian/PI	80%
Other/Multiple	81%

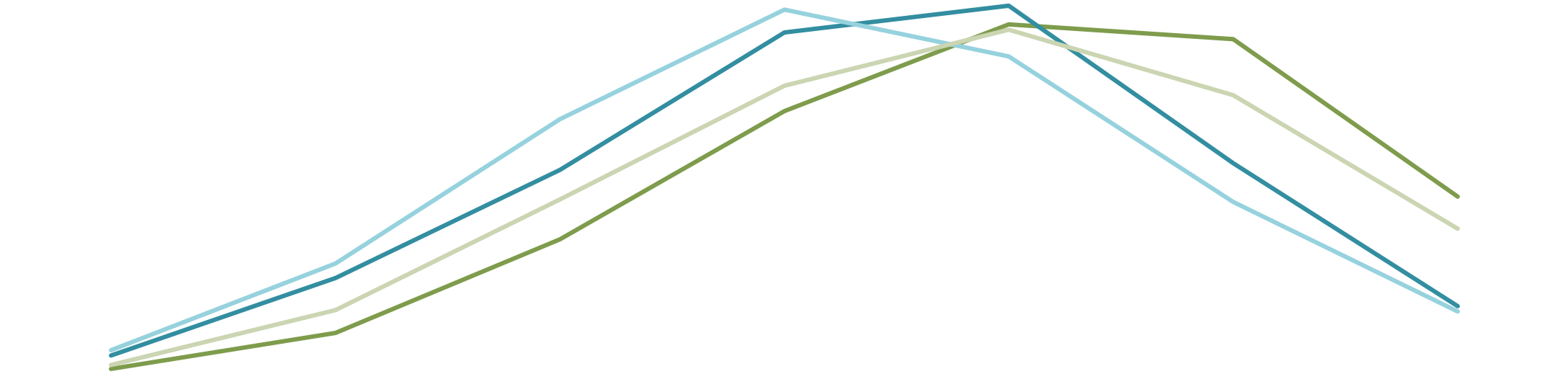


# How Many Factors Do You Have?



	No Factors	One Factor	Two Factor	Three Factors	Four Factors	Five Factors	Six Factors	
3 or More Proportion:				86%	75%	70%	80%	81%
		White	Black	Hispanic	Asian/PI	Other/Multiple		

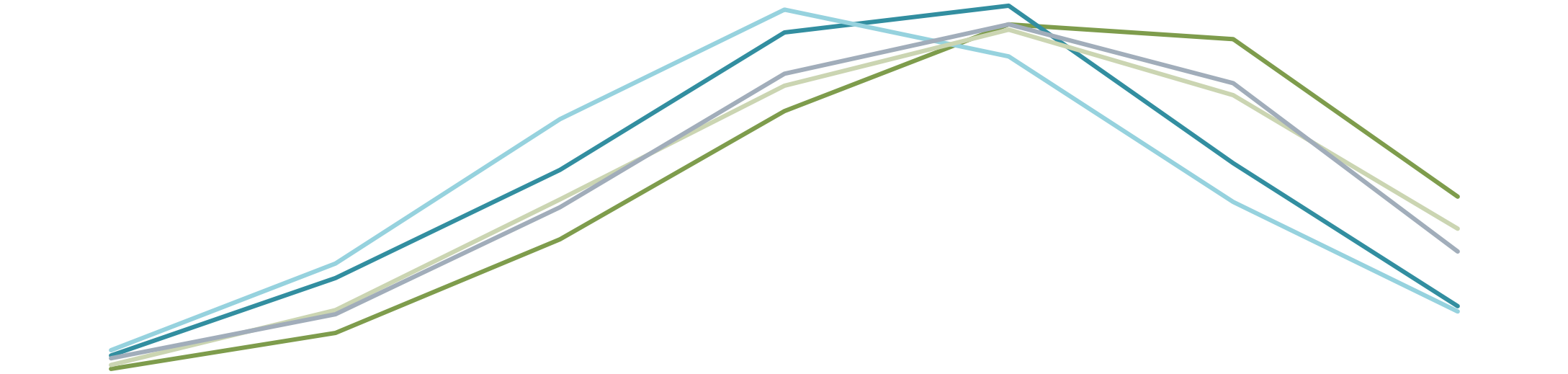
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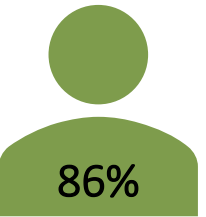
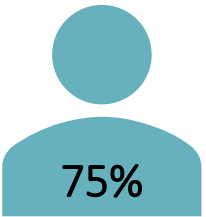
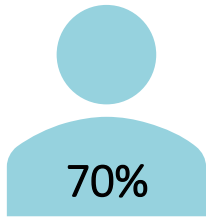
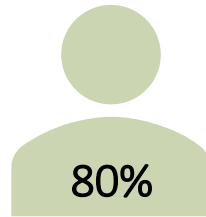
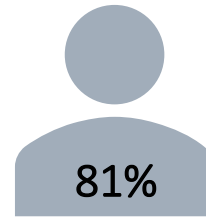
3 or More Proportion:

Racial/Ethnic Group	Proportion (3 or More Factors)
White	86%
Black	75%
Hispanic	70%
Asian/PI	80%
Other/Multiple	81%

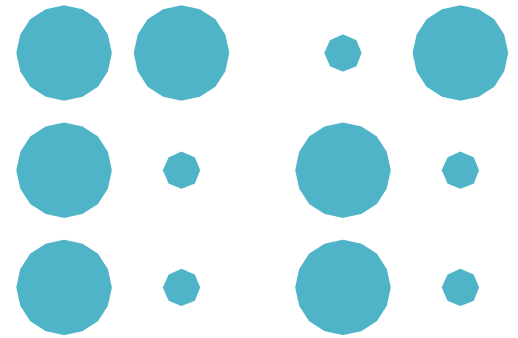
# How Many Factors Do You Have?



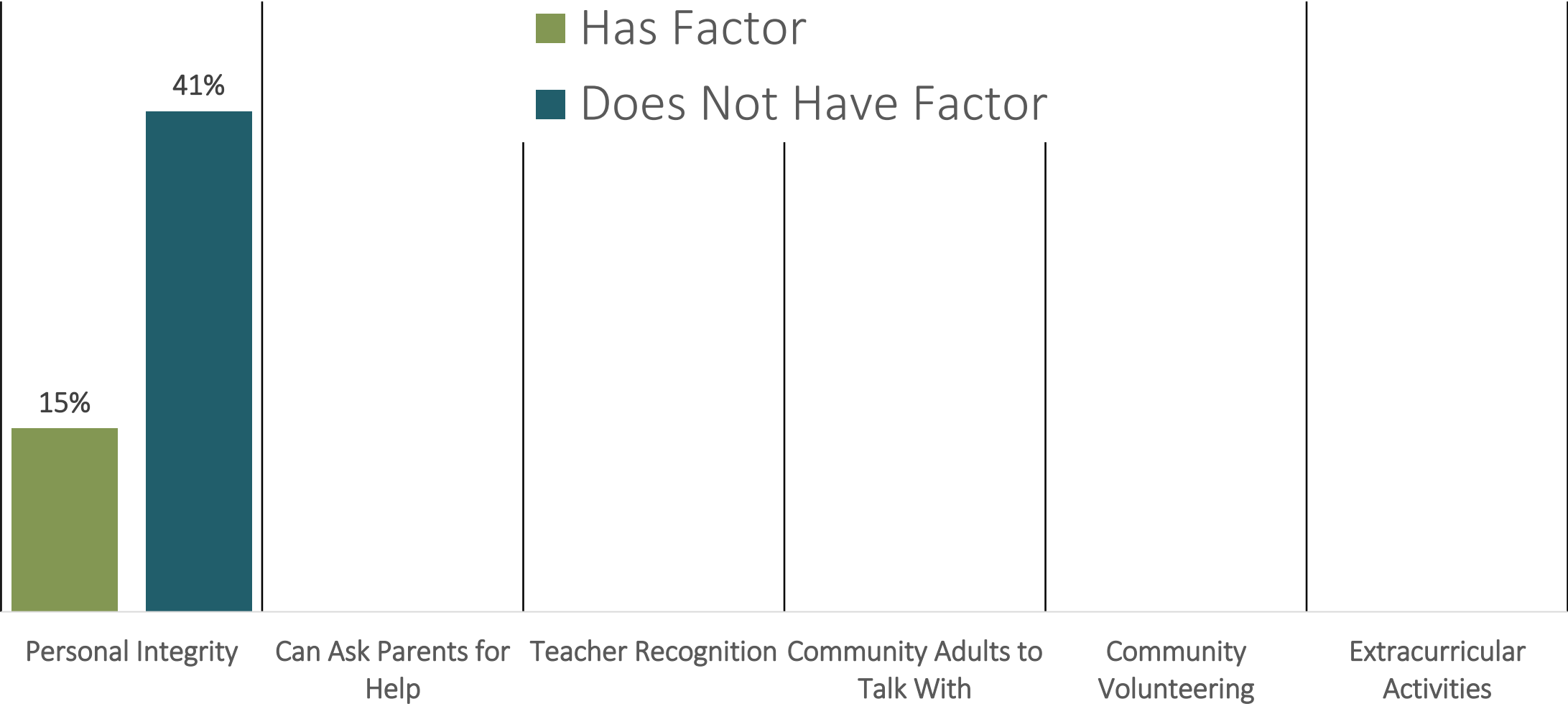
3 or More Proportion:

 <b>86%</b>	 <b>75%</b>	 <b>70%</b>	 <b>80%</b>	 <b>81%</b>
White	Black	Hispanic	Asian/PI	Other/Multiple

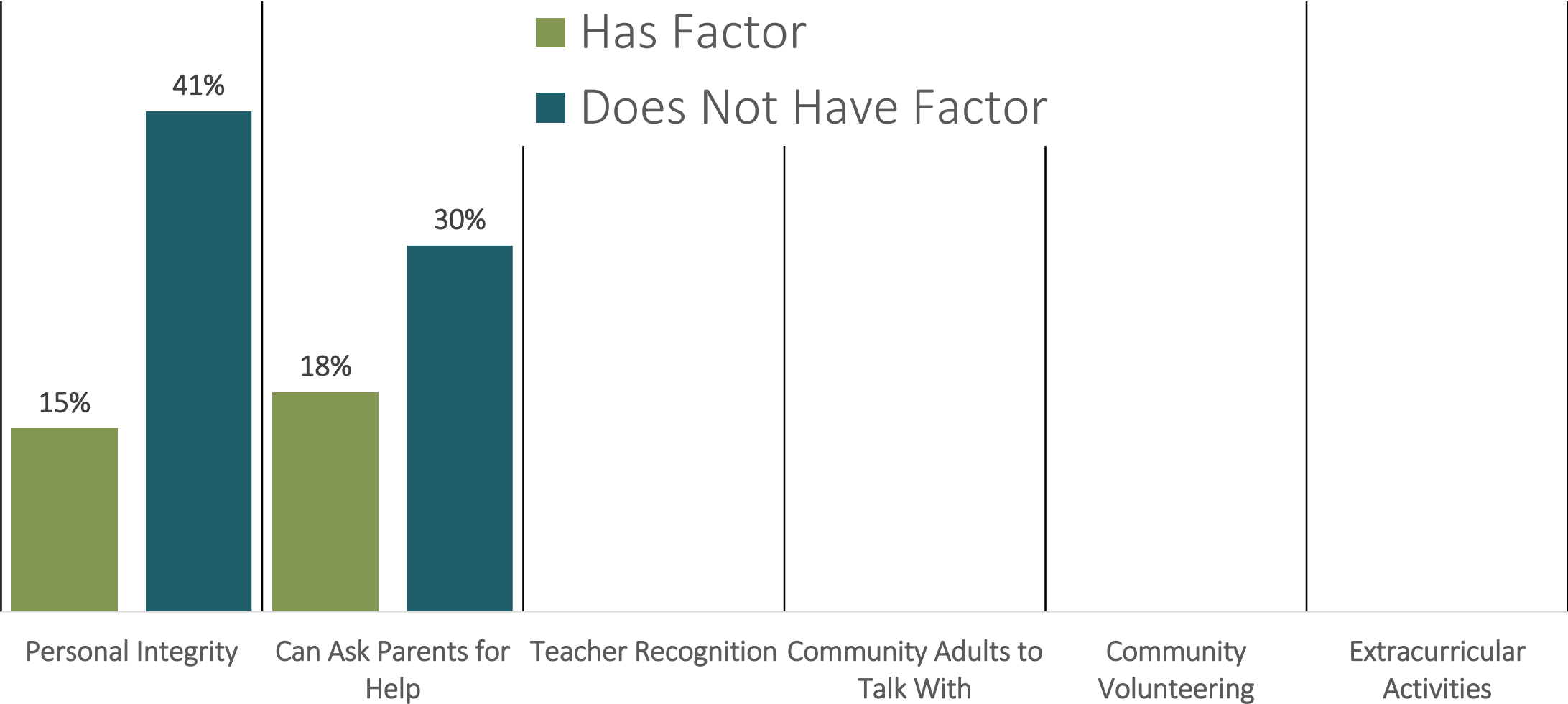
Not All Factors  
Are Equal



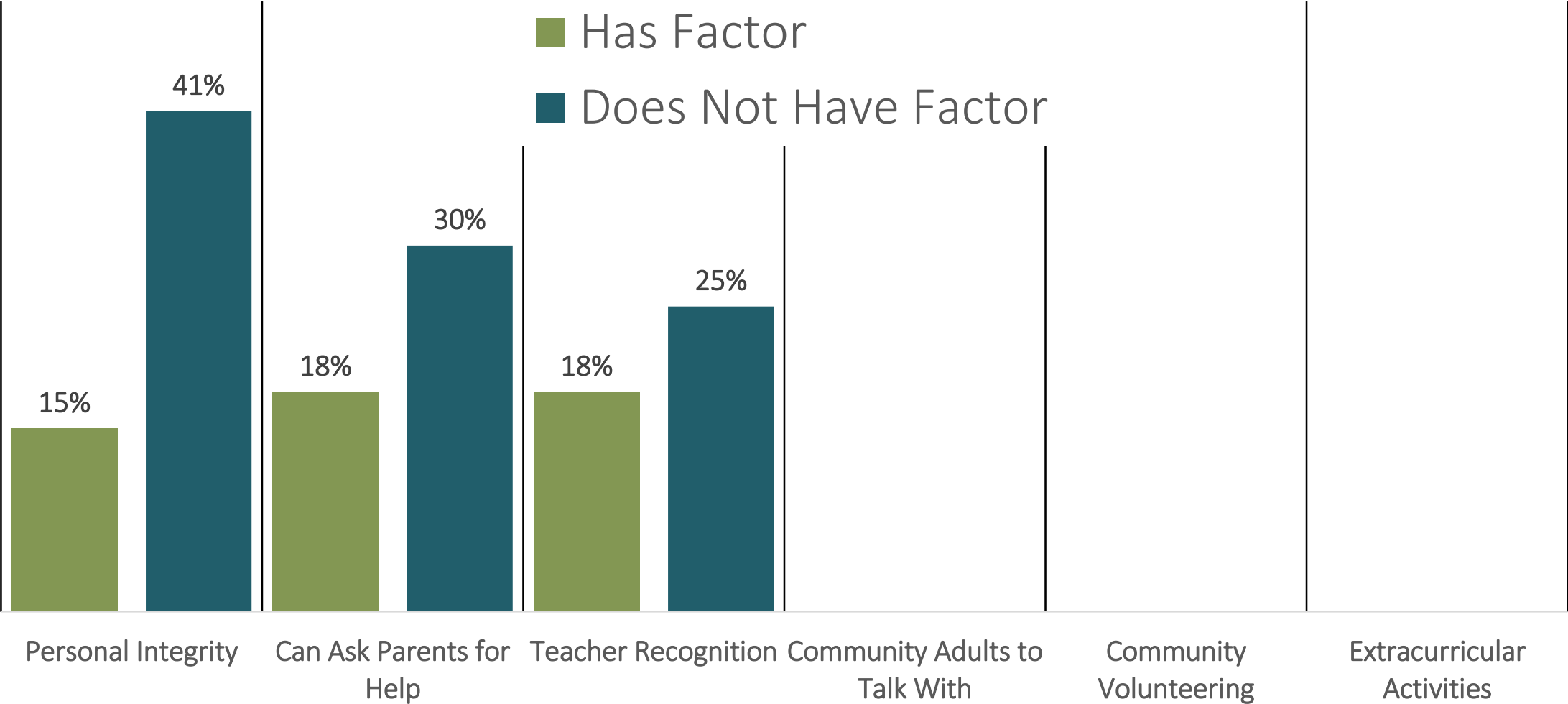
# Individual Protective Factors and Vaping



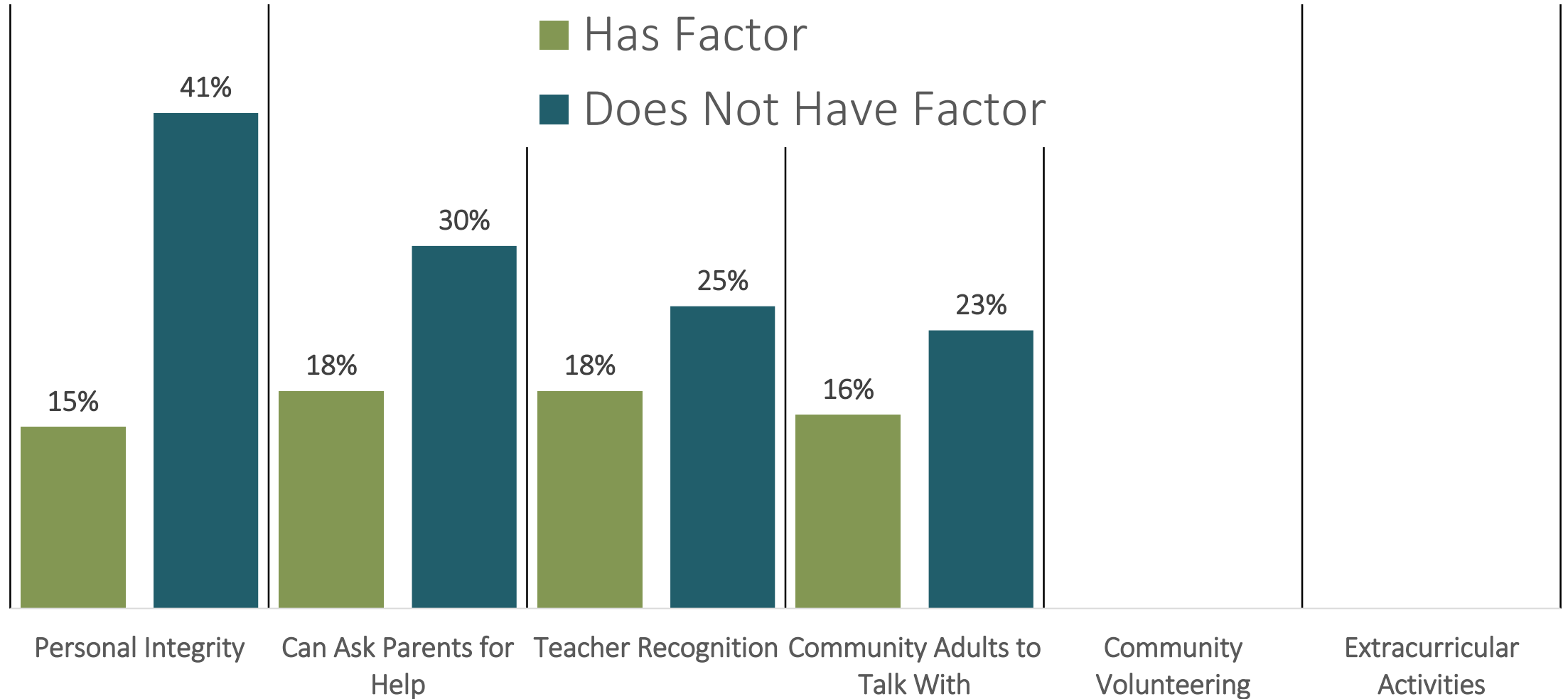
# Individual Protective Factors and Vaping



# Individual Protective Factors and Vaping

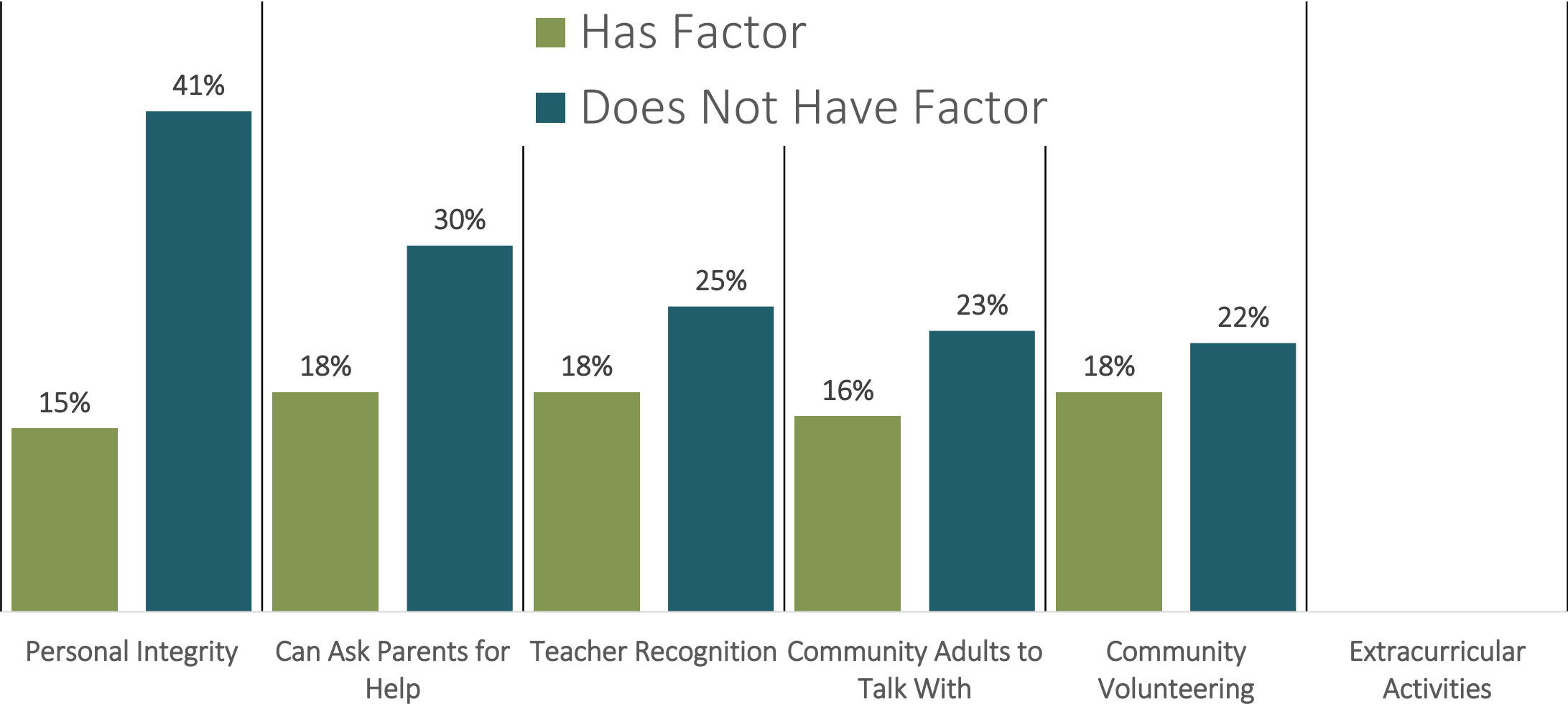


# Individual Protective Factors and Vaping

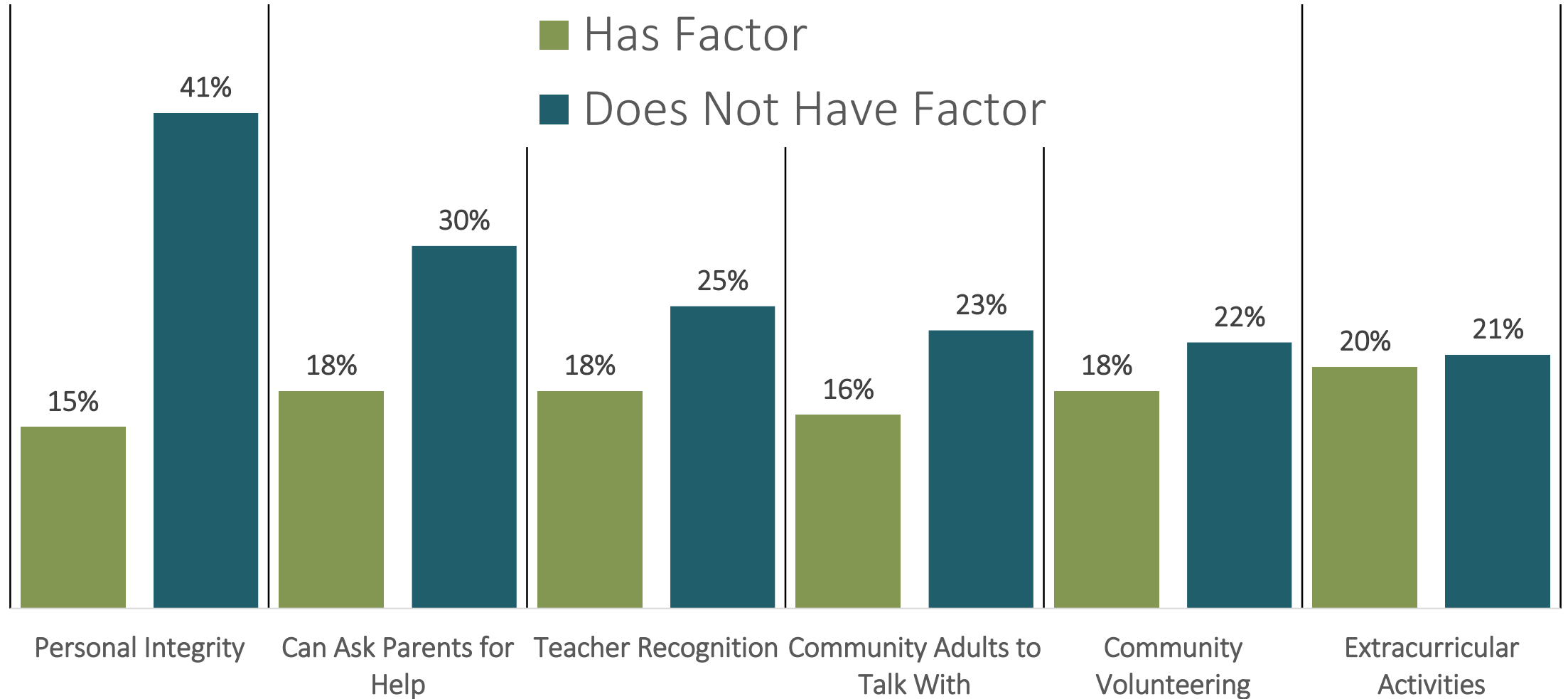




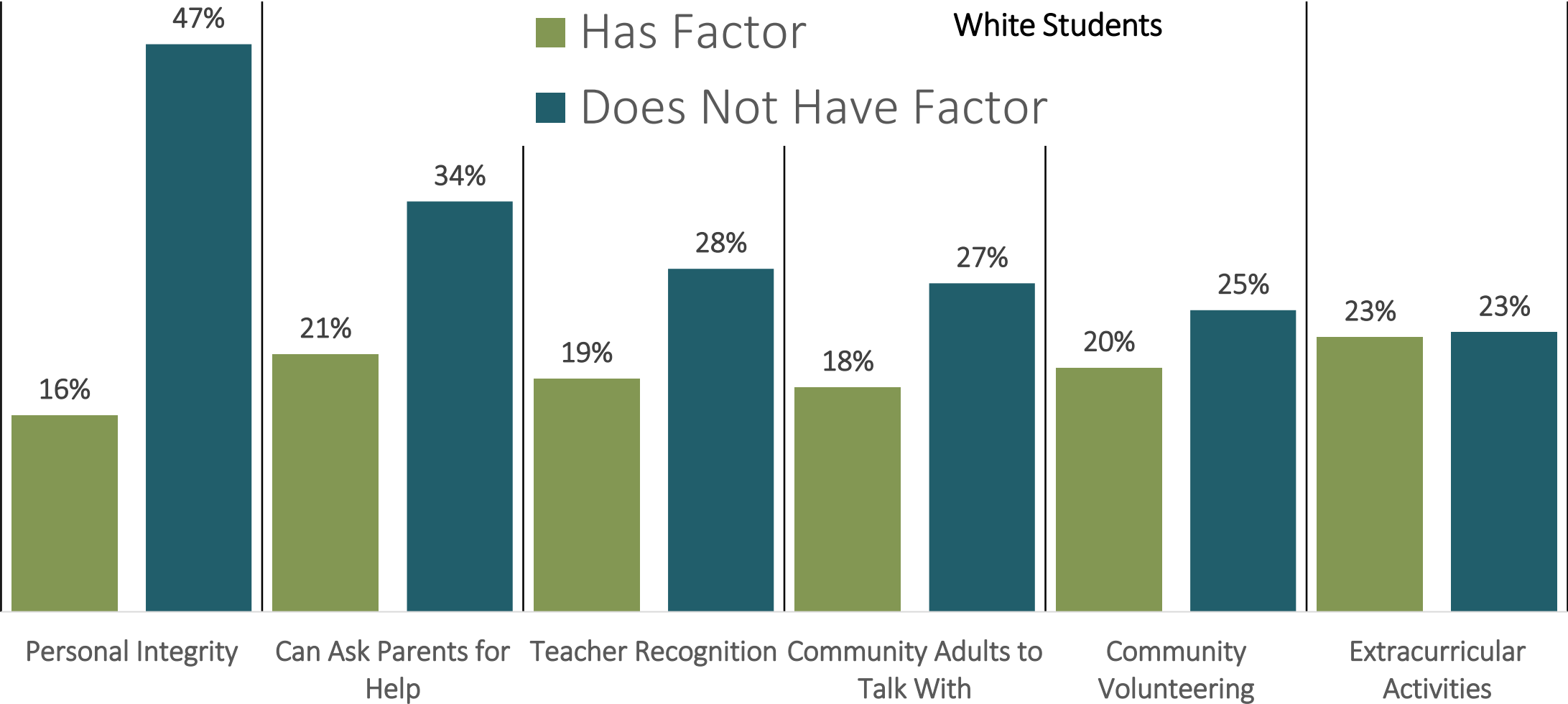
# Individual Protective Factors and Vaping



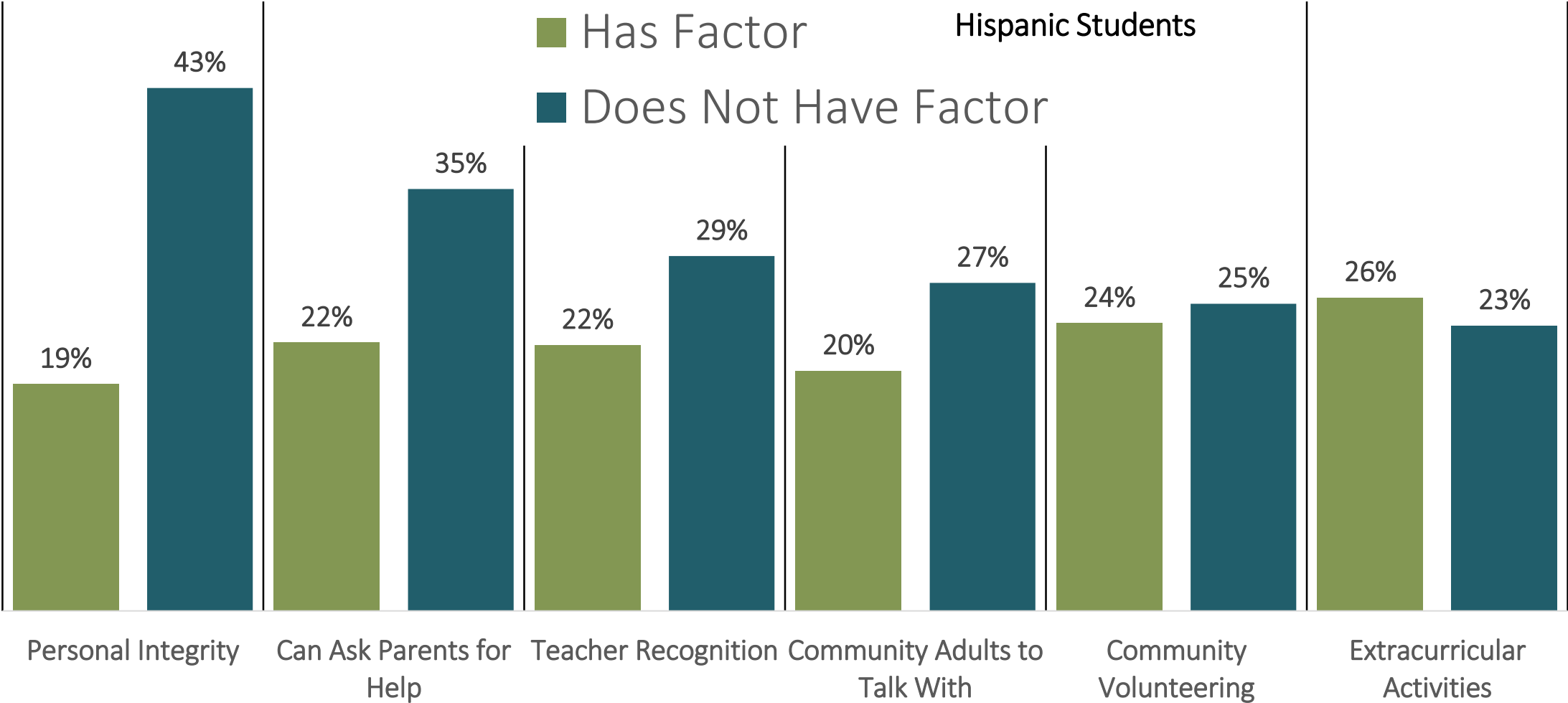
# Individual Protective Factors and Vaping



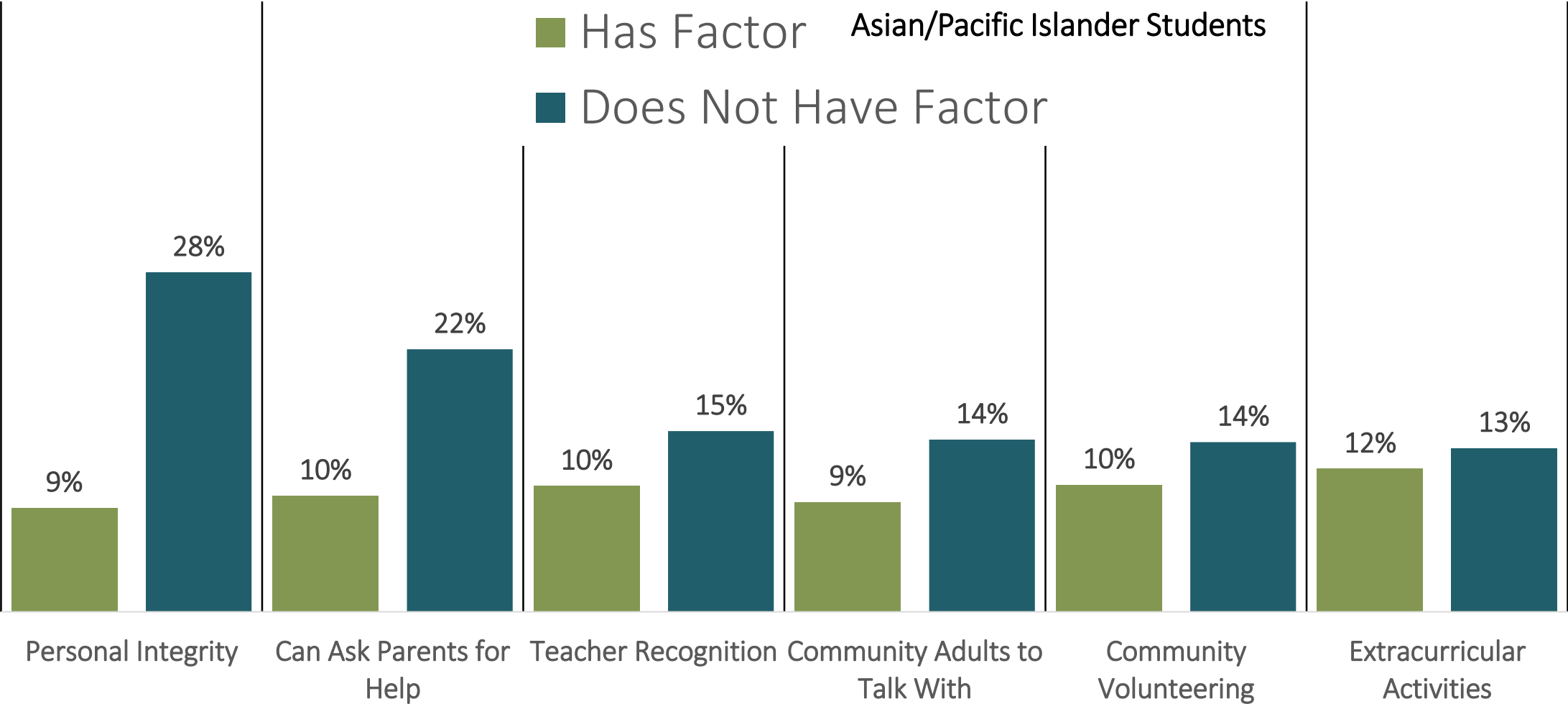
# Individual Protective Factors and Vaping



# Individual Protective Factors and Vaping



# Individual Protective Factors and Vaping



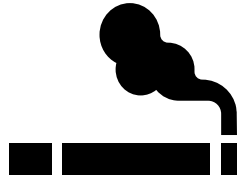
# Alcohol, Tobacco and Other Drugs



# Prevalence of Alcohol, Tobacco and Other Drugs in All Respondents



Alcohol, Past 30 Days: 4,563 (15%)



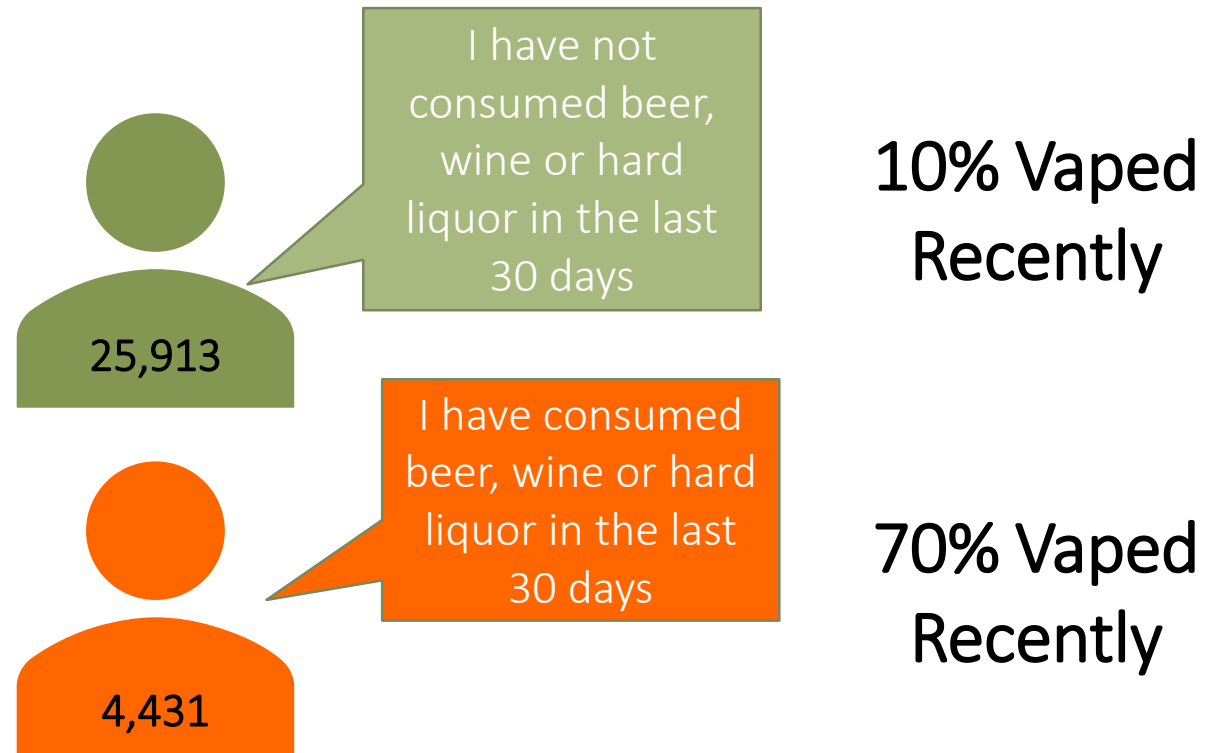
Smoking, Past 30 Days: 571 (2%)



Heroin, Past 30 Days: 84 (<0.25%)

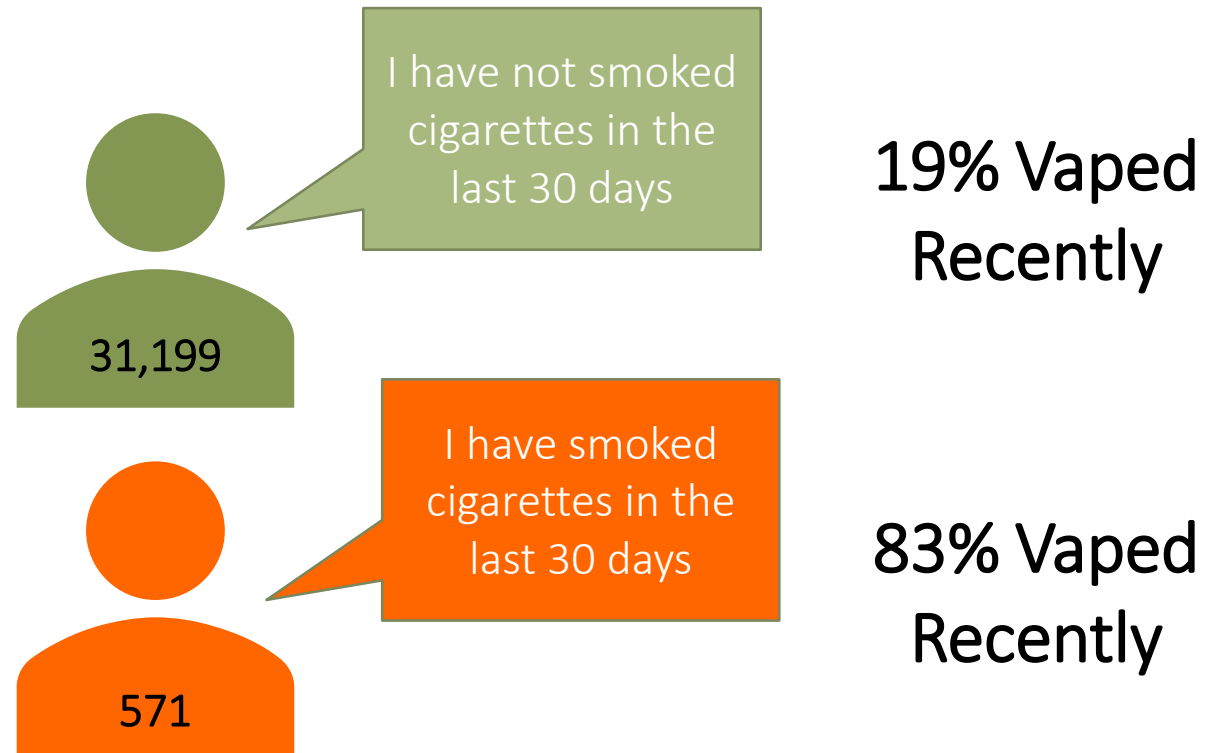
Cocaine, Past 30 Days: 186 (<1%)

# Alcohol and Vaping

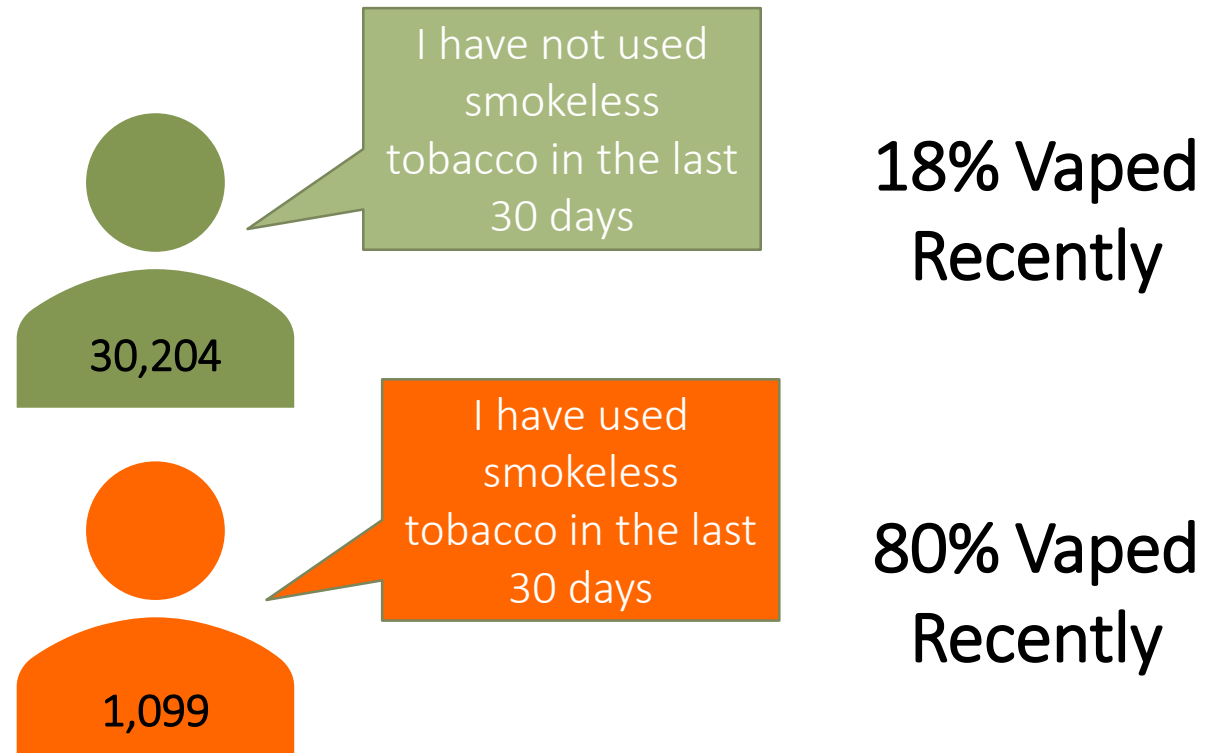




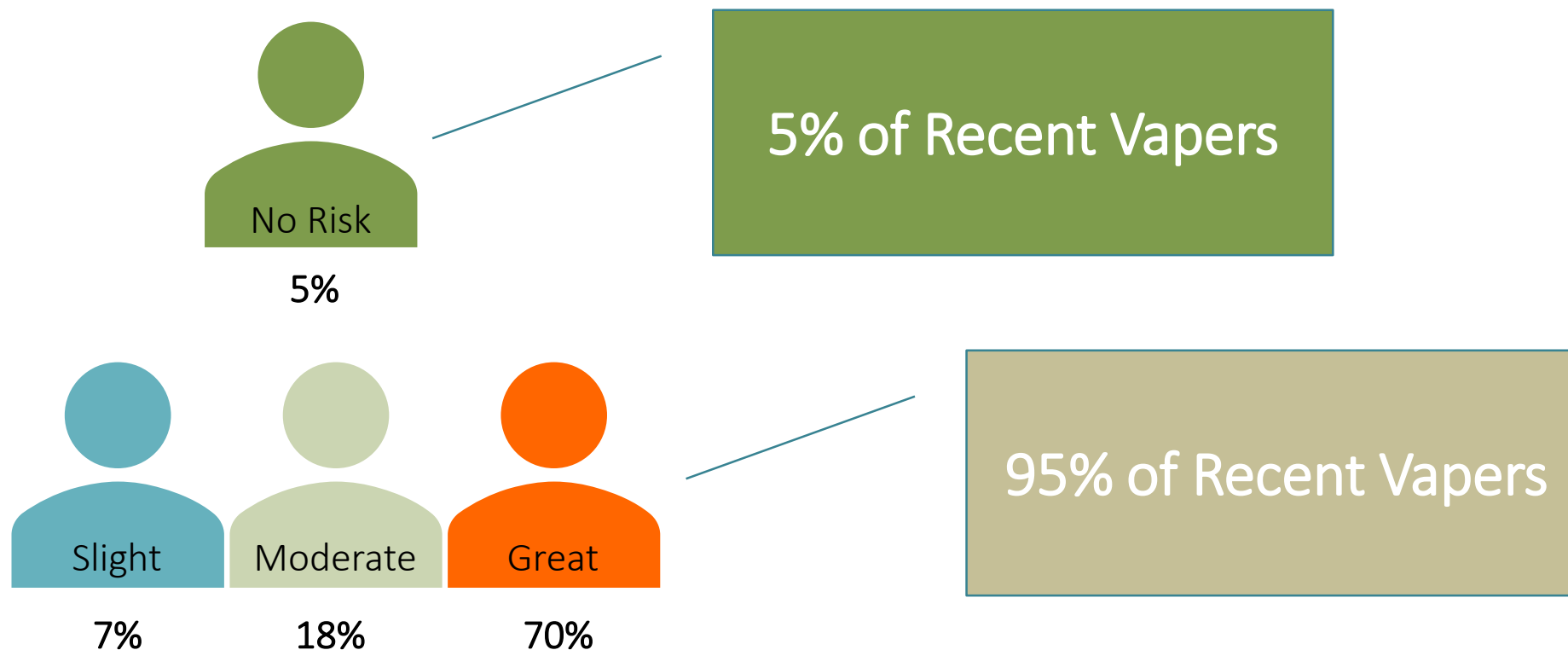
# Tobacco and Vaping



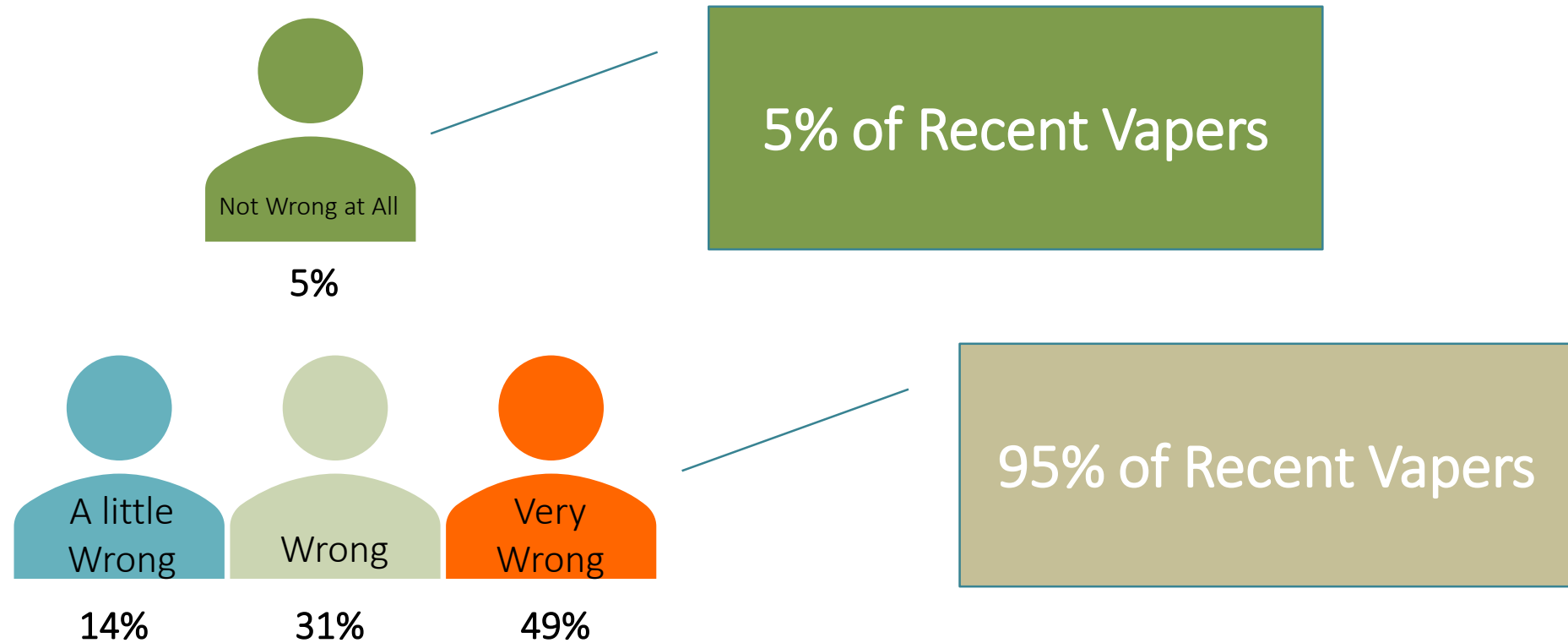
# Tobacco and Vaping



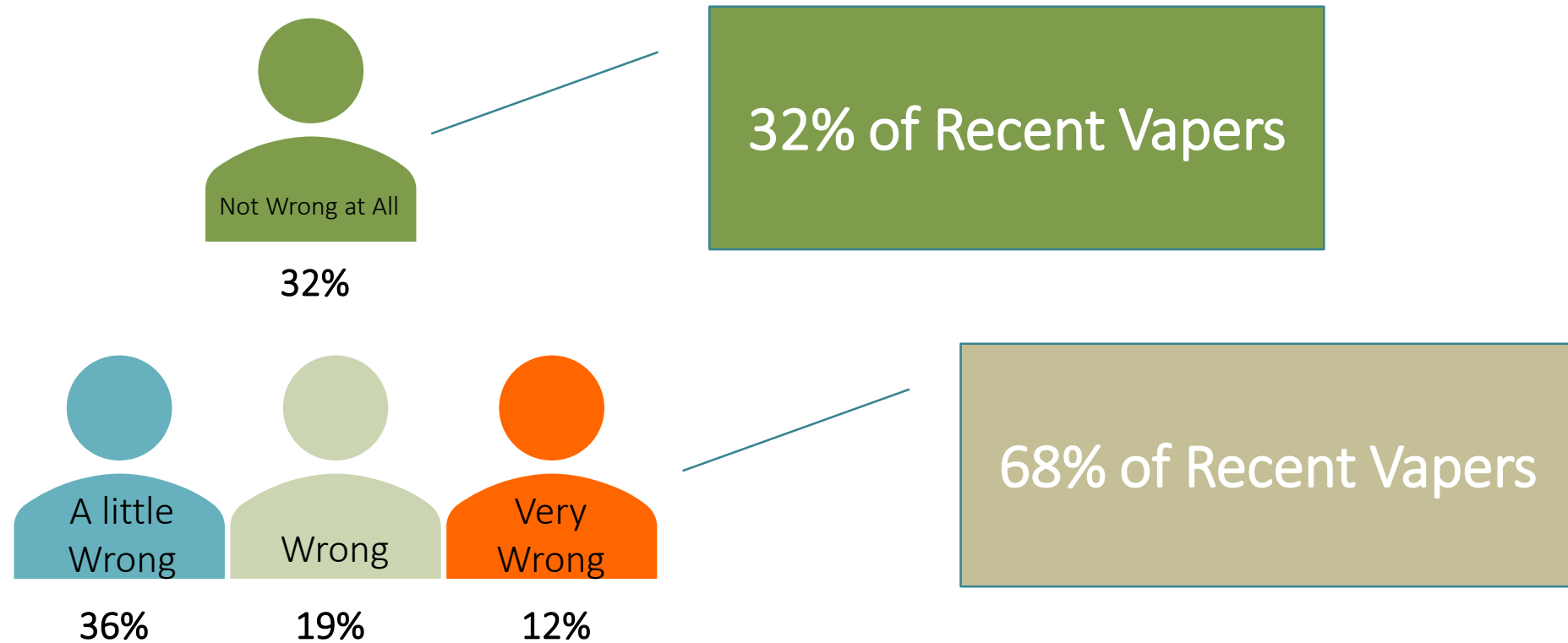
# Perceived Risk from Smoking – Vaped Recently



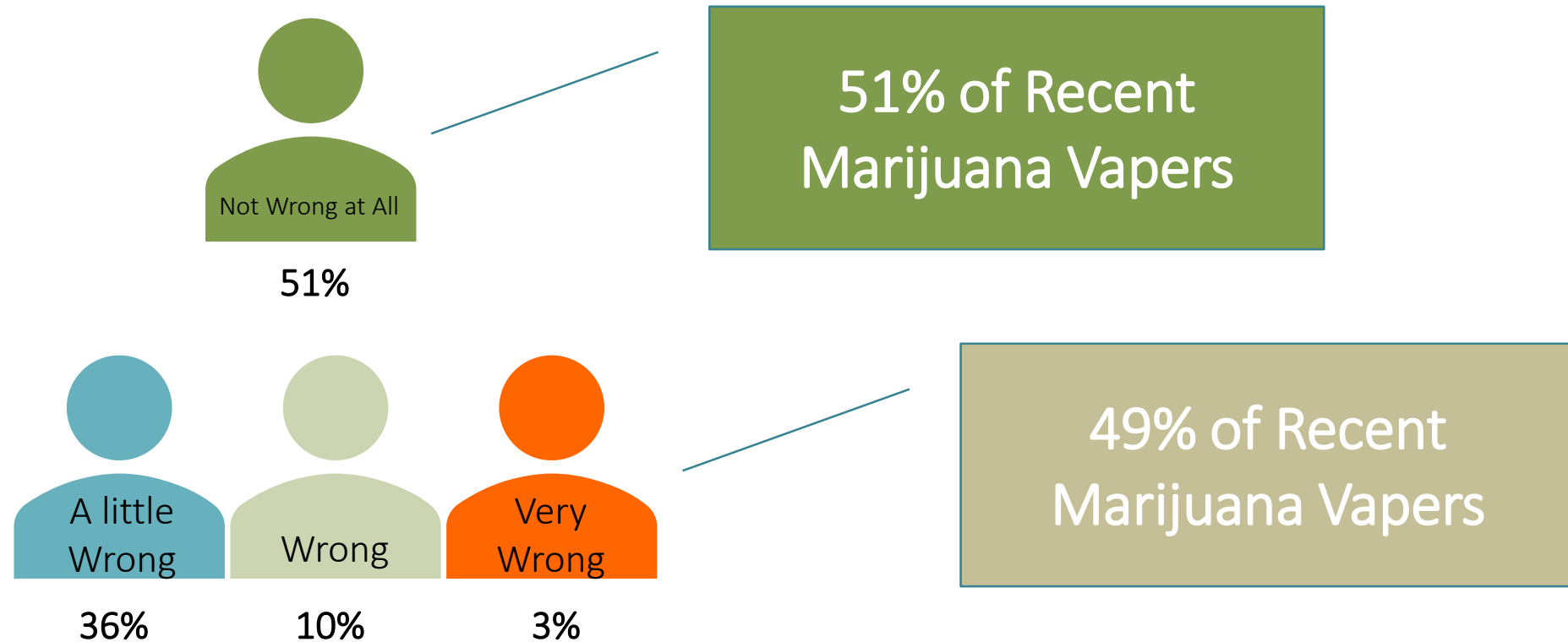
# It Is Wrong to Smoke – Vaped Recently



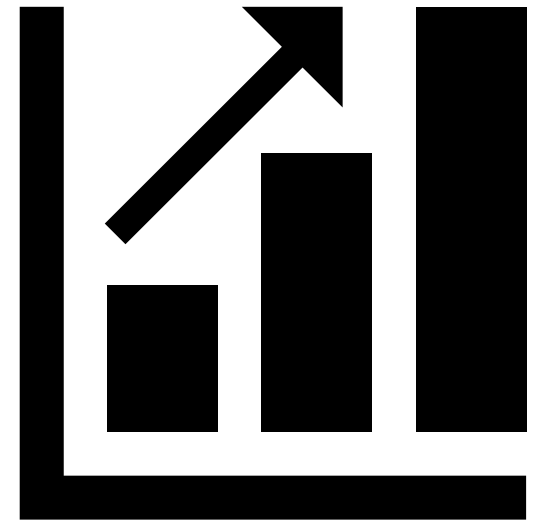
# It Is Wrong to Smoke Marijuana – Vaped Recently



# It Is Wrong to Smoke Marijuana – Vaped Marijuana Recently



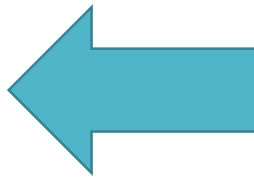
# Protective and Risk Factors Identified in a Logistic Regression



# Logistic Regression



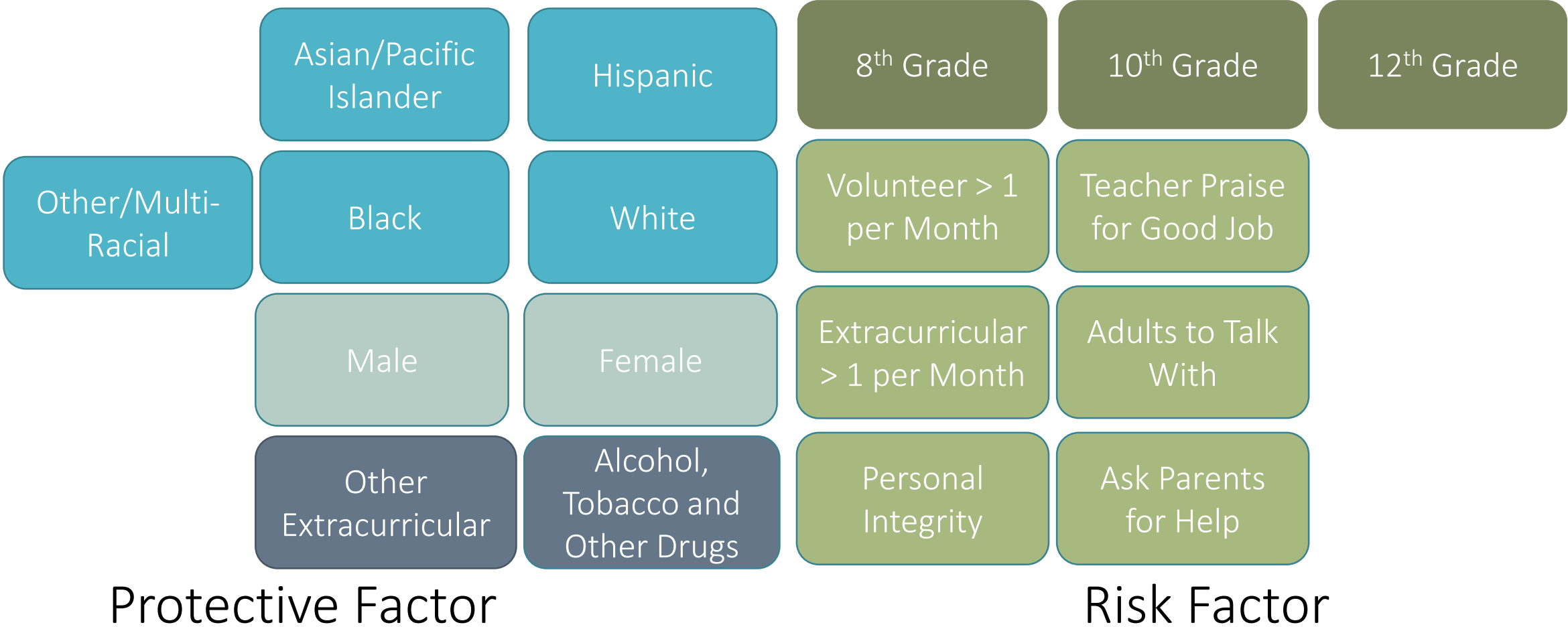
Odds of Vaping  
Yes/No



	Other/Multi-Racial		12 <sup>th</sup> Grade
Asian/Pacific Islander	Hispanic	8 <sup>th</sup> Grade	10 <sup>th</sup> Grade
Black	White	Volunteer > 1 per Month	Teacher Praise for Good Job
Male	Female	Extracurricular > 1 per Month	Adults to Talk With
Other Extracurricular	Alcohol, Tobacco and Other Drugs	Personal Integrity	Ask Parents for Help



# Protective vs. Risk Factors



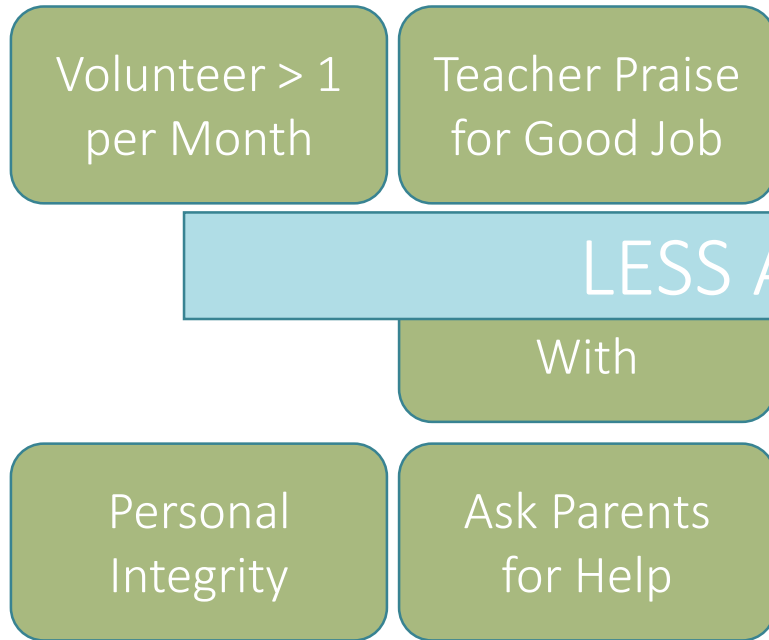
# Race/Ethnicity



Protective Factor

Risk Factor

# Three to Succeed



LESS AT RISK TO MORE AT RISK

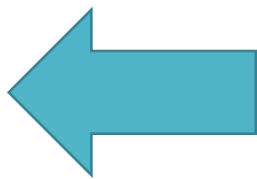
FIVE FACTORS were PROTECTIVE  
STATISTICALLY SIGNIFICANT  
LEVEL...

Some more than others...

# Logistic Regression



Odds of Vaping  
Yes/No

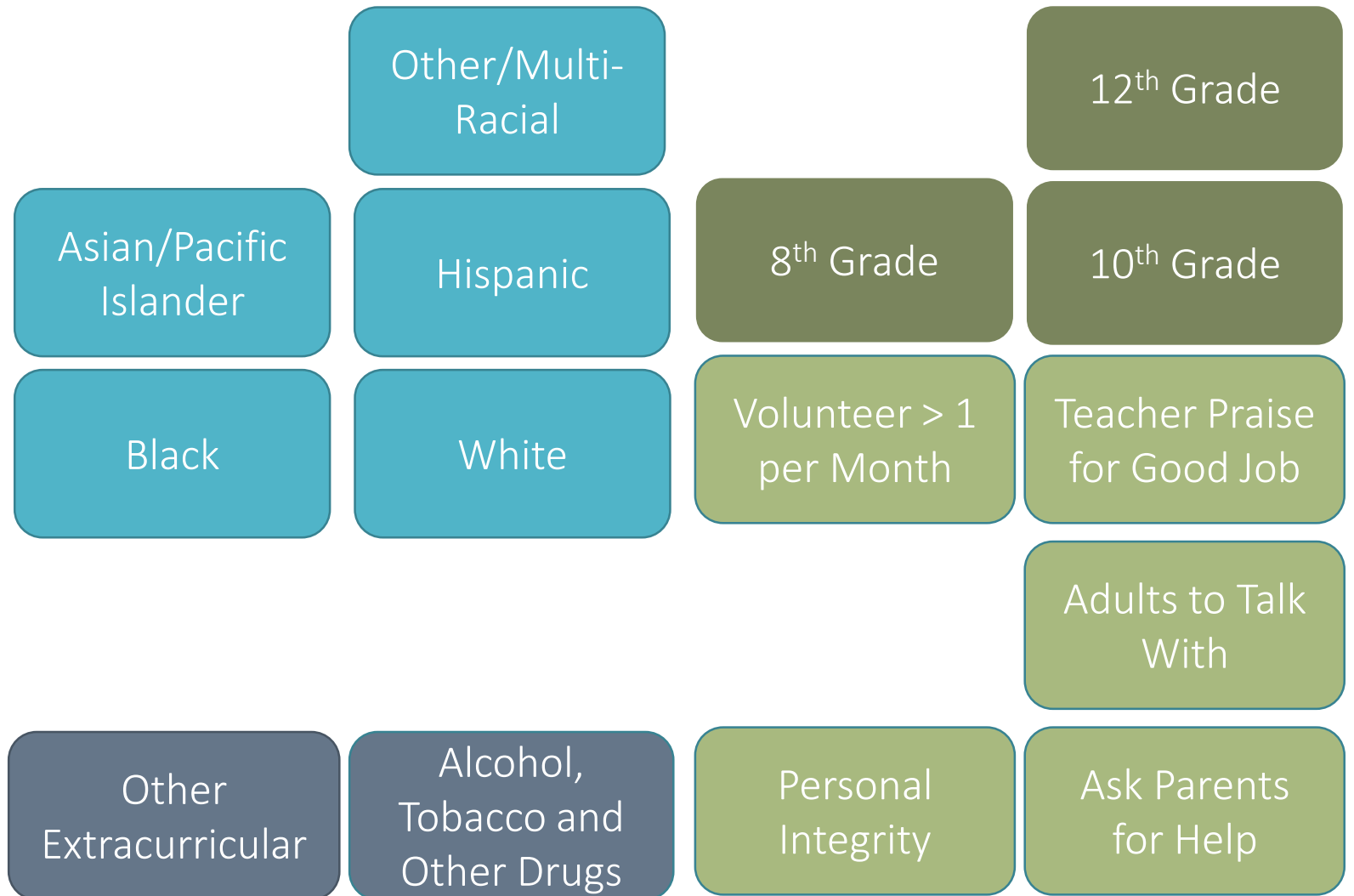
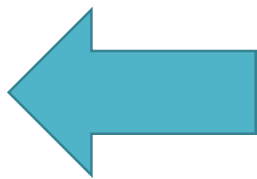


	Other/Multi-Racial		12 <sup>th</sup> Grade
Asian/Pacific Islander	Hispanic	8 <sup>th</sup> Grade	10 <sup>th</sup> Grade
Black	White	Volunteer > 1 per Month	Teacher Praise for Good Job
Male	Female	Extracurricular > 1 per Month	Adults to Talk With
Other Extracurricular	Alcohol, Tobacco and Other Drugs	Personal Integrity	Ask Parents for Help

# Logistic Regression



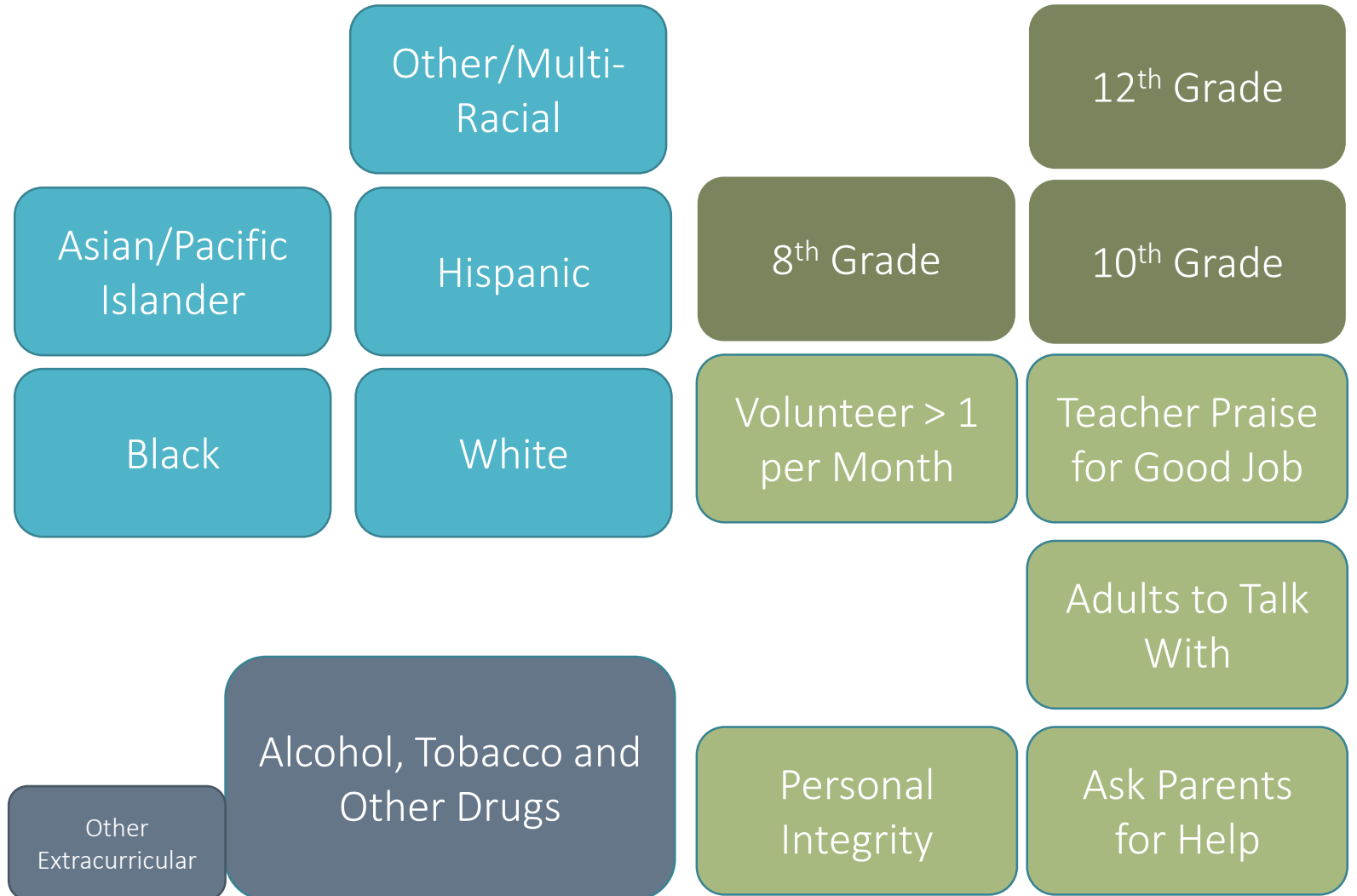
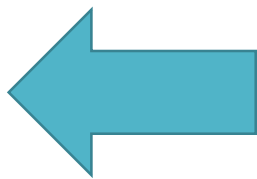
Odds of Vaping  
Yes/No



# Logistic Regression



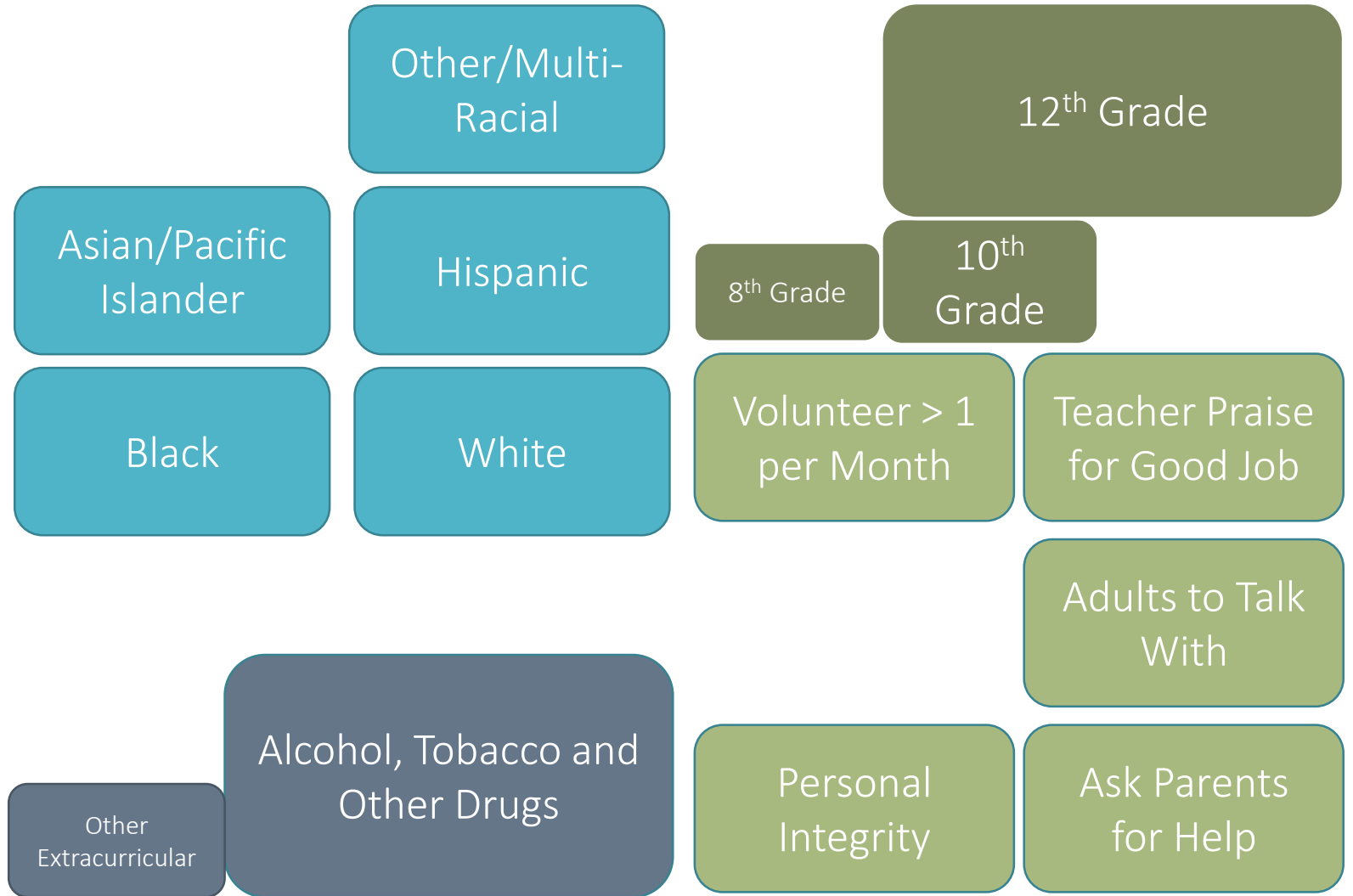
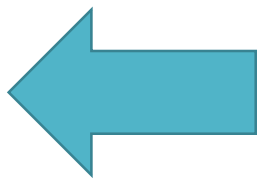
Odds of Vaping  
Yes/No



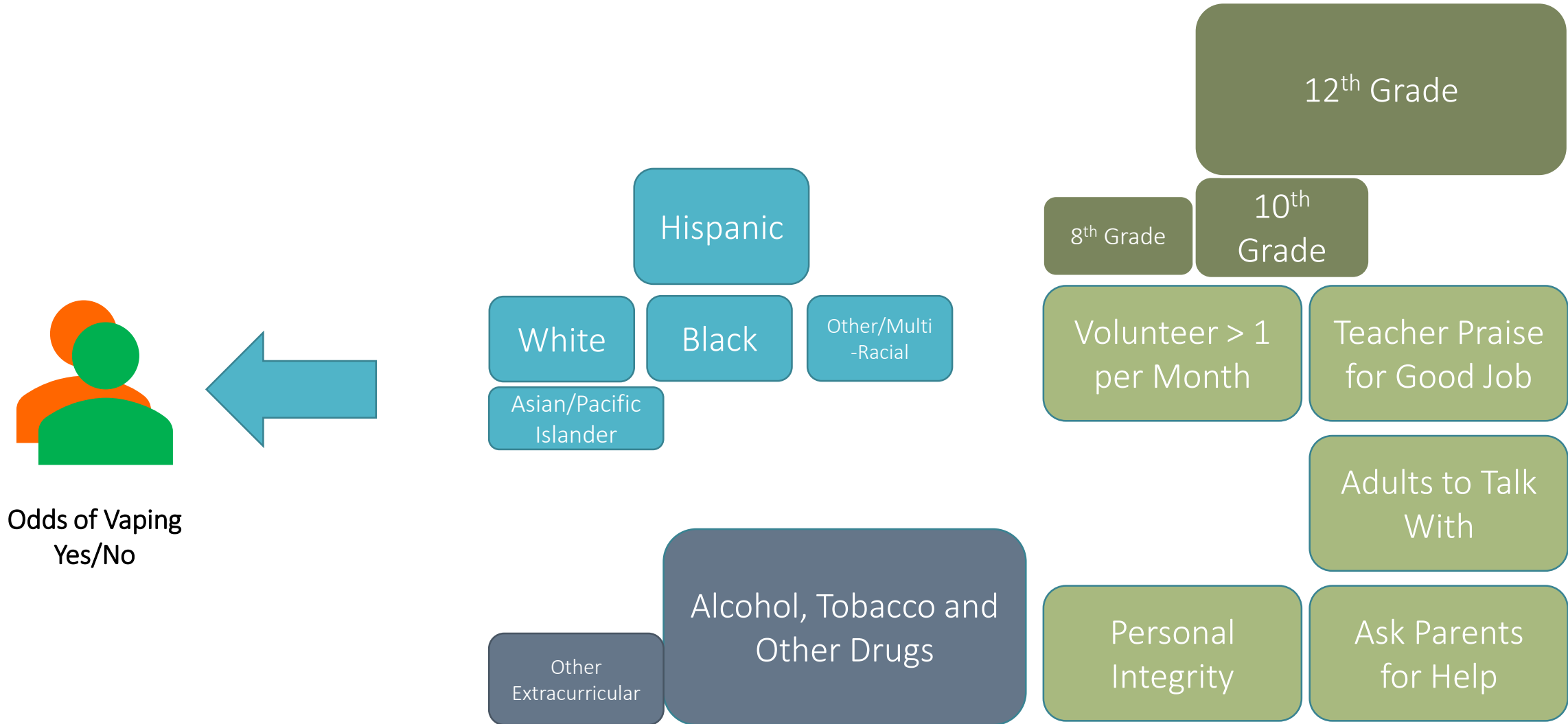
# Logistic Regression



Odds of Vaping  
Yes/No

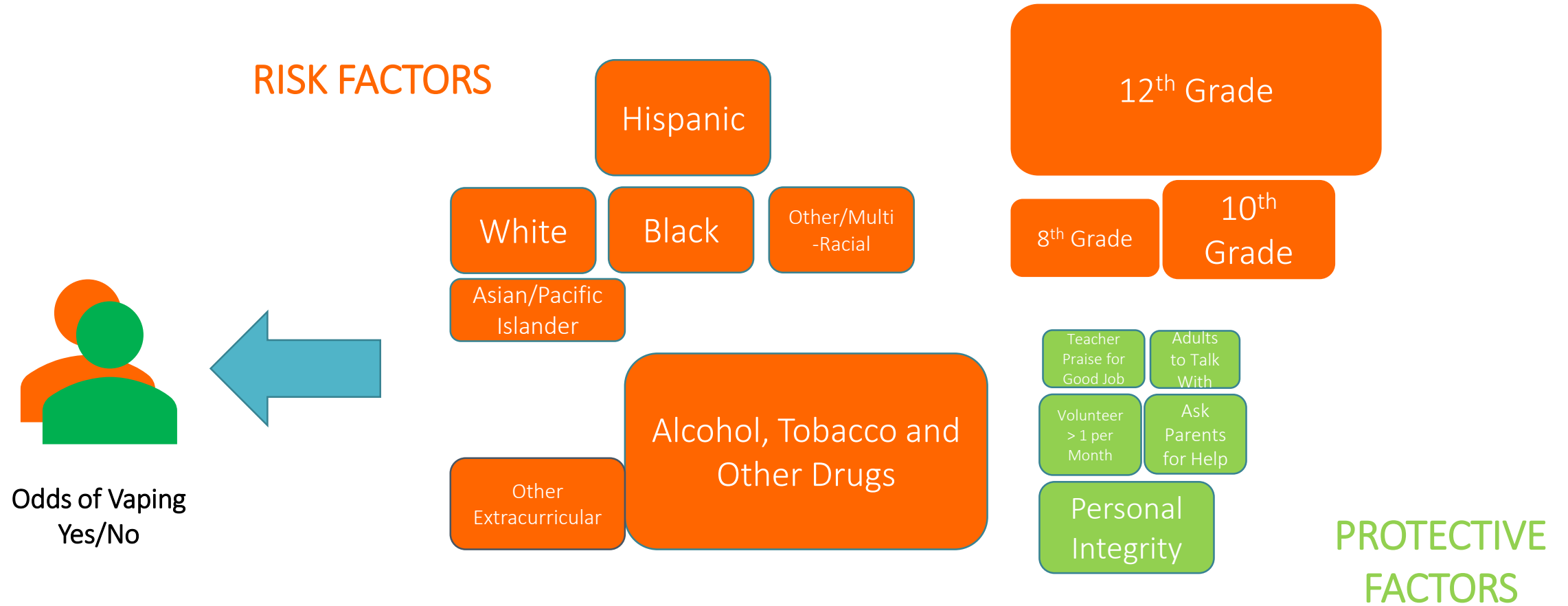


# Logistic Regression



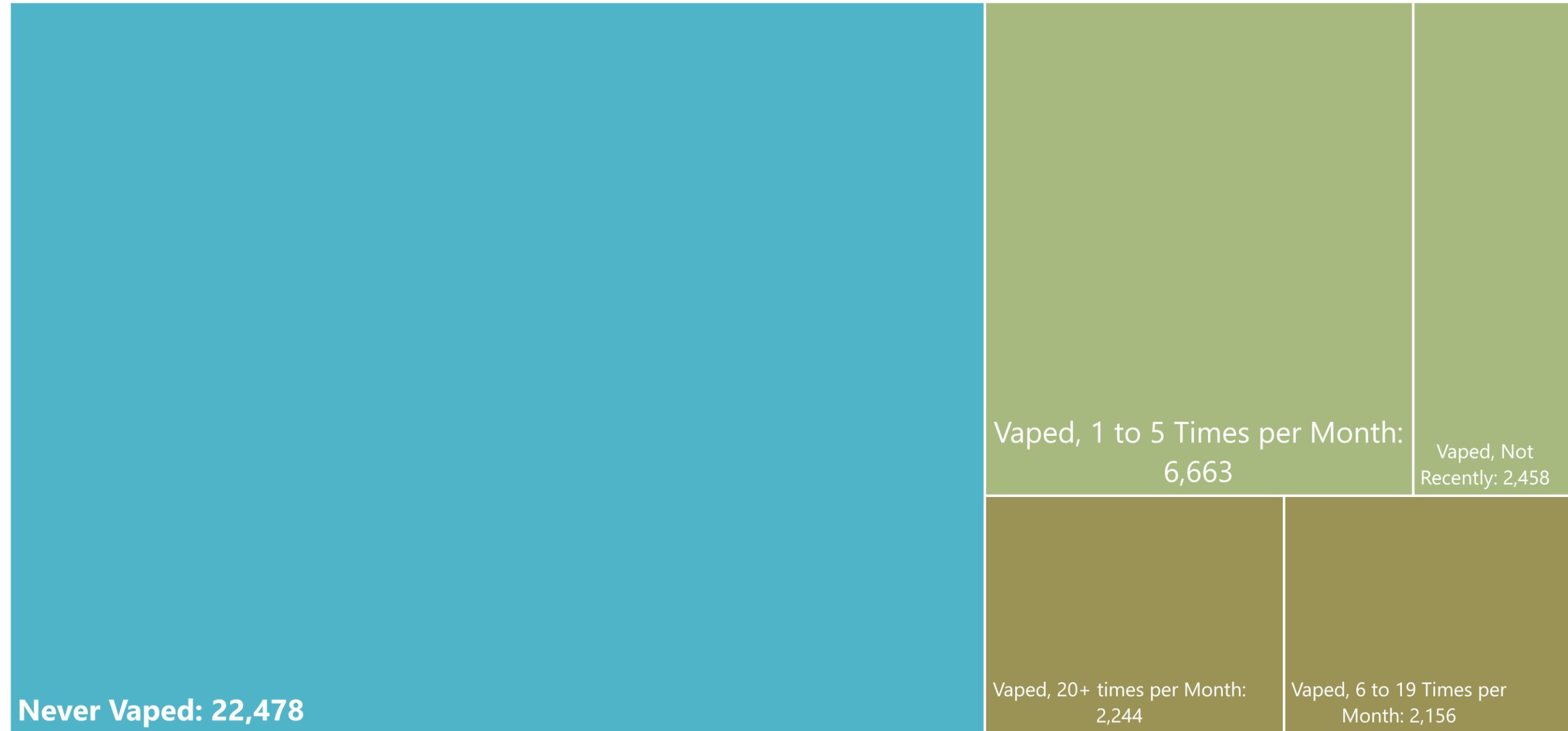


# Logistic Regression



# Number of Students in Each Prevention Level

- **Primary Prevention**
- **Secondary Prevention**
- **Tertiary Prevention**



# Summary

About 1 in 5 students reported vaping recently

8 out of 10 recent vapers vaped nicotine

95% of recent vapers reported that there is slight, moderate or high risk from smoking; They also reported that it is wrong to smoke at their age

Protective factors included: Personal integrity, ability to ask a parent for help, teacher recognition, community volunteering, and adults in the community to talk.

Race/Ethnicity factor for reduced risk: Being Asian/Pacific Islander

Risk factors included: Use of Alcohol, Tobacco and Other Drugs; Higher school grade

Race/Ethnicity factors for increased risk: Being White, being Hispanic

# Future Analysis Aims

What influences the rise in vaping from 8<sup>th</sup> to 10<sup>th</sup> to 12<sup>th</sup> grade?

What influences the lower vaping prevalence in certain racial/ethnic groups?

Why is there a slight positive association with extracurricular activities (outside of school-related)?

What is it about “Personal Integrity” that influences vaping behavior?

Socioeconomic influence on vaping behavior?

Effective interventions?

# Youth Vaping Policy Considerations

Taxation on tobacco and e-cigarette products

Ban the sale of e-cigarette products, including flavors popular with youth

Strengthen the Tobacco 21 law

Impose restrictions on location of independent e-cigarette shops and retail sale of e-cigarette products

Impose restrictions on vaping in public areas

Dedicate funding for research and innovative approaches to prevention and nicotine addiction treatment in youth

Source: Memo to BOS from Gloria Addo-Ayensu, MD, MPH , 11/22/19



Questions/Comments?





# County of Fairfax, Virginia

## MEMORANDUM

**DATE:** November 22, 2019

**TO:** Board of Supervisors

**THROUGH:** Tisha Deeghan   
Deputy County Executive

**FROM:** Gloria Addo-Ayensu, MD, MPH   
Director of Health

**SUBJECT:** Policy Considerations for Reducing Youth E-cigarette Use or Vaping

E-cigarettes<sup>1</sup> are the most commonly used tobacco product among youth. In 2018, more than 3.6 million U.S. middle and high school students reported using e-cigarettes, commonly called vaping, within the past month.<sup>2</sup> In Fairfax County, among students surveyed in 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> grades during the 2018-19 school year<sup>3</sup>:

- Fairfax County youth were more likely than their peers nationally to report vaping nicotine and marijuana in the past month.
- More students reported vaping in the past month than using any of the other substances measured on the survey.
- Prevalence rates of vaping in their lifetime ranged from 15.1% (1,700) of eighth-grade students, 29.5% (3,300) of tenth-grade, to 39.3% (3,900) of twelfth-grade students.
- Usage by race/ethnicity is lowest (17.9%) among Asian students and highest (34.1%) among Hispanic students. This finding runs counter to national data which shows white students as the highest users of e-cigarettes or vaping products.

Vaping is prevalent because it has been marketed as being less harmful than smoking regular cigarettes and many believe incorrectly that they are just inhaling flavored water vapors. While the full spectrum of disease and long-term health effects are not yet fully known, e-cigarette, or vaping, product use associated lung injury (EVALI) is a newly recognized health complication of vaping. Since April 2019, there have

<sup>1</sup> E-cigarettes are sometimes called “e-cigs,” “vapes,” “e-hookahs,” “vape pens,” and “electronic nicotine delivery systems (ENDS).” Some e-cigarettes look like regular cigarettes, cigars, or pipes. Some look like USB flash drives, pens, and other everyday items.

<sup>2</sup> Cullen KA, Ambrose BK, Gentzke AS, Apelberg BJ, Jamal A, King BA. Notes from the Field: Increase in use of electronic cigarettes and any tobacco product among middle and high school students — United States, 2011–2018. MMWR Morbid Mortal Wkly Rep. 2018;67(45):1276–1277

<sup>3</sup> Fairfax County Youth Survey Report for School Year 2018-19.

[https://www.fairfaxcounty.gov/health-humanservices/sites/health-humanservices/files/assets/documents/youth%20survey/2018%20fairfax%208\\_10\\_12%20final\\_08\\_06\\_19.pdf](https://www.fairfaxcounty.gov/health-humanservices/sites/health-humanservices/files/assets/documents/youth%20survey/2018%20fairfax%208_10_12%20final_08_06_19.pdf)



been over 80 cases, including one reported death<sup>4</sup>, associated with this outbreak in Virginia, including nine confirmed cases in Fairfax County. Nationally, nearly 2,300 cases have been reported, including 47 deaths, the youngest being 17 years old.<sup>5</sup> More than half of the cases are younger than 25 years old. All reported cases have a history of e-cigarette product use and while it appears there is an association with vitamin E acetate, evidence is not yet sufficient to rule out the contribution of other chemicals of concern. Amid growing health and safety concerns, and because the specific cause or causes of EVALI are not yet known, the Centers for Disease Control and Prevention continues to recommend that persons consider refraining from using all e-cigarette products. Walmart, Walgreens and Krogers, among the country's largest retailers, decided to stop selling e-cigarette products.

Despite being marketed as a “healthy” alternative to traditional cigarettes, new research provides compelling evidence suggesting that e-cigarettes may be equally, or potentially more, harmful to the heart as traditional cigarettes.<sup>6</sup> E-cigarette products contain toxic chemicals, that are known to be harmful when inhaled<sup>7</sup>, and nicotine – the addictive drug in cigarettes, cigars and other tobacco products known to harm adolescent brain development, which continues into the early or mid-20s. A single JUUL pod, the most widely used product on the e-cigarette market, has the nicotine equivalent of a pack of cigarettes. Youth who vape to deal with anxiety, on a stressful day, may finish a pod in 3 hours or finish more than a single pod.

Although traditional cigarette use is at a nine-year low among youth, a growing number of studies have found that young people who vape are more likely to become smokers<sup>8</sup> and many are low-risk youth who would not have otherwise smoked cigarettes. And ironically, as youth become more educated about the perils of vaping, some are switching back to traditional cigarettes, out of fear of nicotine potency and difficulty overcoming vaping addiction.<sup>9</sup>

### **Policy Considerations**

In 2019, Virginia enacted new laws to combat tobacco and e-cigarette use by youth. Tobacco 21 (HB 2748/SB1727) raised the minimum legal age to sell to, purchase, use, or possess tobacco and e-cigarette products (the bill contains an exception for active duty military personnel); HB1881 requires instruction on the hazards of vaping in public elementary and secondary schools, and; HB2384/SB 1295 requires each school board to develop and implement policies that prohibit the use, distribution and possession of

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<sup>4</sup> As of November 19, 2019 <http://www.vdh.virginia.gov/vdhlivevelling/vaping/>

<sup>5</sup> As of November 20, 2019 [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)

<sup>6</sup> Study: E-Cigarettes May Be More Harmful to Heart Health Than Tobacco. <https://www.cedars-sinai.org/newsroom/study-e-cigarettes-may-be-more-harmful-to-heart-health-than-tobacco/>

<sup>7</sup> What's in an E-Cigarette? American Lung Association. <https://www.lung.org/stop-smoking/smoking-facts/whats-in-an-e-cigarette.html>

<sup>8</sup> E-cigarette use as a predictor of cigarette smoking: results from a 1-year follow-up of a national sample of 12th grade students. Retrieved from <http://tobaccocontrol.bmj.com/content/early/2017/01/04/tobaccocontrol-2016-053291?paper=1>

<sup>9</sup> Vapers Seek Relief From Nicotine Addiction In — Wait For It — Cigarettes. <https://khn.org/news/vapers-seek-relief-from-nicotine-addiction-in-wait-for-it-cigarettes/>



tobacco and vaping products on a school bus, school property, or at on-site or off-site school-sponsored activities.

The vaping epidemic among youth is an escalating public health emergency. The following additional policy options are presented for Board consideration, as a comprehensive strategy to curb the rise in youth vaping and nicotine addiction. Virginia follows the Dillon Rule, under which a locality's authority is limited to those powers granted by the General Assembly. Some of the options below would require additional state enabling authority, and legislative staff will be monitoring related bills to bring to Legislative Committee for the Board's consideration.

**Taxation:** Research shows that raising taxes on tobacco is one of the most effective ways to reduce use. Increasing the price of cigarettes by 10% will result in a 3-5% reduction in overall cigarette consumption and a reduction in youth smoking by 11.9%.

Excise taxes are shown to be more effective because they raise the purchase price, as opposed to a sales tax, which is imposed at the point of sale (after the purchaser already has decided to buy the product). Virginia imposes a \$.30 per pack tax on cigarettes, but there is not a tax on e-cigarettes. Legislation to tax e-cigarettes was considered by the 2019 General Assembly (GA) but it was unsuccessful; it is likely that e-cigarette tax bills will be considered by the 2020 GA.

Fairfax and Arlington Counties have the power to levy a tax upon the sale or use of traditional cigarettes, not to exceed the amount levied under state law (\$.30). Nationally, the average state cigarette tax is \$1.79 per pack. The average state cigarette tax for the Southeastern region of the United States (which includes Virginia and Maryland) is \$0.85. Absent an increase in the state tax rate, Fairfax County would need legislative authority to raise its tobacco tax above \$.30; it is likely that bills dealing with cigarette taxes will be considered by the 2020 GA.

**Strengthen the Tobacco 21 law:** Tobacco 21 can be strengthened by focusing penalties on the seller, rather than the underage purchaser; removing the exemption for active-duty military personnel; and imposing a tobacco retailer licensing process, with enforcement provisions requiring ongoing compliance checks, funding for enforcement inspections, high penalties (e.g. high fines, license suspension or revocation) for violators, and merchant education.<sup>10</sup> However, the creation of a state licensing process for tobacco is likely to have a significant fiscal impact to the state, which could make enactment more challenging.

**Ban the sale of e-cigarette products, including flavors popular with youth:** In the absence of the federal government taking action to pull youth-friendly flavored e-cigarettes (e.g. fruit, menthol, and mint) from the market, vaping is steadily being regulated across the country by states and localities. Michigan, New York, Massachusetts, Rhode Island, Utah, Montana, California, Oregon and Washington, as well as Los Angeles, San Diego and other counties have enacted vaping bans and moratoria so far

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<sup>10</sup> <https://countertobacco.org/tobacco-21-in-virginia/>

(Illinois, New Jersey, and Delaware are considering acting). JUUL announced it will stop selling its fruit-flavored e-cigarettes, but will continue selling its mint and menthol flavors.

**Impose restrictions on location of independent e-cigarette shops and retail sale of e-cigarette products, and vaping in public areas:** Local governments in other states have imposed zoning regulations to restrict e-cigarette use and retail sales, including: complete bans on vaping shops/lounges, limits on retailer locations, and temporary moratoria on new stores. Montgomery County, Maryland, is considering zoning restrictions that would bar the sale of vaping products within a half-mile of middle and high schools, and bar the distribution of any vaping product to all retail outlets in the same areas. Several counties have barred vaping in public indoor areas. Nassau County, New York, is considering a vaping ban at all county parks, playgrounds, athletic fields and outdoor theaters.

Currently, the sale of vaping products, similar to the sale of alcoholic beverages, is considered retail sales under the Zoning Ordinance. A vaping/smoking/hookah lounge, where the primary activity is the vaping or smoking of products provided to the customer for smoking onsite, could be deemed accessory to a restaurant use depending on the number of seats and/or gross floor area devoted to the activity. If not accessory, it would be deemed a principal use of indoor recreation which requires Special Permit approval in the C-3 through C-6 Districts, and is permitted by right in the C-7 and C-8 Districts. In the Industrial Districts, indoor recreation is permitted only in the I-3 through I-6 Districts with special permit approval.

**Dedicate funding for research and innovative approaches to prevention and nicotine addiction treatment in youth:** Traditional methods of smoking cessation and substance use disorder treatment are showing to be ineffective in helping e-cigarette users quit, especially youth.<sup>11</sup> Among adults using e-cigarettes, the cessation success is underwhelming, as 75% of adults using Juul to quit smoking are still smoking combustible cigarettes.<sup>12</sup> New, evidence-based population-level approaches are necessary for the culture around vaping to change, including digital education programs for promoting prevention and tobacco and vaping cessation. Cigarette taxes (and e-cigarette taxes, if authorized) collected at the state level and in Fairfax County could be dedicated for smoking cessation and vaping prevention and treatment in youth.

cc: Bryan J. Hill, County Executive  
Rachel Flynn, Deputy County Executive  
Joseph M. Mondoro, Chief Financial Officer  
David M. Rohrer, Deputy County Executive

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<sup>11</sup> <https://www.iactc.org/youth-tobacco-cessation-meeting-material/>

<sup>12</sup> <https://truthinitiative.org/research-resources/emerging-tobacco-products/few-adults-start-using-juul-quit-smoking-new-study>

# FCPS Tiered Response to Vaping

## Health Curriculum – Grades 2-10

### Tier 1 (School Wide)

#### Grades 2-4

Effects of alcohol, tobacco, and inhalants on body systems and behavior;  
Refusal/Communication Skills

#### Grades 5-6

Prescription and Over-the-counter medications; Instruction Includes [e-cigarettes/vaping](#)

#### Grades 7

Define addiction; protective factors; Identify and create solutions for a community health issue associated to drug use prevention; [Instruction includes e-cigarettes/vaping](#)

#### Grade 8

Healthy brain function; Addiction; Legal consequences; Risk and protective factors;  
Investigate different drugs; [Instruction includes e-cigarettes/vaping](#)

#### Grade 9

Brain development; How drugs change brain chemistry; Legal issues; Research nicotine and smokeless tobacco, marijuana, alcohol, inhalants, and methamphetamine;

#### Grade 10

Standards for substance abuse prevention are currently being met through the quarter-long driver education course.

#### Grade 12

Students either participate in a teacher-facilitated or student-directed lesson on substance use prevention that includes information for tobacco/nicotine products, [vaping, and e-cigarettes](#)

## Substance Abuse Prevention (SAP)

### Specialist Program

### Tier 1 (School Wide)

- ❖ School-wide and community communications using social media, newsletters, and the FCPS News You Choose system
- ❖ Two public vaping pages targeting students and parents
- ❖ Vaping presentations are available upon request for students, staff, parents, and community members
- ❖ 11<sup>th</sup> grade alcohol and other drug lesson [to include vaping](#)
- ❖ Health and PE Department collaborative lessons
- ❖ Collaboration outside of FCPS, such as work with community agencies (FCPD, CSB, Fairfax County Health Department, and various community coalitions)

# FCPS Tiered Response to Vaping (Cont)

## Substance Abuse Prevention (SAP) Specialist Program

### **Tier II**

- Substance abuse assessments (i.e., CRAFFT)
- Psychoeducation to provide an understanding of the social, emotional, academic, legal, and health impact of substance abuse with focuses on classification of substances, stages of addiction, protective and risk factors, thinking errors, triggers, refusal skills, self-regulation, healthy alternatives, and available supports

### **Tier III** (in development)

- Group Therapy
- Tobacco/Vape Cessation Counseling
- Substance Abuse Counseling