Wyoming Survey & Analysis Center
UNIVERSITY OF WYOMING

The Impact of Tobacco in Wyoming

2019 Annual Summary

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Context

There is no safe level of exposure to tobacco smoke. Each year, an estimated 800 Wyoming adults die prematurely from smoking-attributable illnesses such as heart disease, lung diseases, and cancers (primarily of the respiratory system; Centers for Disease Control and Prevention [CDC], 2014a). In 2010, tobacco-related healthcare cost Wyoming nearly $240 million, including private and public costs—more than alcohol and other drugs (Wyoming Survey & Analysis Center at the University of Wyoming [WYSAC], 2012).

The Wyoming Tobacco Prevention and Control Program (TPCP) shares four goals with the national tobacco prevention and control program led by the CDC. *The Impact of Tobacco in Wyoming: 2019 Annual Summary* provides data on the prevalence of tobacco use and data associated with these four goals:

- Reduce youth initiation (CDC, 2014c),
- Reduce exposure to secondhand smoke (CDC, 2017),
- Promote tobacco cessation (CDC, 2015b), and
- Minimize disparities in the burden of tobacco use (CDC, 2014c; 2015b; 2017).

The TPCP and CDC goals tend to focus specifically on smoking cigarettes, though they are also applicable to other combustible tobacco products, smokeless tobacco, and vaping. Nationally and in Wyoming, cigarettes tend to be the focus of prevention work because of the high public health burden associated with them. Vaping tends to be another focus because of a recent surge in youth vaping and concerns that vaping will eventually show a substantial public health burden and may be linked with future cigarette smoking.

This *Annual Summary* also includes a discussion about the economic and health burdens of tobacco use in Wyoming. Details about the analyses and reporting in this annual summary are at the end of this document in the Methods Appendix. Although the estimates provided in this document are the best, most current, publicly available data, they are not without limitations. The Methods Appendix also includes a discussion of the limitations of the data sources based on technical details of the data collection and analyses. Differences noted as significant in this document are statistically significant.

Prevalence of Tobacco Use

Youth Cigarette Smoking and Vaping

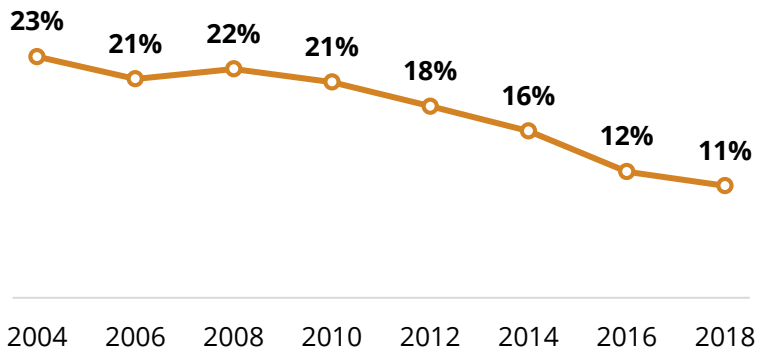
The high school smoking rate in Wyoming has declined by more than half since 2004.

National comparisons for youth smoking and vaping rates are not available (see Methods Appendix). In Wyoming, the percentage of high school students who smoke declined by more than half (52%) between 2004 and 2018, based on smoking one or more days during the 30 days before the survey was administered. (Figure 1; Prevention Needs Assessment [PNA], 2018). Efforts by the Wyoming Department of Health (WDH), the CDC, and other public health organizations (e.g., Campaign for Tobacco-Free Kids) likely played a role in this success for tobacco prevention.

Electronic nicotine delivery systems (ENDS; also known as e-cigarettes, e-cigs, or vape pens) are battery powered devices that create an aerosol by heating a liquid instead of making smoke by burning tobacco. Contents of the liquid vary across products, and some models allow for customized liquids. Many ENDS liquids contain nicotine. In 2018, 36% of Wyoming high school students currently vaped (used ENDS at least once in the previous 30 days). This rate is higher than current use of any other substances of abuse on the PNA, including alcohol and other drugs, presenting a new challenge for tobacco prevention in Wyoming (PNA, 2018).

Figure 1: Youth Cigarette Smoking Has Declined

Percentage of high school students who smoked cigarettes



Source: PNA, 2018

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Adult Cigarette Smoking and Vaping

The adult smoking rate in Wyoming has declined by about 18% since 2011 but is still tied for highest in the region.

Current smokers are those who have smoked at least 100 cigarettes in their lifetime and currently smoke every day or some days. According to the 2017 BRFSS, 19% of Wyoming adults are current smokers, slightly more than the national median of 17%. Wyoming has the 18th highest smoking rate of all the states, territories, and Washington, DC (range 9%–26%). In the region, South Dakota has a similar smoking rate and Montana has a smoking rate that, though slightly lower, is not significantly different from Wyoming's. The other four states in the region have significantly lower smoking rates than Wyoming (Table 1). The smoking rate in Wyoming has declined by almost one fifth, 18%, since 2011, when the smoking rate recently peaked at 23%. WDH efforts, the efforts of the CDC, and the efforts of other public health organizations (e.g., American Cancer Society) probably contributed to this success in tobacco prevention.

In both 2016 and 2017, 6% of Wyoming adults currently vaped (used ENDS some days or every day). This is similar to both the 2017 national median of 5% and the rates for all bordering states (Table 1). The lowest vaping rate is 1% in Puerto Rico; the highest is 7% in Oklahoma; six states have vaping rates that round to 6% (BRFSS, 2017).

Adult Use of Other Tobacco

In 2017, 9% of Wyoming adults reported using chewing tobacco, snuff, or snus every day or some days, compared to 4% of U.S. adults. Wyoming's rate of adult smokeless tobacco use was the highest in the nation. In Wyoming, adult men (17%) are much more likely than adult women (1%) to use smokeless tobacco. Wyoming's percentage of men who use smokeless tobacco is second highest in the nation (slightly behind West Virginia with a rate that also rounds to 17%), and compares to a national median of 7%. For Wyoming men, the slight difference between the 2017 rate and the 2013 rate (16%, the oldest available year) was not significant (BRFSS, 2017).

Table 1: About One Fifth of Wyoming Adults Smoke; About One Twentieth Vape

Regional smoking and vaping prevalence rates

	Smoking Prevalence	Vaping Prevalence
Colorado	15%	5%
Idaho	14%	5%
Montana	17%	4%
Nebraska	15%	4%
South Dakota	19%	4%
Utah	9%	5%
Wyoming	19%	6%
U.S.	**17%**	**5%**

Note: Wyoming, South Dakota, and Montana are not significantly different for smoking prevalence. None of these estimates for vaping prevalence are significantly different.

Source: BRFSS 2017.

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In 2017, 6% of Wyoming adults had used cigars or cigarillos at least once in the past 30 days, an estimate that has not varied significantly since it was 8% in 2010, the first year questions regarding cigars/cigarillos were asked (WYSAC, 2018a).

Goal 1: Reduce Smoking Initiation

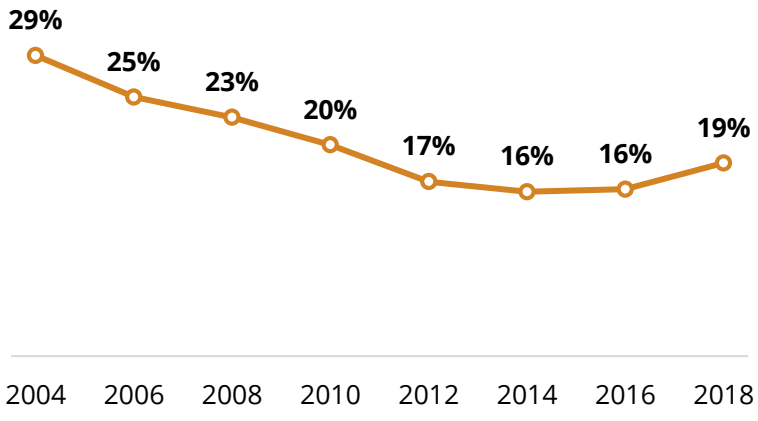
Nine out of ten Wyoming adults who had ever smoked a whole cigarette smoked their first whole cigarette when they were younger than 21.

Smokers Usually Start Young

Smoking initiation is defined as the age at which a person first smokes one whole cigarette. According to the 2018 Prevention Needs Assessment (PNA), 19% of high school smokers started smoking before turning 11. This has declined by 34% since 2004 when it was 29% (Figure 2). WDH efforts, the efforts of the CDC, and the efforts of other public health organizations (e.g., the Campaign for Tobacco-Free Kids) probably contributed to this success in tobacco prevention.

Figure 2: The Percentage of High School Smokers Who Start before the Age of 11 Has Declined since 2004

Percentage of high school students who smoked who started before the age of 11



Source: PNA, 2018

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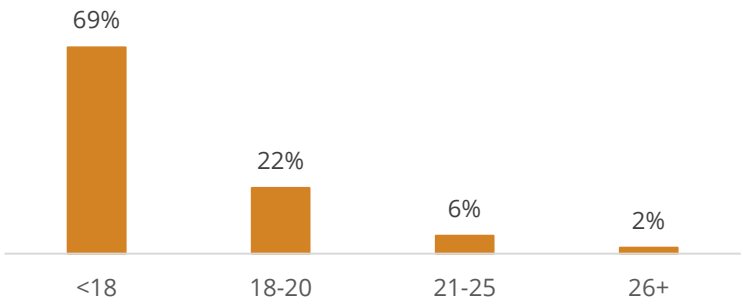
Figure 3: Smoking Initiation Generally Occurs before the Age of 18

Age of smoking first whole cigarette, of those who had smoked a whole cigarette



Source: WYSAC, 2018a.

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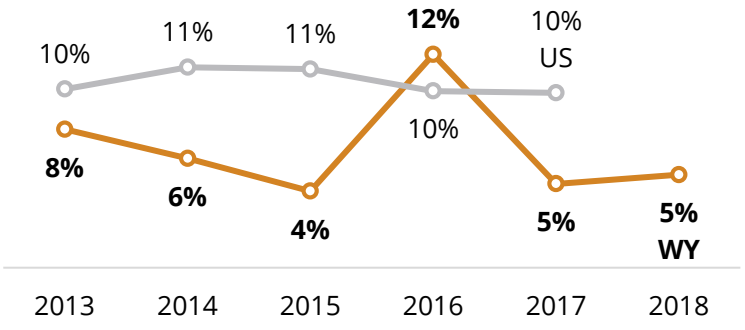
More than two thirds (69%) of Wyoming adults who had smoked a whole cigarette started smoking (smoked their first whole cigarette) before the age of 18; 91% started smoking before the age of 21. Few (8%) started smoking after the age of 20 (Figure 3; WYSAC, 2018a).

Preventing Youth Access

Part of stopping youth from starting to use tobacco is limiting access to tobacco products (CDC, 2014c). The Substance Abuse and Mental Health Services Administration (SAMHSA) requires states to complete annual, random, unannounced inspections of tobacco retailers, known as Synar inspections. SAMHSA requires the noncompliance rate for Synar inspections to be below 20%. Exceeding that rate may result in loss of federal funding for substance abuse prevention and treatment (SAMHSA, 2010). During Wyoming's Synar inspections, trained 16- and 17-year-olds use a script to try to purchase cigarettes or smokeless tobacco from a sample of Wyoming tobacco retailers accessible to minors. Violations during Synar inspections do not result in actual sales, so citations are not issued.

Figure 4: Synar Weighted Retailer Violation Rates



Note: U.S. data are unavailable for 2018.

Sources: SAMHSA, 2019; WDH & WYSAC 2018; WYSAC, 2017b.

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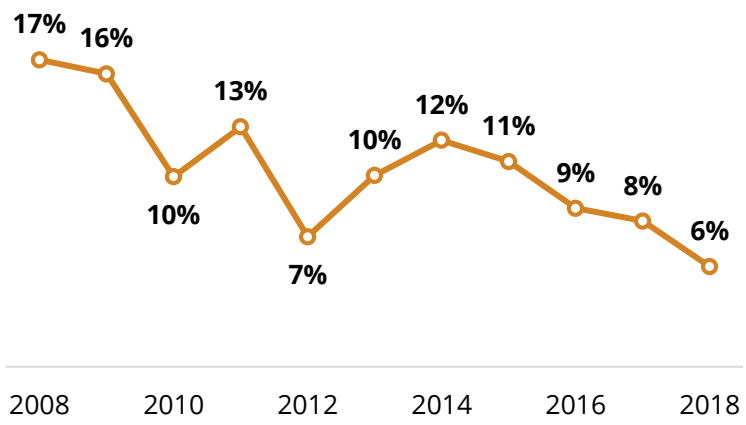
Wyoming's Synar violation rates have usually been similar to the national violation rates (Figure 4). In 2016, however, Wyoming's Synar noncompliance rate was unusually high because specific geographic areas had high violation rates. Since 2007, clerks failing to ask

inspectors for identification has been the strongest predictor of retailer violations (WDH & WYSAC, 2018; WYSAC, 2017b).

Each year, the Wyoming Association of Sheriffs and Chiefs of Police (WASCOP) conducts additional inspections of tobacco retailers. During WASCOP inspections, adolescent inspectors attempt to purchase cigarettes or smokeless tobacco. Unlike Synar inspections, these compliance checks allow law enforcement officers to issue warnings or citations to merchants who sell to minors (WYSAC, 2016; 2017c; 2018b). Violation rates treat repeated visits to outlets as unique inspections and are generally slightly higher for WASCOP inspections (Figure 5) than Synar inspections (Figure 4).

Figure 5: WASCOP Retailer Violation Rates

Noncompliance rates



Sources: WYSAC, 2016; 2017c, 2018b.

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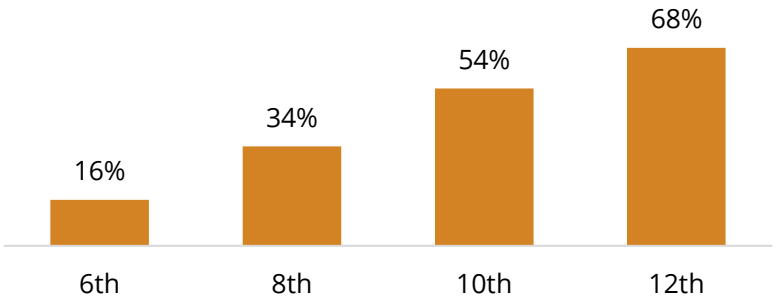
Wyoming retailers are generally compliant with laws limiting youth access to tobacco products (WDH & WYSAC, 2018; WYSAC, 2016; 2017b; 2017c; 2018b). A challenge for tobacco prevention remains because data show that underage youth get tobacco despite legal restrictions. Besides buying tobacco for themselves, sources include relatives, unrelated adults or minors, taking it, and other non-specified sources (PNA, 2018 [based on 2014 data as the most recent year the question was asked]; Youth Risk Behavioral Surveillance System [YRBSS], 2015).

Figure 6: Access to Cigarettes Is Easier for Older Students

Percentage of students younger than 18 saying it would be easy or very easy to get cigarettes, by grade



Source: PNA, 2018.

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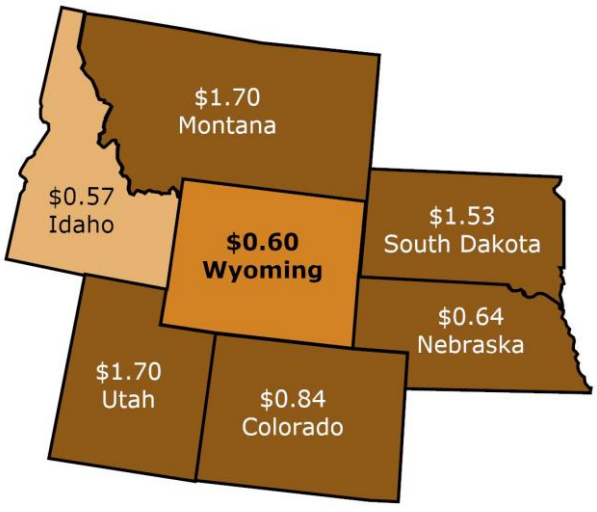
In 2018, 25% of Wyoming middle-school students and 57% of Wyoming high-school students under the age of 18 said it would be easy (either sort of easy or very easy) to get some cigarettes. Students in higher grades reported easier access to cigarettes (Figure 6; PNA, 2018). Synar compliance checks in Wyoming have shown that clerks are more likely to sell tobacco to older or older-looking minors (WDH & WYSAC, 2019; WYSAC, 2017b). Together, these findings suggest that it is easier for youth to illegally purchase or otherwise access cigarettes as they and fellow students approach the age of 18.

Figure 7: Wyoming's Cigarette Tax 2nd Lowest in Region

State cigarette excise tax per pack, as of June 30, 2018



Source: CDC, 2019.

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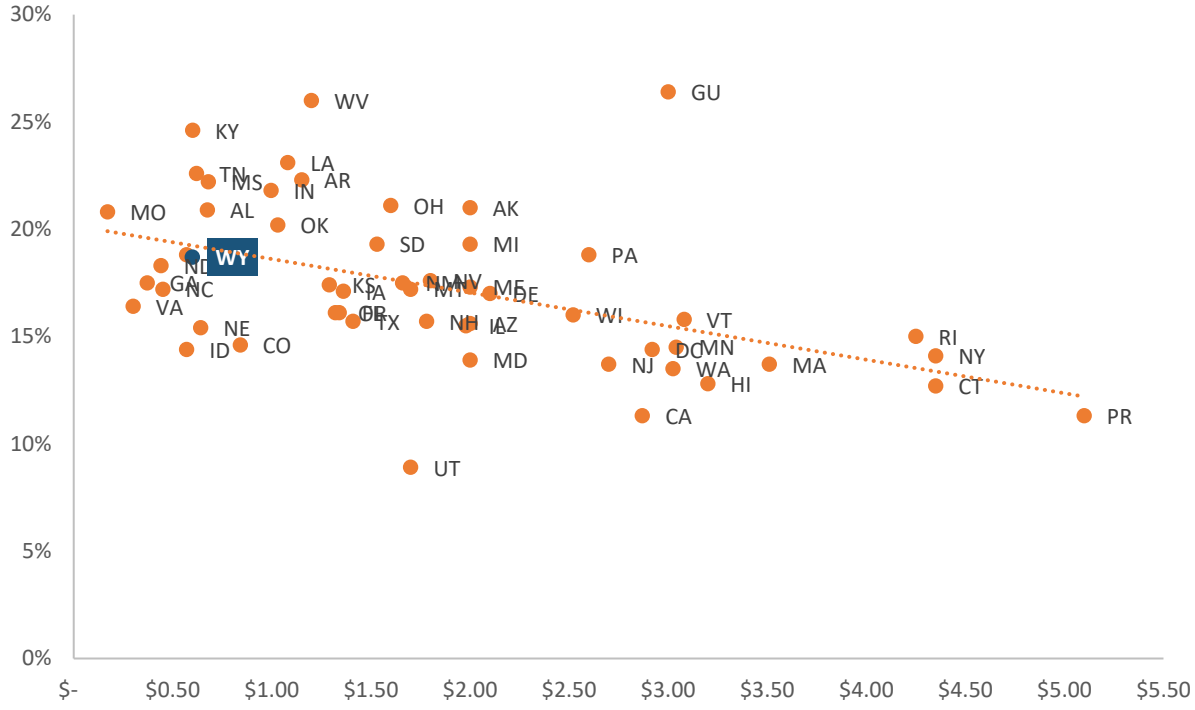
Increasing the price of tobacco products, usually by increasing taxes, is another strategy to keep youth from starting to use tobacco (CDC, 2014c; Chaloupka et al., 2012; Guide to Community Preventive Services, 2015). State tax rates vary from a low of $0.17 per pack in Missouri to a high of $4.35 per pack in New York and Connecticut (Figure 7). The average state tax rate on cigarettes is $1.79 (not including the federal tax or territories, but including the District of Columbia). Wyoming's tax is the eighth lowest in the nation (CDC, 2019).

Consistent with CDC's approach to prevention (CDC, 2014c; 2015b), states that have low cigarette smoking rates tend to have relatively high excise tax rates (Figure 8).

Figure 8: Higher Excise Taxes Are Generally Associated with Lower Adult Smoking Rates.

2017 excise taxes and 2017 adult smoking rates



Sources: BRFSS, 2017 (adult smoking prevalence); CDC, 2019 (2017 excise tax rates).

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Like every state that has implemented a significant cigarette tax increase (Farrelly et al., 2003), Wyoming experienced a decrease in cigarette consumption and an increase in tax revenue when it last raised its cigarette excise tax on July 1, 2003. Cigarette tax revenue increased from $6.6 million (in 2014 dollars; equivalent to $5.1 million in 2003, but adjusted for inflation to allow direct comparison to the 2014 amount) in the fiscal year before the tax increase took effect to $19.1 million in fiscal year 2014 (Wyoming Department of Revenue [WYDOR], ca. 2014). In 2014, WYSAC estimated that a $1.00 price increase would decrease the amount of cigarettes adults in Wyoming smoke by 6% while generating $30.1 million (adjusted for inflation from $29.2 million as estimated in 2014) of additional revenue during the first year (WYSAC, 2014).

Goal 2: Reduce Exposure to Secondhand Smoke

Six Wyoming towns have smokefree indoor air laws that include indoor workplaces, indoor areas of restaurants, and indoor areas of bars, protecting 29% of Wyoming residents.

Wyoming adults generally recognize the overall risk of breathing secondhand smoke: 97% think breathing secondhand smoke is very (62%) or somewhat (35%) harmful to one's health (WYSAC, 2018a). Smokefree indoor air policies and laws have demonstrated effectiveness in reducing youth initiation, reducing exposure to secondhand smoke, and increasing cessation of tobacco use (Guide to Community Preventive Services, 2015).

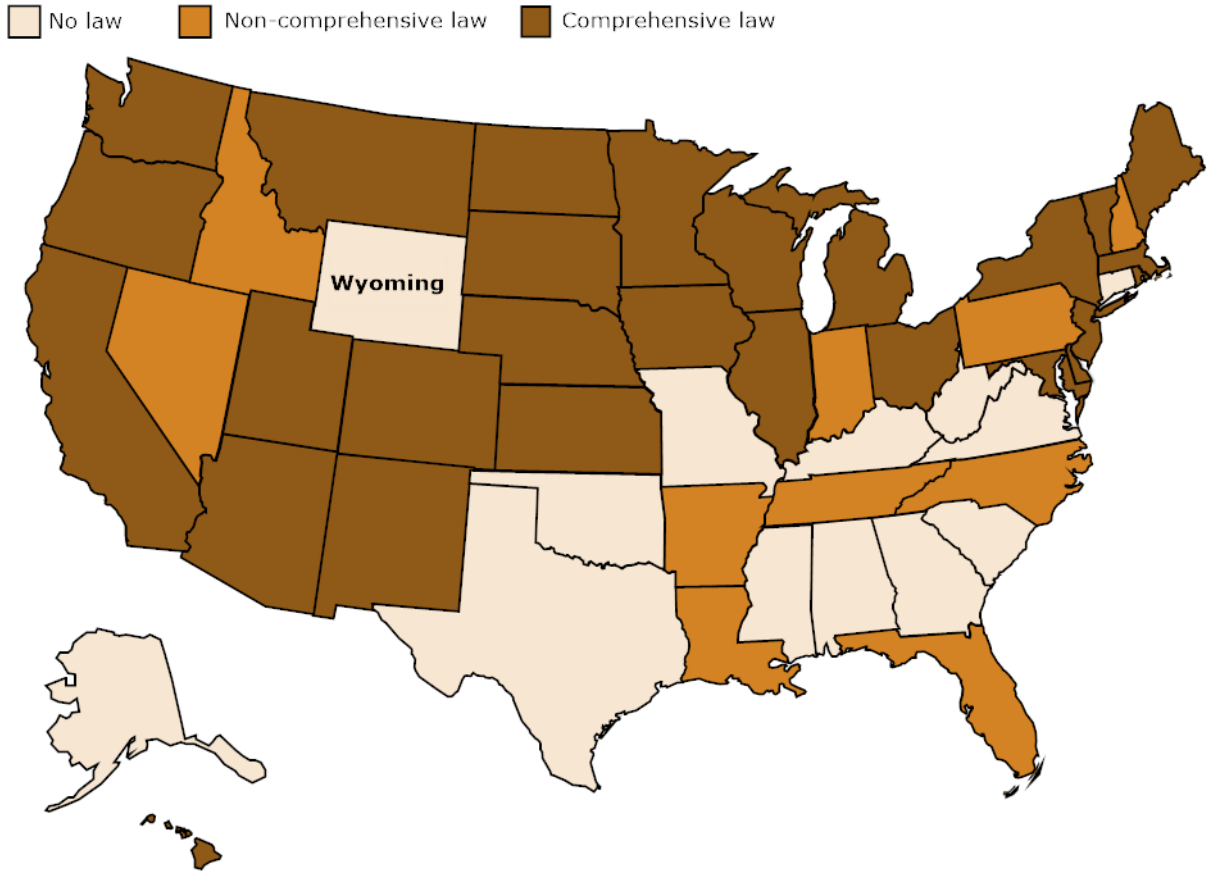
Smokefree Indoor Air Laws

The District of Columbia and 27 states (55% of states and DC) have comprehensive smokefree indoor air laws that cover private workplaces, restaurants, and bars. Overall, 75% of states (and DC) have some sort of smokefree indoor air law; 74% of those laws are comprehensive. When including territories such as Guam and Puerto Rico (all of which have some sort of smokefree indoor air law), 88% of the states and territories have enacted some sort of smokefree indoor air law; 71% of them are comprehensive (CDC, 2019). Based on broad success in implementing smokefree indoor air laws, a developing public health concern is whether such laws address secondhand aerosol from vaping (e.g., Marynak et al., 2014).

Wyoming, unlike all of the bordering states, does not have a statewide smokefree indoor air law (Figure 9). Five of the six bordering states have a comprehensive smokefree indoor air law. Idaho's law covers restaurants (CDC, 2019).

Figure 9: Wyoming Is the Only State in the Region Without a Statewide Smokefree Indoor Air Law

Smokefree indoor air laws across the nation



Note: Comprehensive laws include private workplaces, restaurants, and bars. Non-comprehensive laws cover 1–2 of those areas.

Source: CDC, 2019.

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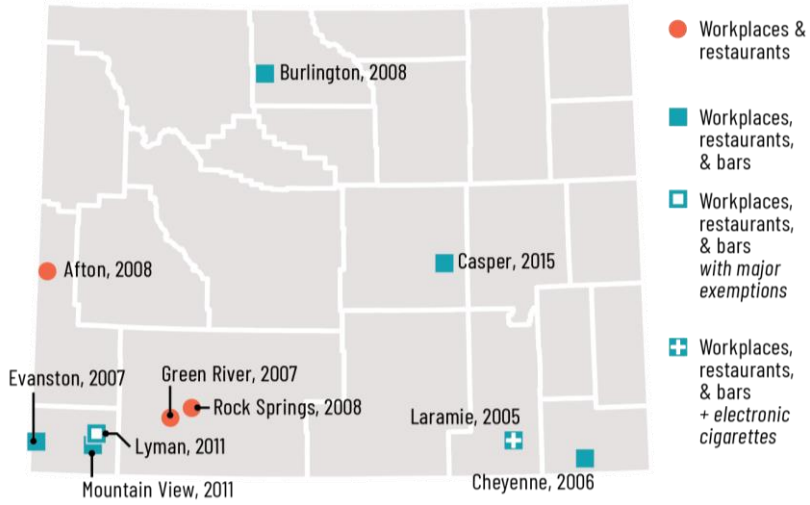
Figure 10: Wyoming's Smokefree Indoor Air Laws

Towns in Wyoming with smokefree indoor air laws, areas covered by each law, and date of enactment



Sources: Municipal Codes of Afton, 2008; Burlington, 2008; Casper, 2015; Cheyenne, 2006; Evanston, 2007; Green River, 2007; Laramie, 2005/2014; Lyman, 2011; Mountain View, 2011; Rock Springs, 2008.

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In the absence of a statewide smokefree indoor air law, 10 Wyoming municipalities have enacted local smokefree indoor air laws (Figure 10). Laramie enacted Wyoming's first smokefree indoor air law in 2005. (That law was expanded to include vaping in 2014). Since then, nine other municipalities have enacted smokefree indoor air laws. However, the law in Lyman includes a clause that allows business owners to opt out by prominently displaying signs "on or near every public entrance" identifying the business as a "smoking place" (Lyman Municipal Code 4-4-5, 2011). Without complete data about the decisions of individual business owners in Lyman, WYSAC does not include Lyman residents in calculations of Wyoming residents protected by a smokefree indoor air law. In total, the remaining nine laws cover 35% of the state's population (based on estimates from U.S. Census Bureau, 2019). Currently, six towns in Wyoming have comprehensive smokefree indoor air laws that include indoor workplaces, indoor areas of restaurants, and indoor areas of bars. These comprehensive laws cover 29% of Wyoming residents. The enactment of these laws between 2005 and 2015 demonstrates progress in public health policy, though this progress appears to have stalled.

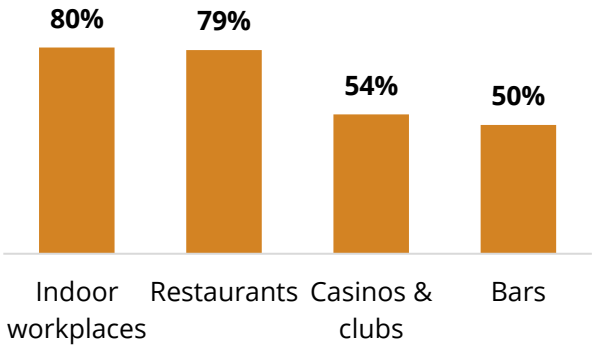
In 2017, most Wyoming adults reported they would support individual laws making indoor workplaces, indoor areas of restaurants, or indoor areas of casinos and clubs smokefree. Half of Wyoming adults would support a law making bars smokefree (Figure 11; WYSAC, 2018a).

Other Clean Air Policies

Voluntary smokefree policies in restaurants, bars, and other businesses also provide some protection from secondhand smoke (Guide to Community Preventive Services, 2015). In 2016, about half (55%) of Wyoming dining businesses (including bars) had a written policy protecting customers from secondhand smoke, indicating a challenge for public health efforts in Wyoming. Written policies prohibiting smoking and vaping for all indoor areas (clean air policies) were most common among fast food restaurants, possibly reflecting corporate policies set by national chains. Full service restaurants were more likely to have clean air policies than full service restaurants with attached bars. Bars, taverns, and saloons (as a single category) were the least likely business type to have clean air policies (Table 2; WYSAC, 2017a).

Figure 11: Most Adults Support Statewide Smokefree Indoor Air Laws

Percentage of adults who said they support a statewide law making each location smokefree



Source: WYSAC, 2018a

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Table 2: Clean Indoor Air Policies Are Most Common in Fast Food Restaurants

Percentage of businesses with written indoor dining area policies by type of business

	Smokefree	Smokefree and Vape-Free
Fast food restaurant	82%	73%
Full service restaurant with bar	53%	53%
Full service restaurant	59%	50%
Limited food service (coffee shop, gas station/convenience store, etc.)	43%	38%
Bar/tavern/saloon	15%	2%
Overall	**55%**	**46%**

Note: WYSAC does not present detailed results for unidentified venues (7 respondents), special events facilities (5 respondents), catering (5 respondents), private clubs (3 respondents), or other (1 respondent) businesses because of the low number of respondents in each category. They are included in the overall row.

Source: WYSAC, 2017a.

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Table 3: Multi-Use Lodging Most Likely to Have Clean Indoor Air Policies

Percentage of businesses with clean indoor air policies by business type

	Smokefree	Smokefree and Vape-Free
Multi-use	80%	80%
Bed-and-breakfast	75%	67%
Resort/dude ranch	55%	55%
Campground/RV park	46%	46%
Hotel	70%	42%
Motel	33%	31%
Overall	**52%**	**42%**

Source: WYSAC, 2017a.

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In 2016, the prevalence of clean air policies differed across lodging business type. Indoor clean air policies were most common in multi-use businesses (e.g., a business that is both a motel and campground). Motels were the least likely to have clean air policies (WYSAC, 2017a; Table 3).

Most Wyoming adults who work primarily indoors are covered by policies prohibiting smoking in the indoor areas of their workplaces. However, these policies do not completely protect Wyoming workers from secondhand smoke (Table 4); 20% of adults reported breathing secondhand smoke at work in the past week (WYSAC, 2018a). Because workers in small communities may not be able to realistically factor a potential employer's smoking policy into their decision about where to work, ensuring the protection of these workers from involuntary exposure to tobacco smoke remains a public health challenge in Wyoming.

Table 4: Most Indoor Workers Covered by Smokefree Air Policies

Percentage of adult, indoor workers who…

Reported that smoking in **indoor areas** of their workplace was **never allowed**	93%
Reported that smoking in **outdoor areas** of their workplace was **never allowed**	26%
Had **breathed smoke from someone smoking**, either indoors or outdoors, at their workplace in the past seven days	20%

Source: WYSAC, 2018a.

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Between 2002 and 2017, the percentage of Wyoming adults who did not allow smoking inside their homes increased from 72% to 89%, possibly as a result of efforts from the TPCP, CDC, and other public health organizations (e.g., the Americans for Nonsmokers' Rights Foundation) to discourage smoking in the home—such as around children (WYSAC, 2018a).

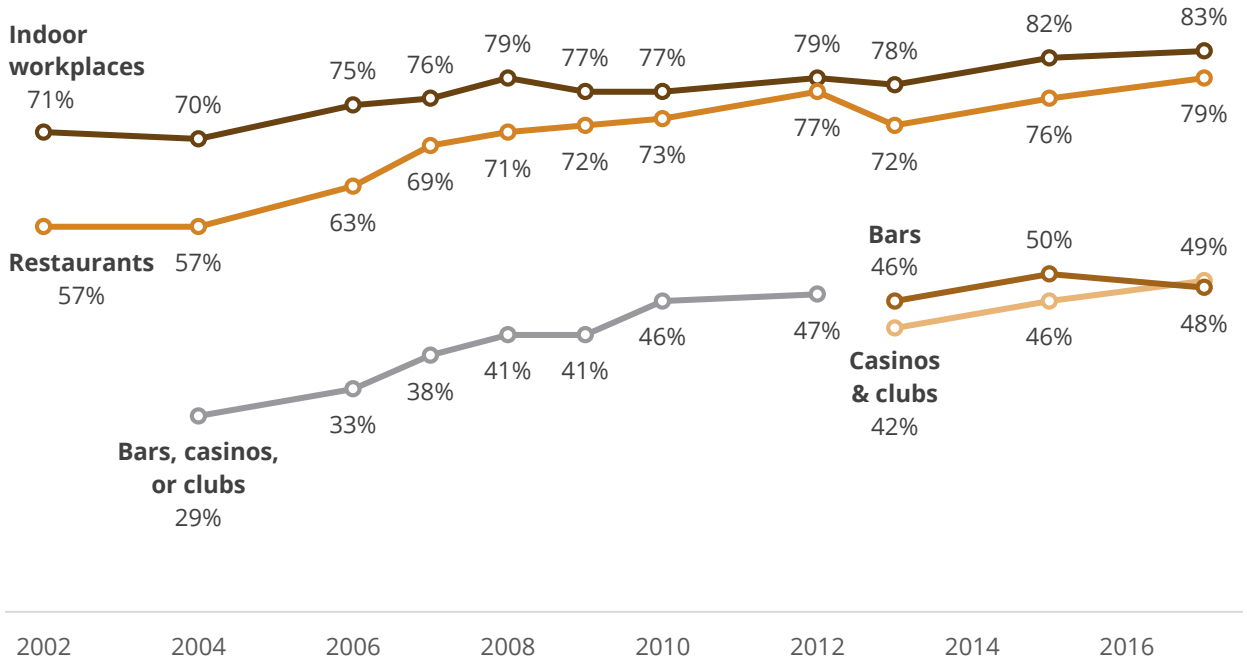
According to the *Wyoming 2016 School Health Profiles Report: Trend Analysis Report* (2017), schools qualify as tobacco-free when there is a policy that specifically prohibits the use of *all types of tobacco* (including cigarettes, smokeless tobacco, cigars, and pipes, but not necessarily ENDS/e-cigarettes) *by all people* (all students, faculty/staff, and visitors) *at all times* (including during non-school hours) *and in all places* (including school-sponsored events held off campus). In 2016, 40% of Wyoming schools had tobacco-free policies, a significant decrease from 50% in 2014. This decrease, after having increased between 2010 and 2014, indicates a developing public health challenge in Wyoming.

Since the most recent data, teen vaping has become an epidemic (FDA, 2018; USDHHS, 2018). Concerns about teen vaping may create an opportunity for schools to review their overall tobacco policies.

Support for smokefree policies in indoor workplaces has steadily increased from 71% in 2002 to 83% in 2017. Support for smokefree policies in restaurants has also steadily increased from 57% in 2002 to 79% in 2017 (WYSAC, 2018a). Educational and social norming efforts implemented by the Wyoming TPCP, the CDC, and other organizations (e.g., the Americans for Nonsmokers' Rights Foundation) that promote public health probably contributed to these changes in opinion. More Wyoming adults stated that smoking should never be allowed in casinos, clubs, or bars in 2017 than in 2015, but support for smokefree bars was lower than for other venues, marking a challenge for protecting customers and employees from the health impacts of secondhand smoke in Wyoming (Figure 12; WYSAC, 2018a). Recent national data are not available for comparison, likely because of the large number of comprehensive smokefree indoor air laws.

Figure 12: Support for Smokefree Indoor Air Policies Has Increased for All Venues

Percentage of Wyoming adults who support smokefree indoor areas in…



Source: WYSAC, 2018a.

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Goal 3: Encourage Tobacco Users to Quit

Since July 2013, the WQTP has helped 30% of enrollees quit using tobacco products.

Benefits of Cessation

Smoking cessation has short- and long-term health benefits (Table 5). Some health effects of smoking cessation (e.g., increased lung functioning) are evident within a few weeks or months of quitting, suggesting that relatively brief periods of abstinence have health benefits. Others (e.g., reduced risk of stroke) are not fully evident for five years or longer, reflecting the long-term benefits of successful smoking cessation (as compiled by the American Cancer Society, 2015). Smoking cessation stops the processes which lead to cancer (CDC, 2010).

Table 5: Health Benefits of Cessation over Time

Time Since Last Cigarette	Benefit
SHORT-TERM BENEFITS	
20 minutes	Heart rate and blood pressure drop.
12 hours	Carbon monoxide level in blood returns to normal.
INTERMEDIATE BENEFITS	
2 weeks to 3 months	Circulation improves and lung function increases.
1 to 9 months	Coughing and shortness of breath decrease. Cilia in lungs regain normal function, increasing ability to handle mucus, clean lungs and reduce risk of infection.
1 year	Excess risk of coronary heart disease is half that of a continuing smoker.
LONG-TERM BENEFITS	
5 years	Risks of mouth, throat, esophagus and bladder cancers cut in half. Cervical cancer and stroke risk falls to that of a nonsmoker.
10 years	Lung cancer death rate is about half of a continuing smoker. Risk of larynx and pancreas cancer decreases.
15 years	Risk of coronary heart disease is the same as a nonsmoker.

Source: American Cancer Society (ACS), 2015.

Cessation among Wyoming Smokers

In 2017, most (87%) adults in Wyoming who smoked every day or some days had stopped smoking for at least one day in their lifetime because they were trying to quit smoking for good, likely a success from public health efforts from groups such as the TPCP, CDC, and U.S. Surgeon General's Office. This statistic has remained fairly steady since 2010. Of those smokers who had tried to quit in their lifetime, over half tried to quit smoking at least once in the past year. Nicotine replacement therapies (NRTs) are the most popular type of cessation aid in Wyoming; 31% of current smokers who had made a quit attempt within the past year used NRTs. Common barriers for people trying to quit smoking were loss of a way to handle stress, cravings for a cigarette, and other people smoking around them (WYSAC, 2018a). Evidence-based programs like the Wyoming Quit Tobacco Program (WQTP) include coaching to address these barriers.

The Wyoming Quit Tobacco Program (WQTP)

The WQTP assists Wyoming residents who want to quit using tobacco by offering them telephone-based cessation coaching, NRTs, and prescription medications. In addition, the WQTP offers online, texting, and email support services. National Jewish Health has been the WQTP service provider since 2013.

In 2017, 49% of non-tobacco users and 77% of tobacco users said they were aware of telephone quitline services, such as the WQTP, that are available to help people quit using tobacco (WYSAC, 2018a).

Most people who enroll in the WQTP do so to get help quitting cigarettes, though some seek help quitting smokeless tobacco, ENDS/e-cigarettes, and/or other tobacco (e.g., cigars, cigarillos, little cigars, hookah, and pipes). Since July 2013, when National Jewish Health became the WQTP service provider, 30% of enrollees had not used any tobacco products for at least 30 days when they answered the Follow-Up Survey seven months after enrolling. This success rate is a key success of efforts funded by the WDH. Enrollees who use phone coaching and prescription medication such as Chantix often see the greatest success rates, including a substantial improvement over using phone coaching alone (currently, enrollees must use phone coaching to obtain medications).

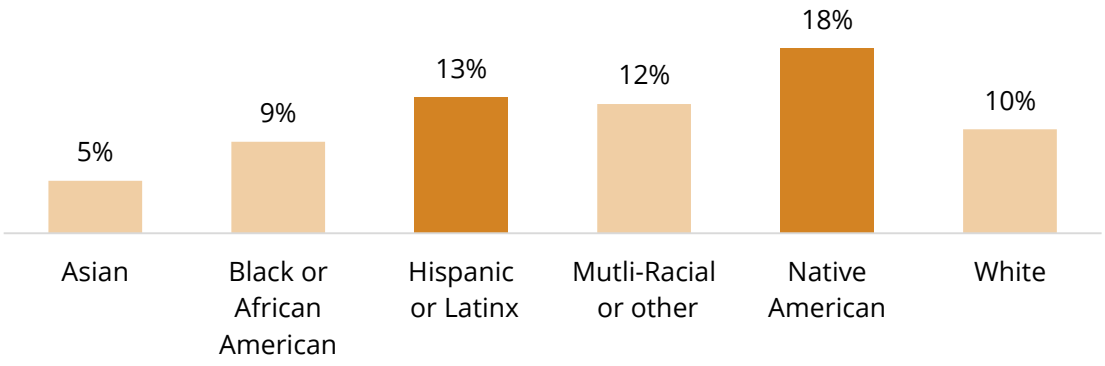
Goal 4: Reduce Disparities in Tobacco Use

Smoking

Young men (11%) and young women (11%) in high school smoke at about the same rate, but we do see a significant difference when it comes to race and ethnicity. Native American and Hispanic students smoke at higher rates than their counterparts do. Asian students stand out as having a low smoking rate (Figure 13, PNA, 2018).

Figure 13: High School Smoking Was High among Native American and Hispanic Students

Percentage of Wyoming high school students who currently smoke by race/ethnicity



Source: PNA, 2018.

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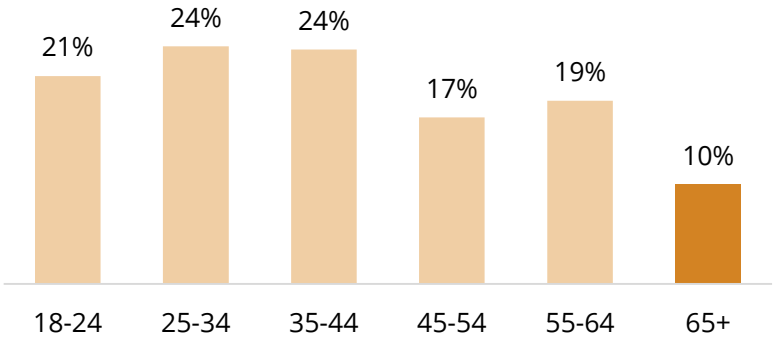
Figure 14: Smoking Lowest among Adults 65 and Older

Percentage of Wyoming adults who currently smoke by age



Source: BRFSS, 2017

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Among adults, two broad demographic groups stand out as having low smoking rates: adults 65 years of age and older (to a lesser degree, adults between the ages of 45 and 64) and adults with more than a high school education (Figure 14 & Figure 15).

For Wyoming, the 2017 BRFSS only reported smoking rates for three racial and ethnic groups: (a) Hispanic (21%) adults, (b) Non-Hispanic White (18%) adults, and (c) Non-Hispanic American Indian or Alaskan Native (24%) adults. These smoking prevalence rates were not significantly different, mainly because the confidence intervals for the minority groups were very large, a result of the relatively low numbers of adults from these groups in Wyoming (BRFSS, 2017).

Figure 15: Smoking Lowest among Adults with a College Degree

Percentage of Wyoming adults who currently smoke by education

Source: BRFSS, 2017

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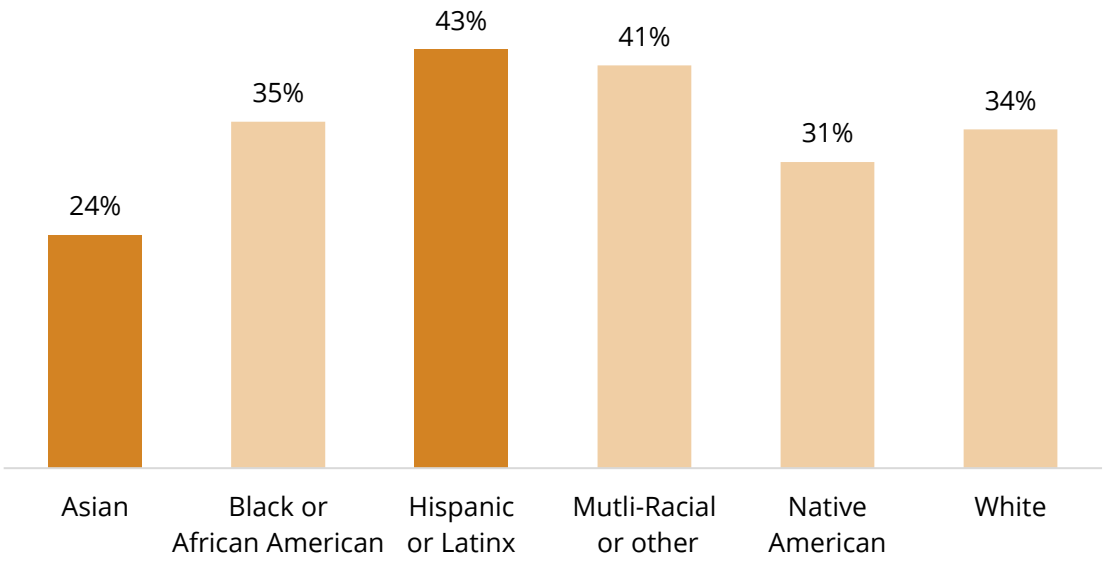
Vaping

Young men (37%) and young women (35%) in high school vape at about the same rate, but there are disparities by race and ethnicity. Hispanic high school students stand out as having a high vaping rate and Asian students stand out as having a low vaping rate (Figure 16; PNA, 2018).

Figure 16: High School Vaping Was High among Hispanic Students and Low among Asian Students

Percentage of Wyoming high school students who currently vape by race/ethnicity



Source: PNA, 2018.

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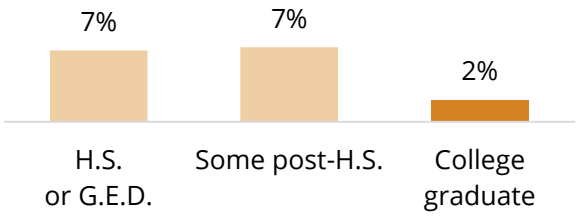
Figure 17: Vaping Lowest among Adults with a College Degree

Percentage of Wyoming adults who currently vape by education



*CDC does not report a prevalence rate for current vaping by adults with less than a high school education because of a very small number of people in that group who self-identified as a current ENDS user.

Source: BRFSS, 2017

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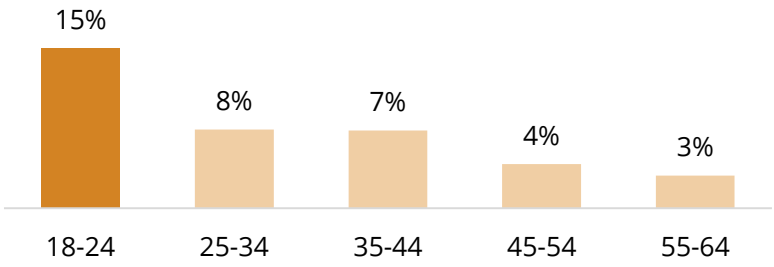
Because vaping is relatively rare among Wyoming adults (6% overall), 2017 BRFSS data do not allow for full exploration of demographic differences. Young adults (aged 18-24) stand out as having a high vaping prevalence, and college graduates stand out as having a low vaping prevalence (Figure 17 & Figure 18). CDC only reports the current vaping rate for White, Non-Hispanic adults and no other racial or ethnic group.

Figure 18: Vaping Highest among Young Adults

Percentage of Wyoming adults who currently vape by age



* CDC does not report a prevalence rate for current vaping by adults 65 years of age or older because of a very small number of people in that age group who self-identified as a current ENDS user.

Source: BRFSS, 2017

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Burdens of Tobacco Use

Each year, about 800 Wyoming adults die from smoking-attributable illnesses such as heart disease, lung diseases, and cancer.

Economic Burdens

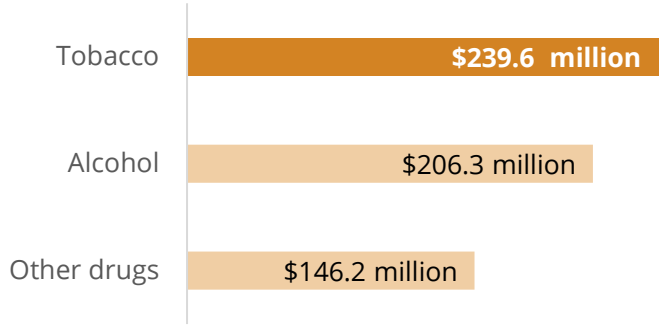
The death and disease caused by tobacco has economic costs. In 2010, tobacco-related healthcare cost Wyoming nearly $240 million, including private and public costs—more than alcohol and other drugs (Figure 19; WYSAC, 2012).

There are also less direct economic costs of tobacco use. Smoking is associated with lost productivity both nationally (USDHHS, 2015) and in Wyoming. Tobacco cost the state of Wyoming nearly $450 million in total productivity losses in 2010 (Table 6; WYSAC, 2012).

Workers who smoke are generally less healthy and more costly for employers. Employing smokers is also associated with increased property loss and occupational disease (USDHHS, 2015). Berman et al. (2013) estimated that, on average, it costs $5,816 more per year to employ a smoker than a nonsmoker. Smokers are more likely to be injured at work than nonsmokers (Craig et al., 2006; USDHHS, 2015). These costs could be reduced by employers if they implement smokefree air policies and/or offer their

Figure 19: Total Tobacco-Related Healthcare Costs Greater than Alcohol or Other Drugs

Wyoming's annual substance abuse-related total healthcare costs as of 2010



Source: WYSAC, 2012.

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Table 6: Smoking Associated with Nearly $450 Million in Productivity Losses in 2010

Loss of productivity costs associated with substance abuse in Wyoming, in millions of dollars

	Impaired Productivity	Hospitalization	Mortality	Total
Alcohol	$358.0	$0.8	$188.7	$547.5
Tobacco	$234.6	$0.9	$214.4	$449.9
Other drugs	$68.8	$0.4	$78.8	$148.0

Source: WYSAC, 2012.

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employees access to cessation services (and those smokers use those services to successfully quit).

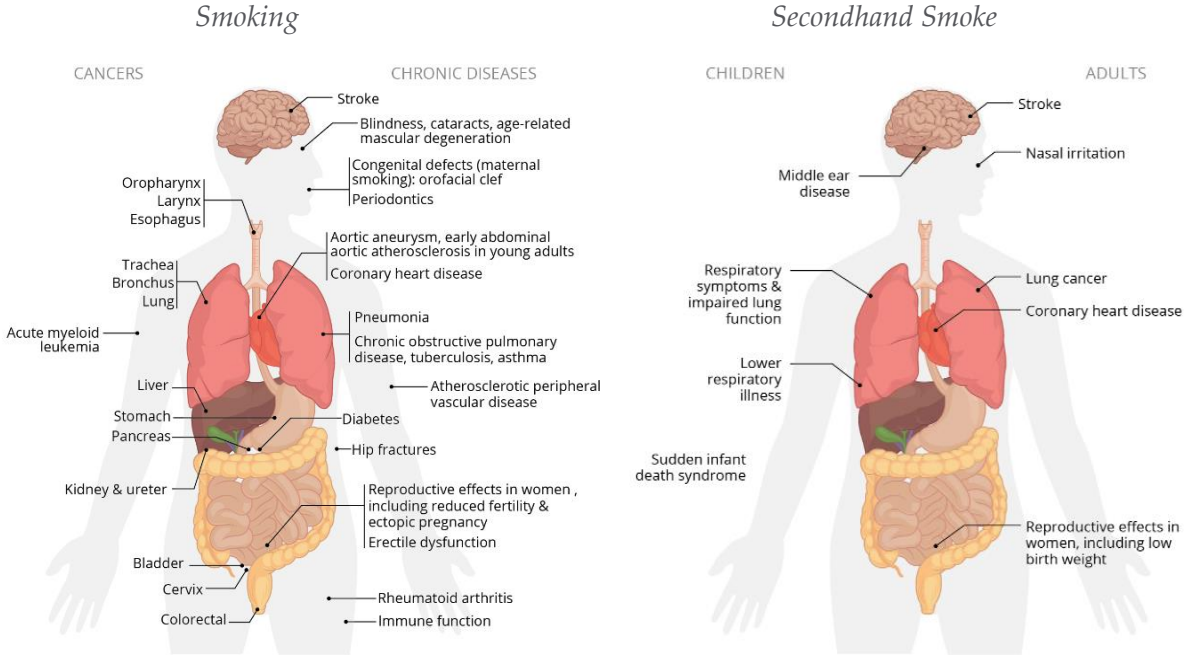
Tobacco-attributable health costs also affect the U.S. military and veterans. A history of smoking has been associated with increased risk of injury for men in U.S. Army basic combat training (Bulzacchelli et al., 2014). In 2010, smoking-attributable medical costs for the Veterans Health Administration were approximately $2.7 billion (Barnett et al., 2015). More broadly, the U.S. Surgeon General, surgeon general of the Air Force (Adams et al., 2019), the U.S. Navy and Marines (Adams et al., 2019; Navy and Marine Corps Public Health Center, n.d.) and U.S. Army (Adams et al., 2019; Army Public Health Center, 2019) have identified tobacco use as a threat to readiness of military personnel.

Health Burdens

Each year, an estimated 800 Wyoming adults die prematurely from smoking-attributable illnesses such as heart disease, lung diseases, and cancers (CDC, 2014a), an average of over two deaths per day. Each year, 480,000 people in the U.S. die prematurely from smoking or from exposure to secondhand smoke (USDHHS, 2015), an average of over 1,300 deaths per day. Tobacco use causes one in five deaths, more than the number of deaths attributable to alcohol, car crashes, suicides, AIDS, homicides, and illegal drugs *combined* (CDC, 2015a). Reducing deaths caused, in whole or in part, by tobacco use is the primary long-term goal of public health organizations working in tobacco prevention, including the TPCP and CDC. A related intermediate-goal is reducing the disease burden caused by tobacco use.

Chronic diseases are leading causes of death and sickness in the U.S. and Wyoming (Centers for Disease Control and Prevention, National Center for Health Statistics [CDC, NCHS], 2015). Smoking is the leading preventable cause of chronic disease and death in the U.S. (USDHHS, 2010). Although there is no safe level of exposure to tobacco smoke, greater exposure increases the risk for and severity of chronic disease. Cigarette smoke contains cancer-causing agents and chemicals that cause heart (cardiovascular) and lung (pulmonary and respiratory) diseases and contribute to poor reproductive and dental health. There are more than 7,000 toxic chemicals in cigarette smoke, including ammonia, tar, and carbon monoxide. These chemicals increase the risk for developing several preventable chronic diseases for smokers and those who breathe secondhand smoke (Figure 20; USDHHS, 2014).

Figure 20: Health Burdens Causally Linked to Smoking and Secondhand Smoke



Source: U.S. Department of Health and Human Services (USDHHS), 2014.

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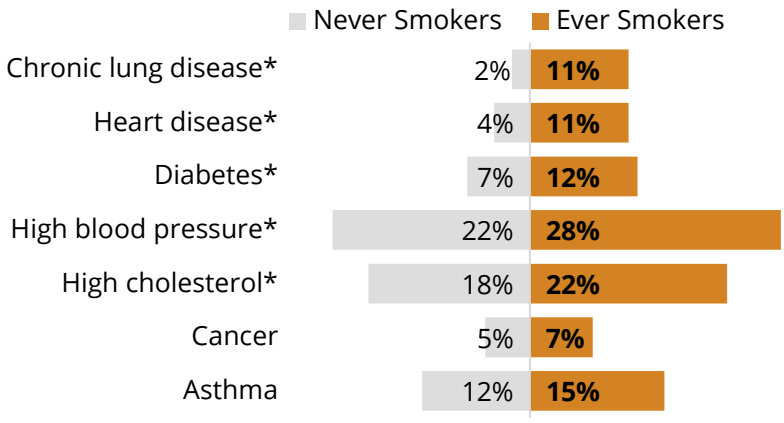
Figure 21: Chronic Diseases More Common in Individuals Who Have Smoked

Percentage of never versus ever smokers who were diagnosed with…



Note: Never smokers have smoked fewer than 100 cigarettes in their lifetime. Ever smokers have smoked at least 100 cigarettes in their lifetime. Chronic lung disease does not include asthma. Cancer does not include skin cancer.

* Significant difference between never and ever smokers.

Source: WYSAC, 2018a

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Compared to Wyoming nonsmokers, current and former smokers were more likely to have been diagnosed with several chronic illnesses (Figure 21; WYSAC, 2018a):

- 5.5 times more likely to have been diagnosed with chronic lung disease,
- 2.8 times more likely to have heart disease,
- 1.7 times more likely to have diabetes,
- 1.4 times more likely to have cancer (other than skin cancer),
- 1.3 times more likely to have high blood pressure, and
- 1.2 times more likely to have high cholesterol.

ENDS/e-cigarettes are a new tobacco product. Therefore, research on the contents of their liquid, aerosol, and health effects is limited. Long-term health effects of ENDS use are still unknown. However, research does shows that vaping harms lung function (Cressey, 2014). Early studies about the contents of the liquid and aerosol show the presence of varying levels of nicotine and cancer-causing chemicals such as formaldehyde (American Lung Association, 2016). Overdoses have been reported, including among children, from drinking the nicotine liquid or spilling the liquid on their skin (CDC, 2014b). The nicotine in most e-liquids is known to be addictive, can harm the developing brains of youth and young adults, and may make it more likely that youth will go on to develop other addictions (USDHHS, 2016). Labels on e-liquid have also presented inaccurate information about nicotine concentrations, meaning users might vape a nicotine-containing liquid contrary to their intention to avoid nicotine (Goniewicz et al., 2015). Aerosol from ENDS also contains chemicals linked to lung disease and heavy metals like lead (USDHHS, 2016).

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Methods Appendix

In reporting the data, WYSAC used the data sources' rules for determining statistical significance and for reporting confidence intervals. Generally using an alpha of .05 for statistical tests or 95% confidence intervals, WYSAC identified as significant only differences or relationships that have been identified by the data sources as statistically significant or where confidence intervals do not overlap. When differences and relationships are not statistically significant, WYSAC described the related estimates as similar.

Throughout this report, when referring to a change in the percent of a certain measurement between two time periods, WYSAC reports the percentage change (ex: a change from 50% to 25% is a 50% change). This is different than the simple difference between the two measurements (ex: 50% - 25% = 25%) which is not used in this report.

The BRFSS national medians reported in this document are from the 50 states, the District of Columbia, and all U.S. territories. Medians, as reported by CDC for the BRFSS, do not have confidence intervals to use in comparing national and Wyoming estimates. WYSAC presents them for comparison without being able to conduct statistical tests.

Key Limitations to the Data

Many of the data sources in this document are self-reported surveys and subject to the limitations common to all self-report surveys. For example, the smoking prevalence rates reported by the BRFSS are not verified by any biological markers. Because smoking is not a generally accepted behavior, respondents to BRFSS may underreport how many cigarettes they have smoked in their lifetime and avoid being classified as current smokers.

National comparisons for youth smoking and vaping rates are not available because the Youth Risk Behavior Surveillance System (YRBSS), administered by the Wyoming Department of Education until 2015 and under the oversight of the CDC nationally, had provided such comparisons.

A specific limitation to the PNA data is that they are collected from students in participating public schools. Participation by schools has varied over time. Although WYSAC is confident that the PNA estimates are the best available at the state level, this variation in school participation may contribute to differences between iterations. Additionally, the results may not generalize to youth outside of the public school system, such as home-schooled youth.

The 2016 PNA asked questions about vaping, but WYSAC improved the language substantially for the 2018 PNA based on changes in how youth talk about vaping, making a comparison across time impossible.

The 2018 PNA prioritized questions about vaping over questions about the use of smokeless tobacco, including eliminating questions to estimate how many Wyoming youth use smokeless tobacco. Archival data from the YRBS for these variables are available here https://www.wyomingpreventiondepot.org/dataprofiles/MainSelection/State/Tobacco/Consumption or here https://www.cdc.gov/healthyyouth/data/yrbs/index.htm

Because phone coaching is required to use prescription medications and NRTs provided by the WQTP, WYSAC cannot analyze the effects of these program components without phone coaching. It is possible that this requirement creates a barrier to using either type of medication, facilitates treatment compliance and quitting success for either medication, has no meaningful impact on quitting success when medication is also used, or has some other unmeasured effect.

When analyzing the data from the WQTP Follow-Up Survey, WYSAC assumed that the enrollees who respond to this attempted census are representative of all enrollees. However, enrollees' satisfaction with the program or tobacco use at the time of follow-up might introduce an unknown response bias to the data. For example, enrollees who were dissatisfied with the program or who did not successfully quit using tobacco products might be less likely to respond to the Follow-Up Survey than other enrollees, leading to an overly positive description of the program in the Follow-Up Survey data.

Data sources were the best, most current estimates available at the time this document was written. Still, some of the sources, especially those that provide estimates for costs of tobacco use, are dated and may not accurately reflect current values.