Tobacco Use among Lesbian, Gay, and Bisexual Alaska Adults

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This image is from 2017 Anchorage PrideFest.

Executive Summary

Decades of research reviews and state reports have shown that lesbian, gay, and bisexual (LGB) adults are more likely to smoke and use tobacco products compared to heterosexual adults. Smoking and tobacco use is also highly prevalent among American Indian and Alaska Native people compared to all other race and ethnic groups in the United States. We used data from the Alaska Behavioral Risk Factor Surveillance System (BRFSS) to examine the potential intersection between the LGB community and Alaska Native people with regard to tobacco and e-cigarette use. We also assessed other substance use-related behaviors such as marijuana consumption and binge drinking in these communities.

In general, results showed significant differences by gender, sexual orientation, race/ethnicity, and smoking status. Large disparities were found among women relative to sexual orientation within nearly every tested indicator including smoking status, marijuana and e-cigarette use, binge drinking, exposure to secondhand smoke, knowledge about secondhand smoke, visiting establishments after smokefree policies were implemented, and preferences for spending time where people are not smoking. Disparities among women were particularly evident in comparisons between bisexual and heterosexual women. Bisexual and lesbian women consistently fared worse than heterosexual women, and those disparities persisted despite controlling statistically for age. With one exception (binge drinking), the level of disparity found among women based on sexual orientation was not found among men.

In line with previous research, Alaska Native people were significantly more likely than non-Native people to be current smokers and to use smokeless tobacco (SLT) and marijuana. Heterosexual Alaska Native people were more likely to use SLT compared to gay and lesbian Alaska Native people, but bisexual Alaska Native people were more likely to use e-cigarettes compared to gay, lesbian, and heterosexual Alaska Native people. Patterns between non-Native heterosexual and LGB people were similar to those found among women, with non-Native LGB people reporting more smoking, marijuana and e-cigarette use, and binge drinking.

Our review of secondhand smoke indicators revealed some patterns of concern. Bisexual women were the least likely to have a smokefree policy in the home. Bisexual women also tended to report visiting bars *less* in light of recent implementation of smokefree policies and to indicate no preference for spending time where people are not smoking. What was most interesting about these findings was that the disparity in secondhand smoke exposure persisted for the LGB community even among nonsmokers in some cases. That is, nonsmoking LGB respondents were more likely than nonsmoking heterosexual respondents to live with smokers and to indicate no preference for spending time where people are not smoking. Despite these disparities, LGB respondents were just as likely as heterosexual respondents to report knowing about the harmful effects of breathing secondhand smoke, and they were more likely than heterosexual respondents to be aware of Alaska's Tobacco Quit Line. Recommendations for leveraging resources like the Quit Line to better meet the needs of the LGB community are discussed.

Introduction

Despite a significant decrease in adult tobacco use in the U.S. over the past few decades, high levels of smoking and other tobacco use continue to be found among individuals from certain subpopulations. One group where disparities in tobacco use are particularly evident is lesbian, gay, and bisexual (LGB[1]) adults. Several research reviews, along with a few state reports on tobacco use and sexual orientation have consistently identified higher prevalence of smoking within the LGB community relative to heterosexual adults.[i] Estimates of this disparity vary widely, but some research suggests smoking prevalence among gay and bisexual men is up to 71% higher than heterosexual men and up to 350% higher for bisexual and lesbian women compared to heterosexual women.[ii]

The prevalence of smoking and other tobacco use is also disproportionately high among certain racial and ethnic groups in the U.S., particularly American Indian and Alaska Native people. Several studies have consistently found that American Indian and Alaska Native people report the highest prevalence of current smoking compared to all other racial and ethnic groups as well as the lowest quit ratios.[iii]

In light of these known patterns, the current analysis reviewed public health surveillance data to measure the extent of disparities in smoking and tobacco use among LGB and heterosexual Alaska Native respondents and non-Native respondents. The overall goal of this report is to meet one of the principal tenets of the Alaska Tobacco Prevention and Control Program, which is to "identify and eliminate tobacco-related disparities and achieve health equity."[iv] Toward that end, we present data on tobacco use, other substance use, exposure to secondhand smoke, and knowledge and attitudes about secondhand smoke in the LGB population of Alaska. We were specifically interested in documenting patterns by sexual orientation and gender (i.e., men vs. women), sexual orientation and age, sexual orientation and race/ethnicity (i.e., Alaska Native people vs. non-Native people), and sexual orientation and smoking status (i.e., smokers vs. nonsmokers).

Methods

We used data from the Alaska Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an anonymous telephone survey conducted by the Alaska Division of Public Health in cooperation with the Centers for Disease Control and Prevention (CDC). Data collected on the BRFSS provides an estimate of the prevalence of behavioral risk factors in the general

[1] Discussion of lesbian, gay, and bisexual adults also typically includes individuals who identify as transgender (i.e., LGBT). The Alaska Behavioral Risk Factor Surveillance System does not currently include questions relative to gender identity, therefore data are not available on transgender people. The lack of data on transgender people is a limitation of the current analysis, and is addressed in the Recommendations section at the end of this report.

population that are known to be associated with the leading causes of morbidity and mortality in adults. The BRFSS has been in operation in Alaska since 1991.

Two BRFSS surveys are conducted in Alaska: the Standard BRFSS and the Supplemental BRFSS. A set of core questions appears on each survey—including questions on tobacco and other substance use—and additional tobacco-related questions are asked on the Supplemental survey only. Both the Standard and Supplemental BRFSS surveys are conducted throughout the year, using separate samples recruited using the same sampling techniques. This report uses data collected on both surveys from 2012 to 2015. For each indicator, data are noted as coming from the Standard survey, Supplemental survey, or a combination of the two (i.e., for questions asked on both surveys). Areas where data were unavailable during certain years are also noted.

The following survey questions regarding sexual orientation, smoking and tobacco use, other substance use, and attitudes and opinions about secondhand smoke were assessed:

1. Now I'm going to ask you a question about sexual orientation. Do you think of yourself as…? *(Responses were gay or lesbian, straight, bisexual, and something else)*
2. Have you smoked at least 100 cigarettes in your entire life? *(Responses were yes or no)*
3. Do you now smoke cigarettes every day, some days, or not at all? *(Responses were every day, some days, and not at all)*
4. Do you currently use chewing tobacco, snuff, Snus, and Iqmik (also known as Blackbull) every day, some days, or not at all? *(Responses were every day, some days, and not at all)*
5. During the past 30 days, on how many days did you use e-cigarettes? *(Response was number of days)*
6. During the past 30 days, on how many days did you use marijuana or hashish? *(Response was number of days)*
7. Considering all types of alcoholic beverages, how many times during the past 30 days did you have X (X = 5 for men, X = 4 for women) or more drinks on an occasion? *(Response was number of times)*
8. How many people, including you, who live in your household currently smoke cigarettes, cigars, or pipes? *(Response was number of current smokers in household)*
9. Which statement best describes the rules about smoking inside your home? Do not include decks, garages, or porches. *(Responses were smoking is not allowed anywhere inside your home, smoking is allowed in some places or at some times, and smoking is allowed anywhere inside the home)*
10. Do you think that breathing smoke from other people's cigarettes is…? *(Responses were very harmful to one's health, somewhat harmful to one's health, not very harmful to one's health, and not harmful at all to one's health)*
11. People should be protected from smoke from other people's cigarettes. *(Responses were strongly agree, agree, disagree, and strongly disagree)*
12. Since smoking has not been allowed in bars and cocktail lounges, have you visited them more, less, or has it not made any difference? *(Responses were more, less, and no difference)*
13. Do you agree or disagree with the following statement: I prefer to spend time where people are not smoking. *(Responses were strongly agree, agree, disagree, and strongly disagree)*

14. Are you aware of the Alaska Tobacco Quit Line, which is a telephone service that can help people quit smoking or using smokeless tobacco? *(Responses were yes or no)*

For question 1, response option "something else" was categorized as missing. Questions 2 and 3 were used together to categorize respondents as current, former, and never smokers. For question 4, response options "every day" and "some days" were combined. For questions 5 through 8, responses of "0" and "1" or higher were recoded as "no/absent" and "yes/present". For question 9, "smoking is allowed some places or at some times" and "smoking is allowed anywhere inside the home" were combined. For question 10, responses "very harmful to one's health" and "somewhat harmful to one's health" were combined. For questions 11 and 13 "strongly agree" and "agree" were combined; and "disagree" and "strongly disagree" were combined. For question 12, responses "more" and "no difference" were combined. Questions 12 and 13 were only asked of the subset of respondents who lived in areas where smoking is restricted in bars and cocktail lounges.

Alaska Native people were identified via responses to questions about race and ethnicity. Respondents who self-identified as Alaska Native alone or in combination with any other race were classified as Alaska Native (unless a race other than Alaska Native was selected by the respondent as his or her primary racial identity).

Analysis

Data were weighted using standard raking procedures (also called iterative proportional fitting). Stata was used to account for the complex survey design. For each measure, crosstabulations were conducted to estimate percentages for men and women separately, Alaska Native people and non-Native people separately, and smokers and nonsmokers separately and where relevant. Logistic regression modeling was employed to generate adjusted odds ratios (by age) for the association between certain outcome measures (where noted) and sexual orientation. A significance level of $p < 0.05$ was used generally, while significance levels of $p < 0.10$ are noted as trends toward significance.

Results

The following sections present results for each indicator by gender and sexual orientation, and race/ethnicity and smoking status where possible. Estimates are suppressed or flagged based on statistical guidelines developed by the Health Promotion and Chronic Disease Prevention Section of Oregon Health Authority's Public Health Division. If the coefficient of variation is between 30% and 50%, the estimate is reported but flagged with the letter c. These estimates should be interpreted with caution. If the coefficient of variation is larger than 50%, the estimate is suppressed and replaced with the letter s.

1. Demographics

Several key demographic indicators differ significantly by sexual orientation:

Table 1a. Demographic information by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=14,354)	**Gay (N=161)**	**Bisexual (N=157)**	**Heterosexual (N=16,659)**	**Lesbian (N=215)**	**Bisexual (N=297)**
Mean age[a]	44	36	39	45	44	32
Age group[a]						
18-29	25%	48%	45%	21%	23%	53%
30-54	45%	38%	32%	47%	52%	41%
55 or older	30%	14%	23%	32%	25%	7%
Race/Ethnicity						
Alaska Native	13%	13%	13%	14%	11%	15%
Education[a]						
College or higher	22%	31%	19%	28%	40%	18%
Some college	36%	34%	40%	40%	32%	40%
High school graduate	32%	27%	30%	24%	25%	28%
Less than high school	11%	9%	12%	8%	3%	13%
Employment (age ≤ 65)						
Employed	76%	74%	68%	64%	72%	54%
Unemployed	10%	4%	18%	7%	9%	9%
Not in workforce	15%	22%	15%	29%	20%	38%
Geography[a]						
Anchorage, Mat-Su	52%	64%	57%	55%	65%	57%
Gulf Coast & Southeast	22%	13%	23%	22%	17%	18%
Interior	17%	18%	15%	16%	13%	21%
Northern & Southwest	9%	5%	4%	7%	5%	4%

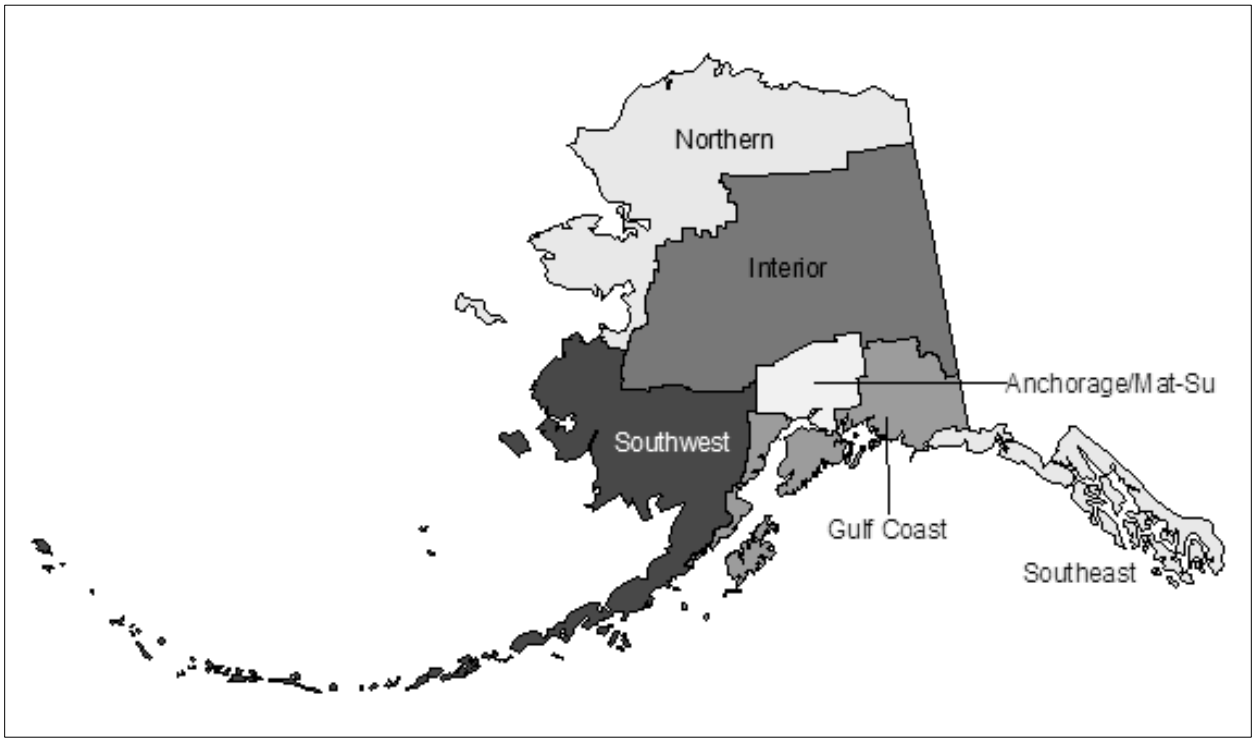
Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

[a] Significant differences by age, education level, and geography are described below.

- Heterosexual men are significantly older than gay men ($p < 0.01$) and bisexual men ($p < 0.05$). Nearly half of gay men and bisexual men are under 30.
- Bisexual women are significantly younger than heterosexual women ($p < 0.01$) and lesbian women ($p < 0.01$). More than half of bisexual women are under 30. Lesbian and heterosexual women's age is not statistically different.
- Sexual orientation is not significantly related to identifying as an Alaska Native person or non-Native person.
- Bisexual women are less likely to report a 4 year college degree compared to both heterosexual and lesbian women ($p < 0.05$).
- Unemployment tends to be more prevalent among bisexual men compared to heterosexual and gay men ($p = 0.07$).

- Bisexual women tend to be less likely to report employment and more likely to report that they are not in the workforce ($p = 0.09$). Data indicate that most bisexual women who are not in the workforce report that they are students (i.e., not retired or unable to work).
- In terms of geography, the BRFSS survey data do not provide sufficient representation for reporting by each of the individual boroughs. Therefore, we combined boroughs to report patterns that reflect the Alaska Public Health Regions (Figure 1a). Table 1a shows gay men are significantly more likely to live in the Anchorage/Matanuska-Susitna region compared to heterosexual and bisexual men ($p = 0.05$). Lesbian women also tend to be more likely to live in the Anchorage/Matanuska-Susitna region than heterosexual and bisexual women ($p = 0.07$). There are no significant differences by sexual orientation among men or women for the other regions.

Figure 1a. Alaska Public Health regions



Source: State of Alaska, DHSS, DPH, Section of Chronic Disease Prevention and Health Promotion

2. Smoking Status

Smoking status is determined through a series of questions on the Standard and Supplemental BRFSS surveys which categorize each respondent as a current smoker, former smoker, or someone who has never smoked. Current smokers include respondents who have smoked at least 100 cigarettes (i.e., five packs) in their lifetime and currently smoke every day or some days. Former smokers are respondents who have smoked at least 100 cigarettes in their lifetime but do not currently smoke. Respondents who have smoked less than 100 cigarettes in their lifetime and do not currently smoke are considered to have never smoked.

Results indicate that smoking status differs by gender and, among women, by sexual orientation:

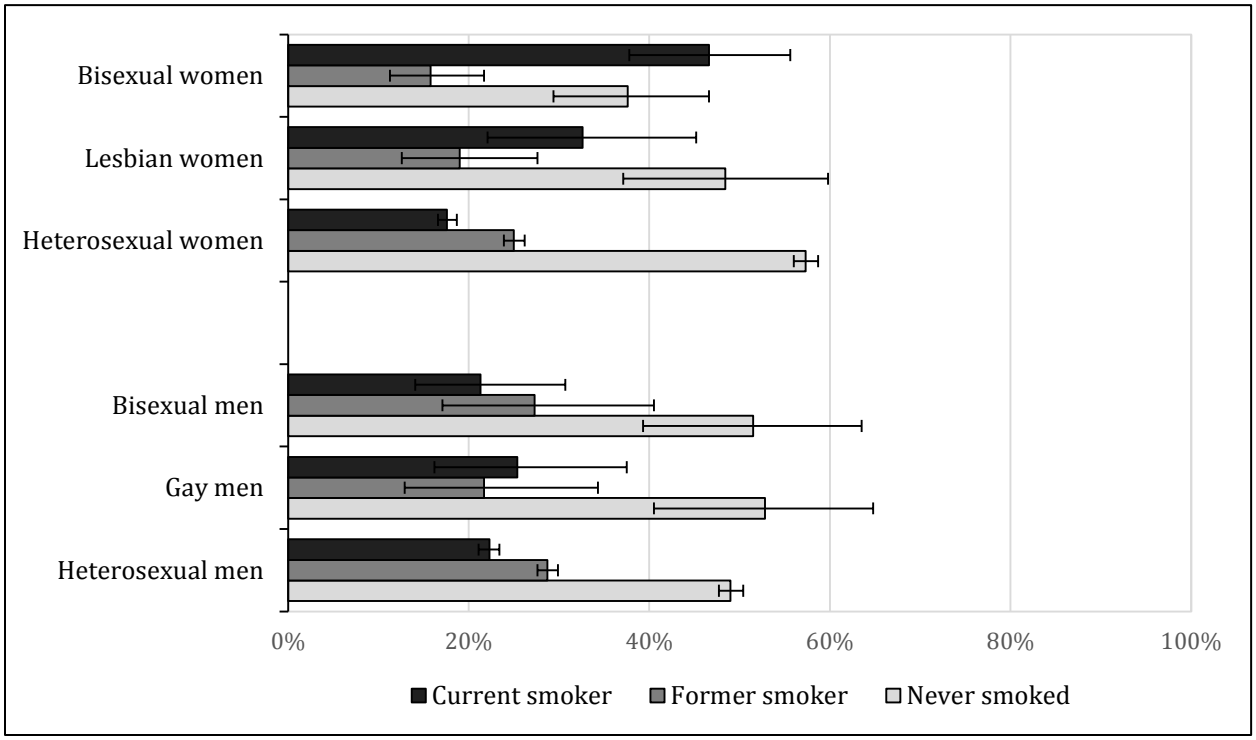


Figure 2a. Smoking status by gender and sexual orientation.
Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

Table 2a. Smoking status by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=14,354)	**Gay (N=161)**	**Bisexual (N=157)**	**Heterosexual (N=16,659)**	**Lesbian (N=215)**	**Bisexual (N=297)**
Current smoker*†	22%	25%	21%	18%	33%	47%
Former smoker	29%	22%	27%	25%	19%	16%
Never smoked	49%	53%	52%	57%	48%	38%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015
* Significant difference between bisexual women and heterosexual women and lesbian women and heterosexual women.

† Marginally significant difference between bisexual women and lesbian women.

- Regardless of sexual orientation, women are significantly more likely than men to report that they have never smoked ($p < 0.01$).
- Smoking status does not differ by sexual orientation among men.
- Among women, bisexual women are significantly more likely to be current smokers compared to heterosexual women ($p < 0.01$). Smoking is also more prevalent among bisexual women compared to lesbian women, but the difference is marginal ($p = 0.07$).
- Lesbian women are also more likely than heterosexual women to be current smokers ($p < 0.01$).

Smoking Status: Controlling for Age

Findings indicate that the average age of respondents is significantly different based on sexual orientation. Heterosexual men are significantly older than gay and bisexual men, and bisexual women are significantly younger than both heterosexual and lesbian women. Because individual health and certain behaviors like tobacco use are highly related to a person's age, smoking status (i.e., current smoking) was examined again relative to sexual orientation and age.

Two models were estimated to measure the independent relationships between age and current smoking, as well as sexual orientation and current smoking. Then a third model assessed the combined effects of age and sexual orientation on current smoking:

Table 2b. Models predicting current smoking status from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.99	0.98-0.99	<0.01	0.99	0.98-0.99	<0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	1.19	0.67-2.11	0.54	2.26	1.32-3.88	<0.01
	Bisexual	0.94	0.57-1.55	0.82	4.08	2.82-5.89	<0.01
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	1.07	0.60-1.89	0.83	2.25	1.31-3.85	<0.01
	Bisexual	0.87	0.53-1.45	0.60	3.55	2.45-5.15	<0.01
	Age	0.99	0.98-0.99	<0.01	0.99	0.99-1.0	<0.01

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

- Age is significantly associated with current smoking among both men and women. Younger age is associated with higher likelihood of being a current smoker.
- Sexual orientation is not significantly related to current smoking among men, and this relationship is unchanged when age is controlled.
- Among women, sexual orientation is significantly related to current smoking. Lesbian women are over two times more likely than heterosexual women to be current smokers

(OR = 2.26, $p < 0.01$), and bisexual women are over four times more likely than heterosexual women to be current smokers (OR = 4.08, $p < 0.01$). Bisexual women also tend to be more likely than lesbian women to be current smokers ($p = 0.07$).

- When age is statistically controlled, the relationship between sexual orientation and current smoking remains largely the same for women. Despite large differences in age, bisexual and lesbian women are still significantly more likely to smoke than heterosexual women ($p < 0.01$).
- The odds ratio for current smoking among bisexual women decreases slightly from 4.08 to 3.55 when age is controlled, but the decrease is not statistically significant. This may indicate that bisexual women's younger age accounts for some of the association between sexual orientation and smoking, but not all.
- When age is statistically controlled, the difference between bisexual women and lesbian women's smoking status no longer approaches significance ($p = 0.16$).

Smoking Status: Alaska Native people vs. Non-Native people

Differences in smoking status were examined between Alaska Native people and non-Native people by sexual orientation. Because of small sample sizes, contrasts between men and women were not possible.

Results indicate that smoking status is significantly different between Alaska Native people and non-Native people. Smoking status is also significantly different by sexual orientation, but only for non-Native people:

Table 2c. Smoking status by race/ethnicity and sexual orientation.

	Alaska Native people			Non-Native people		
	Heterosexual (N=4,785)	Gay/Lesbian (N=57)	Bisexual (N=81)	Heterosexual (N=25,522)	Gay/Lesbian (N=313)	Bisexual (N=366)
Current smoker*	40%	41%	54%	17%	27%	35%
Former smoker	27%	29%[c]	19%[c]	27%	20%	20%
Never smoked	34%	31%	28%[c]	56%	53%	45%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

[c] This number may be statistically unreliable and should be interpreted with caution.

* Significant difference between heterosexual and gay/lesbian non-Native people and heterosexual and bisexual non-Native people.

- Regardless of sexual orientation, Alaska Native people were significantly more likely to be current smokers and significantly less likely to have never smoked compared to non-Native people ($p < 0.01$). Specifically, 40% of Alaska Native people reported they are current smokers while only 18% of non-Natives reported current smoking. Only 34% of Alaska Native people have never smoked, compared to 56% of non-Native people.
- Among Alaska Native people, smoking status does not differ by sexual orientation.
- Among non-Native people, heterosexual individuals are significantly less likely to be current smokers compared to LGB individuals.

3. Smokeless Tobacco

Smokeless tobacco use among Alaska respondents is measured via a single question on the Standard and Supplemental BRFSS surveys: "Do you currently use chewing tobacco, snuff, Snus, and Iqmik (also known as Blackbull) every day, some days, or not at all?" Snus is a moist smokeless tobacco, typically packed in small pouches that are placed under the lip against the gum. Iqmik is a form of chewing tobacco traditionally used by Alaska Native people. Iqmik is made by mixing fire-cured tobacco leaves and "punk ash," which is ash generated by burning a fungus that grows on birch trees. Respondents who indicate they use smokeless tobacco (SLT) products some days or every day are considered current SLT users.

Results indicate that SLT use differs by gender and by sexual orientation among men only:

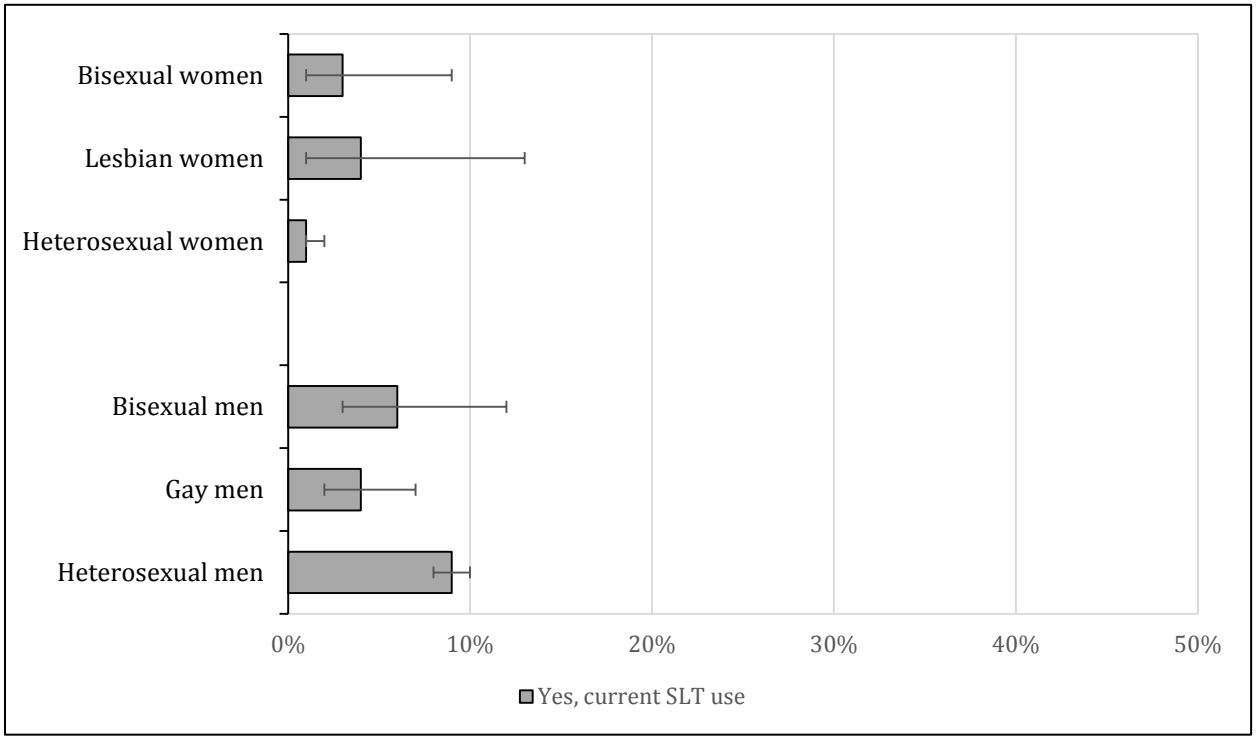


Figure 3a. Current SLT use by gender and sexual orientation.
Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

Table 3a. Current SLT use by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=14,354)	**Gay (N=161)**	**Bisexual (N=157)**	**Heterosexual (N=16,659)**	**Lesbian (N=215)**	**Bisexual (N=297)**
Current SLT use*†	9%	4%	6%	1%	4%	3%
No SLT use	91%	97%	94%	99%	96%	97%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015
* Significant difference between gay men and heterosexual men.

† Marginally significant difference between lesbian women and heterosexual women.

- Overall, men are more likely than women to report current SLT use regardless of sexual orientation ($p < 0.01$). Nine percent of all men report being current SLT users compared to only 2% of women.
- SLT use differs by sexual orientation among men, with gay men being significantly less likely than heterosexual men to report current SLT use ($p < 0.05$). SLT use among bisexual men is not statistically different from that of heterosexual or gay men.
- Among women, differences in SLT use between lesbian women and heterosexual women approach significance ($p = 0.09$), with lesbian women being more likely to report current SLT use. SLT use among lesbian and bisexual women is not statistically different.

Smokeless Tobacco: Controlling for Age

Use of smokeless tobacco was reexamined controlling statistically for age. Similar to analyses of current smoking, models were first estimated to measure the independent relationships between SLT use and age as well as SLT use and sexual orientation. A third model assessed the combined effects of age and sexual orientation on SLT use:

Table 3b. Models predicting current SLT use from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.98	0.98-0.99	<0.01	0.98	0.97-1.00	0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	0.37	0.17-0.82	0.01	2.97	0.85-10.40	0.09
	Bisexual	0.62	0.28-1.39	0.25	2.37	0.80-7.02	0.12
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	0.32	0.14-0.71	0.01	2.97	0.85-10.33	0.09
	Bisexual	0.56	0.25-1.26	0.16	1.77	0.60-5.24	0.30
	Age	0.98	0.98-0.99	<0.01	0.98	0.96-0.99	<0.01

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015

- Similar to findings on smoking, age is significantly associated with current SLT use among men and women. Younger age is associated with higher likelihood of SLT use.
- Gay men are significantly less likely than heterosexual men to use SLT.
- Among men, when age is controlled the relationship between sexual orientation and SLT use is largely unchanged. Gay men remain significantly less likely than heterosexual men to be current SLT users. SLT use between gay and bisexual men and bisexual and heterosexual men is not statistically different, regardless of controlling for age.

- Among women, the association between sexual orientation and SLT use approaches significance such that lesbian women tend to be more likely than heterosexual women to be current users (OR = 2.97, $p = 0.09$). Bisexual women's likelihood of current SLT use is not statistically different from that of heterosexual or lesbian women.
- Similar to men, controlling statistically for age does not impact the relationship between sexual orientation and SLT use among women. The trend toward higher odds of SLT use among lesbian women compared to heterosexual women is the same when age is controlled (OR = 2.97; $p = 0.09$), and SLT use between bisexual and heterosexual women and bisexual and lesbian women is still not statistically different.

Smokeless Tobacco: Alaska Native people vs. Non-Native people

Differences in smokeless tobacco use were examined between Alaska Native people and non-Natives by sexual orientation. Due to small sample sizes, contrasts between men and women were not possible.

Findings indicate that SLT use differs significantly between Alaska Native people and non-Native people in general. Differences in SLT use among Alaska Native people by sexual orientation approach significance:

Table 3c. SLT use by race/ethnicity and sexual orientation.

	Alaska Native people			Non-Native people		
	Heterosexual (N=4,812)	**Gay/Lesbian (N=57)**	**Bisexual (N=81)**	**Heterosexual (N=25,595)**	**Gay/Lesbian (N=311)**	**Bisexual (N=366)**
Current SLT use*	14%	5%[c]	9%[c]	4%	3%[c]	3%[c]
No SLT use	86%	95%	91%	96%	97%	97%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between gay/lesbian Alaska Native people and heterosexual Alaska Native people.

- Alaska Native people are more likely to use SLT than non-Native people ($p < 0.01$). Overall, 14% of Alaska Native people report current SLT use compared to only 4% of non-Natives.
- Gay and lesbian Alaska Native people are significantly less likely to report SLT use compared to heterosexual Alaska Native people ($p < 0.05$).
- No significant differences in SLT use are evident among non-Native people based on sexual orientation.

4. E-Cigarettes

Use of e-cigarettes or "vaping" among Alaska residents is measured through a series of questions on the Standard and Supplemental Alaska BRFSS, the most pertinent of which is: "During the past 30 days, on how many days did you use e-cigarettes?" Individuals who report use on one or more days are considered current users of e-cigarettes. Questions about e-cigarettes began appearing on the Alaska BRFSS in 2010; however, the following analyses are restricted to data from 2014 and 2015, when prevalence of e-cigarette use was sufficient to calculate some reliable estimates.

Results indicate that e-cigarette use differs by gender and sexual orientation. Due to small sample sizes, gay men were combined with bisexual men and contrasted with heterosexual men, and lesbian women and bisexual women were compared as a group with heterosexual women:

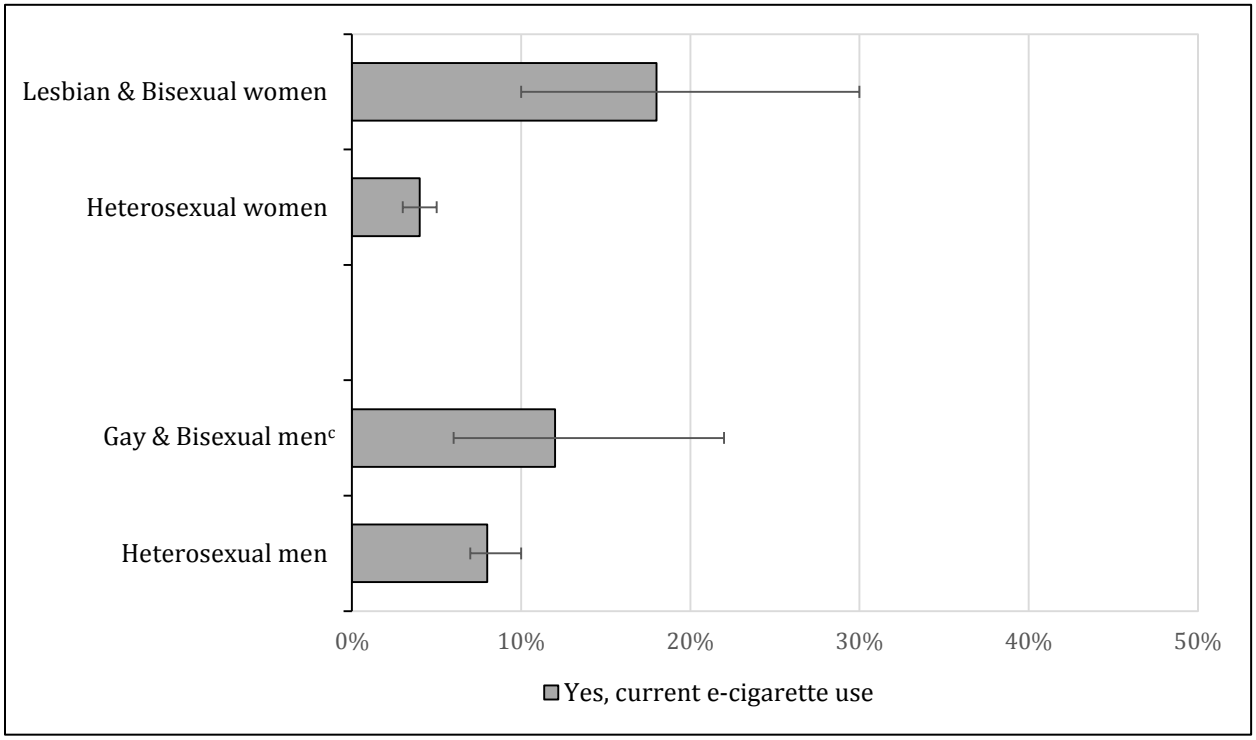


Figure 4a. Current e-cigarette use by gender and sexual orientation.
Source: Alaska BRFSS Standard File, 2014; Standard and Supplemental Combined File, 2015
[c] This number may be statistically unreliable and should be interpreted with caution.

Table 4a. Current e-cigarette use by gender and sexual orientation.

	Men		Women	
	Heterosexual (N=5,342)	**Gay & Bisexual (N=147)**	**Heterosexual (N=6,164)**	**Lesbian & Bisexual (N=200)**
Current e-cig use*	8%	12%[c]	4%	18%
No e-cig use	92%	88%	96%	82%

Source: Alaska BRFSS Standard File, 2014; Standard and Supplemental Combined File, 2015

[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between lesbian/bisexual women and heterosexual women.

- Similar to smoking and SLT use, men are more likely than women to report currently using e-cigarettes regardless of sexual orientation ($p < 0.01$). Prevalence of e-cigarette use is 8% among men and 5% among women.
- E-cigarette use is not statistically different among men based on sexual orientation.
- Bisexual and lesbian women are significantly more likely to report e-cigarette use compared to heterosexual women ($p < .01$).

E-Cigarettes: Controlling for Age

E-cigarette use was reexamined controlling statistically for age. Models were first estimated to measure the independent relationships between age and e-cigarette use, as well as sexual orientation and e-cigarette use. A third model assessed the combined effects of age and sexual orientation on e-cigarette use:

Table 4b. Models predicting current e-cigarette use from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.95	0.94-0.96	<0.01	0.98	0.96-0.99	<0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian/Bisexual	1.46	0.66-3.25	0.35	4.94	2.40-10.14	<0.01
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian/Bisexual	1.55	0.71-3.35	0.27	4.08	2.24-7.45	<0.01
	Age	0.96	0.95-0.97	<0.01	0.98	0.97-0.99	<0.01

Source: Alaska BRFSS Standard File, 2014; Standard and Supplemental Combined File, 2015

- Similar to smoking and SLT use, age is significantly associated with using e-cigarettes among both men and women. Results indicate that younger age is associated with significantly higher likelihood of using e-cigarettes.
- Gay and bisexual men's e-cigarette use is not statistically different from heterosexual men's use regardless of whether age is controlled.
- In contrast, lesbian and bisexual women are significantly more likely than heterosexual women to use e-cigarettes ($p < 0.01$) regardless of whether age is controlled. Lesbian and bisexual women are nearly five times more likely than heterosexual women to use e-cigarettes when age is not controlled ($p < 0.01$) and just over four times more likely when age is controlled ($p < 0.01$).

E-Cigarettes: Alaska Native people vs. Non-Native people

Differences in the prevalence of e-cigarette use were examined between Alaska Native people and non-Native people by sexual orientation. Due to small sample sizes, contrasts between men and women were not possible, and gay, lesbian, and bisexual adults were combined and compared to heterosexual adults as a group.

Table 4c. E-cigarette use by race/ethnicity and sexual orientation.

	Alaska Native people		Non-Native people	
	Heterosexual (N=1,731)	Gay, Lesbian, Bisexual (N=67)	Heterosexual (N=9,550)	Gay, Lesbian, Bisexual (N=275)
Current e-cigarette use*	7%	19%[c]	14%	30%
No e-cigarette use	93%	81%	86%	71%

Source: Alaska BRFSS Standard File, 2014; Standard and Supplemental Combined File, 2015

[c] This number may be statistically unreliable and should be interpreted with caution.

* Significant differences between LGB and heterosexual Alaska Native people and LGB and heterosexual non-Native people.

- Regardless of sexual orientation, use of e-cigarettes is not significantly different between Alaska Native people and non-Native people.
- Gay, lesbian, and bisexual Alaska Native people are significantly more likely than heterosexual Alaska Native people to report e-cigarette use ($p < 0.05$).
- The same is found among non-Native people. LGB non-Native people are significantly more likely than heterosexual non-Native people to report e-cigarette use ($p < 0.01$).

5. Marijuana

Questions about marijuana use began appearing on the Alaska Standard and Supplemental BRFSS in 2015. Respondents are asked several questions about marijuana use, including how often they have used in the past 30 days, the method of use (e.g., smoke, eat, vape, dab, etc.), and whether any use was for medical purposes. The following analysis is based on the question "During the past 30 days, on how many days did you use marijuana or hashish?" Respondents who indicated marijuana use during one or more days in the past 30 are considered current users.

Findings indicate that marijuana use differs by gender and, for women, by sexual orientation:

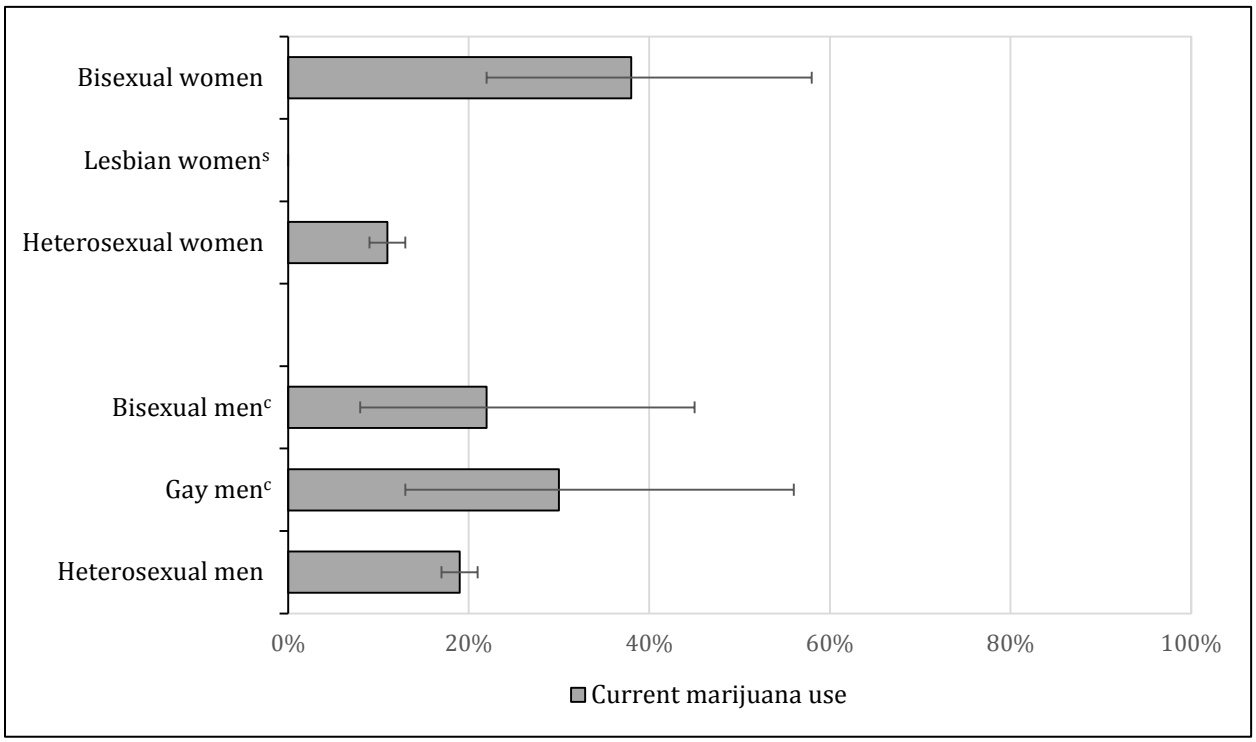


Figure 5a. Current marijuana use by gender and sexual orientation.
Source: Alaska BRFSS Standard and Supplemental Combined File, 2015 only
[c] This number may be statistically unreliable and should be interpreted with caution.
[s] This number is suppressed because it is statistically unreliable.

Figure 5a. Current marijuana use by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=3,239)	**Gay (N=57)**	**Bisexual (N=50)**	**Heterosexual (N=3,805)**	**Lesbian (N=54)**	**Bisexual (N=74)**
Current marijuana use*	19%	30%[c]	22%[c]	11%	[s]	38%
No marijuana use	81%	70%	78%	89%	74%	62%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2015
[c] This number may be statistically unreliable and should be interpreted with caution.
[s] This number is suppressed because it is statistically unreliable.

* Significant difference between bisexual and heterosexual women.

- Marijuana use is more common among men versus women, regardless of sexual orientation ($p < 0.01$). Nineteen percent of male respondents indicated current marijuana use, compared to only 12% of women.
- Marijuana use is not significantly different among men based on sexual orientation.
- Marijuana use is significantly higher among bisexual women relative to heterosexual women ($p < 0.01$).

Marijuana: Controlling for Age

The relationship between sexual orientation and marijuana use was examined again while controlling for age:

Table 5b. Models predicting current marijuana use from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.97	0.97-0.98	<0.01	0.98	0.97-0.99	<0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	1.86	0.63-5.47	0.26	2.85	0.71-11.42	0.14
	Bisexual	1.19	0.39-3.59	0.76	4.95	2.17-11.31	<0.01
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	1.43	0.50-4.12	0.50	2.87	0.74-11.10	0.13
	Bisexual	1.04	0.35-3.11	0.95	3.87	1.65-9.05	<0.01
	Age	0.98	0.97-0.98	<0.01	0.98	0.97-0.99	<0.01

Source: Alaska BRFSS Standard and Supplemental Combined File, 2015 only

- Age is significantly associated with marijuana use among men and women, regardless of sexual orientation. The likelihood of marijuana use decreases with age in both groups.
- Controlling for age did not impact the relationship between marijuana use and sexual orientation among men. There continue to be no significant differences in marijuana use based on sexual orientation.
- Among women, the relationship between marijuana use and sexual orientation is largely unchanged when age is controlled. When age is not controlled, bisexual women are nearly five times more likely than heterosexual women to report marijuana use (OR = 4.95, $p < 0.01$). When age is controlled, bisexual women are still nearly four times more likely than heterosexual women to report marijuana use (OR = 3.87, $p < 0.01$). The differences between heterosexual women and lesbian women, and bisexual women and lesbian women remain statistically insignificant.

Marijuana: Alaska Native people vs. Non-Native people

Differences in marijuana use were examined between Alaska Native people and non-Native people by sexual orientation. Because of small sample sizes, contrasts between men and women were not possible. In addition, gay/lesbian and bisexual respondents were combined into a single group and compared with heterosexual respondents.

Table 5c. Current marijuana use by race/ethnicity and sexual orientation.

	Alaska Native people		Non-Native people	
	Heterosexual (N=1,094)	Gay, Lesbian, Bisexual (N=45)	Heterosexual (N=5,803)	Gay, Lesbian, Bisexual (N=185)
Current marijuana use*	22%	34%[c]	14%	30%
No marijuana use	79%	66%	86%	71%

Source: Alaska BRFSS Standard and Supplemental Combined File, 2015

[c] This number may be statistically unreliable and should be interpreted with caution.

* Significant difference between LGB non-Native people and heterosexual non-Native people.

- Alaska Native people are more likely to report current marijuana use than non-Native people, regardless of sexual orientation ($p < 0.01$). Prevalence of marijuana use among Alaska Native people is 22%, compared to 15% among non-Native people.
- Marijuana use is not significantly different among Alaska Native people based on sexual orientation ($p = 0.18$).
- Among non-Native people, LGB respondents are significantly more likely to use marijuana than heterosexual respondents ($p < 0.01$).

6. Binge Drinking

Alcohol and tobacco are two of the primary causes of preventable death in the United States. Alcohol use and tobacco use are highly correlated—that is, people who smoke are more likely to drink alcohol and people who drink alcohol are more likely to smoke. Addiction to both is also strongly linked. Smokers are more likely to be dependent on alcohol than nonsmokers, and people who are dependent on alcohol are significantly more likely to be smokers.[v] Understanding the ways in which tobacco use may interact with alcohol abuse within the LGB community may be key to identifying effective prevention and intervention strategies.

Questions about excessive alcohol consumption appeared only on the Alaska Standard BRFSS survey from 2012 to 2014 and then appeared on both the Standard and Supplemental surveys in 2015. Respondents were asked to report the number of days in the previous 30 where they drank several alcoholic beverages (i.e., more than 4 for women or 5 for men) on a single occasion. This question addresses binge drinking, which is a type of excessive alcohol use.[vi]

Results indicate that binge drinking differs by gender and sexual orientation:

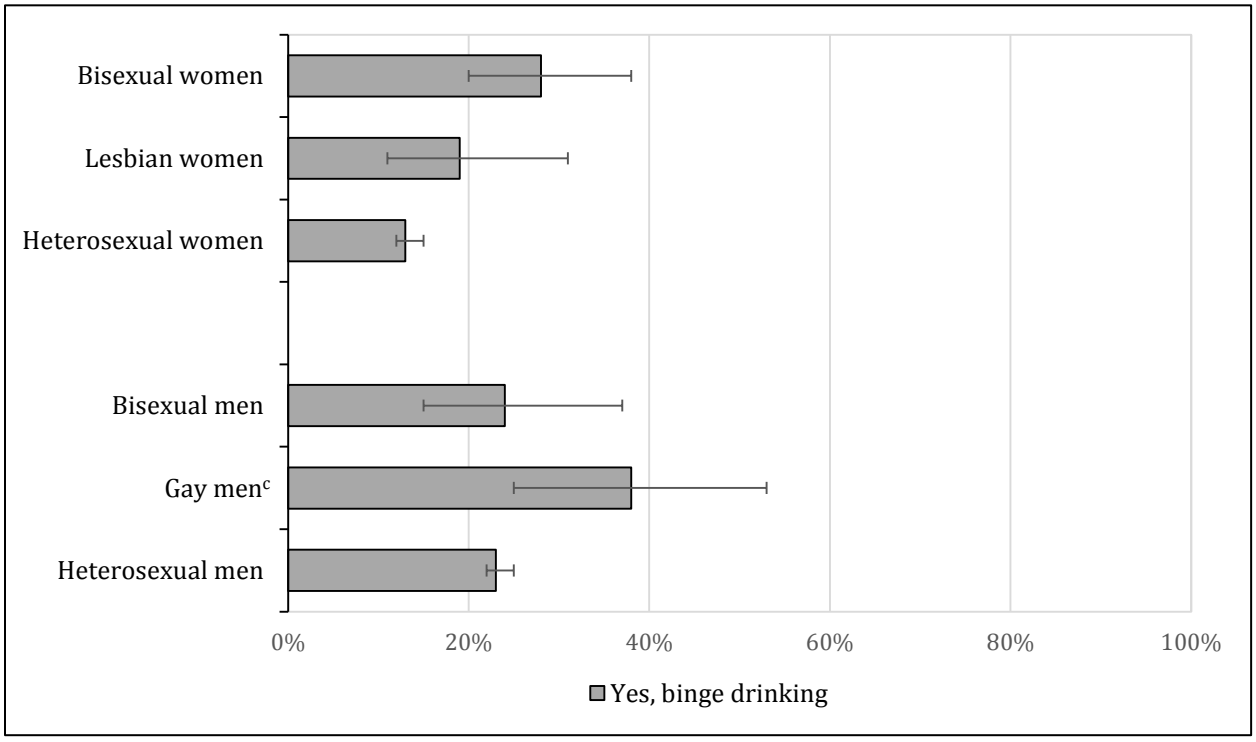


Figure 6a. Binge drinking by gender and sexual orientation.

Source: Alaska BRFSS Standard File, 2012-2014; Standard and Supplemental Combined File 2015

[c] This number may be statistically unreliable and should be interpreted with caution.

Table 6a. Binge drinking by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=8,349)	**Gay (N=102)**	**Bisexual (N=102)**	**Heterosexual (N=9,869)**	**Lesbian (N=139)**	**Bisexual (N=193)**
Binge drinking*†	23%	38%[c]	24%	13%	19%	28%
No binge drinking	77%	62%	76%	87%	81%	72%

Source: Alaska BRFSS Standard File, 2012-2014; Standard and Supplemental Combined File, 2015

[c] This number may be statistically unreliable and should be interpreted with caution.

* Significant difference between bisexual women and heterosexual women.

† Marginal difference between gay men and heterosexual men.

- Men are significantly more likely than women to report binge drinking, regardless of sexual orientation ($p < 0.01$). Twenty-four percent of men reported binge drinking on at least one occasion in the last 30 days compared to only 14% of women.
- Among men, gay men are more likely to report binge drinking than heterosexual men ($p < .05$. Heterosexual and bisexual men's reported binge drinking is not statistically different ($p = 0.90$).
- Reported binge drinking is significantly more prevalent among bisexual women compared to heterosexual women ($p < 0.01$) but not lesbian women ($p = 0.20$). Binge drinking reported by heterosexual and lesbian women is not statistically different ($p = 0.21$).

Binge Drinking: Controlling for Age

Evidence of alcohol abuse was examined again while controlling statistically for age.

Table 6b. Models predicting binge drinking from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.97	0.97-0.98	<0.01	0.97	0.96-0.97	<0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	2.01	1.10-3.66	0.02	1.51	0.79-2.90	0.21
	Bisexual	1.04	0.56-1.94	0.90	2.53	1.60-3.98	<0.01
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian	1.67	0.90-3.08	0.10	1.59	0.84-2.99	0.15
	Bisexual	0.89	0.48-1.68	0.73	1.82	1.13-2.94	0.01
	Age	0.98	0.97-0.98	<0.01	0.97	0.96-0.98	<0.01

Source: Alaska BRFSS Standard File, 2012-2014; Standard and Supplemental Combined File, 2015

- Age is significantly associated with binge drinking among men and women, regardless of sexual orientation. The likelihood of binge drinking decreases with age in both groups.
- Among men, controlling for age significantly changes the relationship between binge drinking and sexual orientation. When age is not controlled, gay men are significantly more likely to report binge drinking than heterosexual men ($p < 0.05$). When age is controlled, the difference becomes only marginally significant ($p = 0.10$). Bisexual men's binge drinking is not statistically different from that of heterosexual or gay men regardless of controlling for age.
- Controlling for age does not significantly impact the relationship between binge drinking and sexual orientation among women. Bisexual women are significantly more likely than heterosexual women to report binge drinking whether or not age is controlled. Heterosexual women's binge drinking is still not significantly different from lesbian women's, and lesbian women are still no different from bisexual women.

Binge Drinking: Alaska Native people vs. Non-Native people

Binge drinking patterns were examined between Alaska Native people and non-Native people by sexual orientation. Due to small sample sizes, contrasts between men and women were not possible.

Table 6c. Binge drinking by race/ethnicity and sexual orientation.

	Alaska Native people			Non-Native people		
	Heterosexual (N=2,790)	Gay/Lesbian (N=37)	Bisexual (N=53)	Heterosexual (N=15,095)	Gay/Lesbian (N=200)	Bisexual (N=236)
Binge drinking	21%	16%[c]	23%[c]	18%	28%	27%
No binge drinking	79%	84%	77%	82%	72%	73%

Source: Alaska BRFSS Standard File, 2012-2014; Standard and Supplemental Combined File 2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between bisexual women and heterosexual women.

- Prevalence of binge drinking is not significantly different between Alaska Native and non-Native people ($p = 0.37$). Twenty percent of Alaska Native people and 19% of non-Native people report binge drinking in the last 30 days.
- Binge drinking is not significantly different among Alaska Native people based on sexual orientation ($p = 0.79$).
- Heterosexual non-Native people are significantly less likely to report binge drinking in the past 30 days compared to gay/lesbian and bisexual non-Native people ($p < 0.05$).

Binge Drinking: Smokers vs. Nonsmokers

Given the known relationship between alcohol use/abuse and smoking status, binge drinking was examined again by smoking status and sexual orientation. Former smokers and never smokers were categorized as nonsmokers.

Table 6d. Binge drinking by smoking status and sexual orientation.

	Current Smokers			Nonsmokers		
	Heterosexual (N=3,185)	**Gay/Lesbian (N=53)**	**Bisexual (N=83)**	**Heterosexual (N=14,937)**	**Gay/Lesbian (N=187)**	**Bisexual (N=211)**
Binge drinking*†	32%	29%[c]	44%	15%	27%[c]	17%
No binge drinking	68%	71%	56%	85%	74%	83%

Source: Alaska BRFSS Standard File, 2012-2014; Standard and Supplemental Combined File 2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between gay/lesbian nonsmokers and heterosexual nonsmokers.
† Marginally significant difference between gay/lesbian nonsmokers and bisexual nonsmokers.

- Binge drinking is significantly different by smoking status ($p < 0.01$). Thirty-two percent of smokers report recent binge drinking versus only 16% of nonsmokers.
- Among current smokers, differences in binge drinking by sexual orientation are not significant ($p = 0.17$).
- Gay/lesbian nonsmokers are significantly more likely to report binge drinking compared to heterosexual nonsmokers ($p < 0.05$), and marginally more likely than bisexual nonsmokers to report binge drinking ($p = 0.09$).

7. Secondhand Smoke: Exposure

Exposure to secondhand smoke increases the risk of many serious health issues, including heart disease, stroke, and lung cancer.[vii] Clean indoor air or smokefree policies can reduce exposure to secondhand smoke and have also been found to decrease smoking prevalence among individuals covered by these policies.[viii] Public health outreach regarding the dangers of secondhand smoke has prompted changes to many state and local ordinances to ensure smokefree workplaces, restaurants, and bars. As a result, about 50% of Alaska residents are covered by comprehensive smokefree policies.[ix]

Number of Smokers at Home: Nonsmokers Only

Smokers are inherently exposed to secondhand smoke in the home from their own smoking behavior (and if they live with other smokers), but nonsmokers are only exposed to secondhand smoke at home if they live with one or more smokers. Nonsmokers who are exposed to secondhand smoke at home are at higher risk of developing lung cancer and may even suffer early death.[x] Due to small sample sizes, contrasts between male and female nonsmokers were not possible. Nonsmokers who reported living with one and two or more smokers were combined and contrasted with those not living with smokers. Nonsmokers include former smokers and never smokers.

Table 7a. Number of smokers living at home among nonsmokers by sexual orientation.

	Nonsmokers		
	Heterosexual (N=13,588)	**Gay/Lesbian (N=146)**	**Bisexual (N=156)**
1+ smokers at home	15%	17%[c]	21%
No smokers at home	85%	83%	79%

Source: Alaska BRFSS Supplemental File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.

- The number of smokers living in the home does not differ significantly by sexual orientation among nonsmokers ($p = 0.57$).

Indoor Secondhand Smoke Exposure at Home or Work

Respondents' experiences with secondhand smoke are further measured on the Supplemental BRFSS via questions about exposure while indoors at home and/or at work. Specifically, respondents are asked to report the number of days in the past 30 where anyone (including the respondent) smoked inside their home and/or workplace (for those who work indoors). Contrasts between men and women were not possible due to small sample sizes, however tests were conducted by smoking status (i.e., current smokers versus nonsmokers).

Table 7b. Secondhand smoke exposure at home or work by smoking status and sexual orientation.

	Current Smokers			Nonsmokers		
	Heterosexual (N=2,787)	Gay/Lesbian (N=51)	Bisexual (N=75)	Heterosexual (N=13,585)	Gay/Lesbian (N=146)	Bisexual (N=157)
Indoor SHS exposure	31%	26%[c]	32%	8%	15%[c]	10%[c]
No indoor SHS exposure	69%	74%	68%	92%	86%	90%

Source: Alaska BRFSS Supplemental File, 2012-2015

[c] This number may be statistically unreliable and should be interpreted with caution.

- Regardless of sexual orientation, exposure to secondhand smoke differs significantly by smoking status. Not surprisingly, current smokers are more likely to report one or more days in the past 30 where anyone (including the respondent) smoked inside their home and/or workplace ($p < 0.01$)
- Exposure to secondhand smoke indoors at home or in the workplace does not differ significantly by sexual orientation for current smokers ($p = 0.88$) or nonsmokers ($p = 0.28$).

Smokefree Policies in the Home

Changes to state laws and ordinances may be able to prohibit individuals from smoking in public places or buildings, but families are on their own to establish smokefree policies in the privacy of their own homes. Some families may only allow smoking outside while others may allow smoking anywhere in the house or only inside a designated room. Prior research suggests that smokefree policies inside the home increase the likelihood that current smokers will quit;[xi] therefore determining whether LGB respondents are more or less likely to have anti-smoking rules in the home may be an important step in understanding discrepancies in smoking behavior.

Alaska residents are asked about smokefree policies in the home on the Supplemental BRFSS. Respondents who indicated that smoking is allowed anywhere in the home or in some places inside the home were combined and compared to respondents who do not allow smoking anywhere in the home. Contrasts were examined by gender as well as smoking status. Nonsmokers include former smokers and never smokers.

Results show differences in smokefree policies at home by gender and, for women, by sexual orientation:

Table 7c. Smoking rules at home by gender and sexual orientation.

	Male			Female		
	Heterosexual (N=7,585)	**Gay (N=91)**	**Bisexual (N=81)**	**Heterosexual (N=8,740)**	**Lesbian (N=103)**	**Bisexual (N=148)**
No smokefree policy in the home*	11%	17%[c]	17%[c]	8%	15%[c]	24%
Smokefree policy in the home	89%	83%	83%	92%	85%	76%

Source: Alaska BRFSS Supplemental File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between bisexual women and heterosexual women.

- Regardless of sexual orientation, the vast majority of respondents report having a smokefree policy in the home. Ninety-one percent of women and 89% of men do not allow smoking in the home, and the difference is statistically significant ($p < 0.01$).
- Among men, sexual orientation is not significantly related to the likelihood of having a smokefree policy in the home.
- Only 76% of bisexual women reported a smokefree policy in the home—significantly less than heterosexual women (92%; $p < 0.01$).

Findings indicate differences in smokefree policies at home based on smoking status and sexual orientation. Due to small sample sizes, gay, lesbian, and bisexual adults were combined and compared with heterosexual adults within smoking status:

Table 7d. Smoking rules at home among smokers and nonsmokers by sexual orientation.

	Current Smokers		Nonsmokers	
	Heterosexual (N=2,769)	**Gay, Lesbian, Bisexual (N=123)**	**Heterosexual (N=13,453)**	**Gay, Lesbian, Bisexual (N=299)**
No smokefree policy in the home	28%	32%	5%	11%[c]
Smokefree policy in the home*	72%	68%	95%	89%

Source: Alaska BRFSS Supplemental File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between LGB nonsmokers and heterosexual nonsmokers.

- Not unexpectedly, current smokers are significantly less likely than nonsmokers to have smokefree policies at home (72% vs. 95%, $p < 0.01$).
- For current smokers, smokefree policies in the home are not related to differences in sexual orientation.
- Gay, lesbian, and bisexual nonsmokers are significantly less likely than heterosexual nonsmokers to have a smokefree policy in the home ($p < 0.05$).

8. Secondhand Smoke: Knowledge, Attitudes, and Behaviors

Evidence suggests that knowledge and attitudes about secondhand smoke may influence smoking behavior in nonsmokers and current smokers.[xii] For example, research shows that educating adults about the health risks associated with secondhand smoke prevents nonsmokers from initiating smoking and supports quitting attempts among current smokers.[xiii] Reviewing whether knowledge and attitudes about secondhand smoke vary based on sexual orientation may be key to developing effective education and prevention strategies for LGB Alaska residents.

Knowledge of Harm caused by Secondhand Smoke

Respondents' knowledge of the harm caused by secondhand smoke is measured via a single question on the Supplemental BRFSS: "Do you think that breathing smoke from other people's cigarettes is: very harmful, somewhat harmful, not very harmful, or not harmful at all to one's health?" Responses of "not very harmful", "not harmful at all", and "don't know" are reported here as "SHS is not harmful". Responses of "very harmful" and "somewhat harmful" are reported here as "SHS is harmful". Due to small sample sizes, gay and bisexual men were compared as a group with heterosexual men, and lesbian and bisexual women were compared as a group with heterosexual women.

Results indicate that knowledge of the harmful effects of secondhand smoke differs significantly between men and women, and marginally by sexual orientation among men:

Table 8a. Knowledge of harm caused by secondhand smoke by gender and sexual orientation.

	Men		Women	
	Heterosexual (N=7,603)	**Gay & Bisexual (N=175)**	**Heterosexual (N=5,803)**	**Lesbian & Bisexual (N=185)**
SHS is not harmful	12%	6%[c]	5%	4%[c]
SHS is harmful[†]	88%	94%	95%	96%

Source: Alaska BRFSS Supplemental File, 2012-2015

[c] This number may be statistically unreliable and should be interpreted with caution.

[†] Marginally significant difference between gay/bisexual men and heterosexual men.

- Women are more likely than men to indicate that breathing secondhand smoke is harmful, regardless of sexual orientation (95% of women vs. 88% of men, $p < 0.01$).
- Gay and bisexual men are marginally more likely than heterosexual men to indicate that secondhand smoke is harmful to one's health ($p = 0.06$).
- Sexual orientation is unrelated to knowing about the dangers of secondhand smoke among women.

Findings also show that knowledge of harm from secondhand smoke differs significantly by smoking status and, for current smokers, by sexual orientation:

Table 8b. Knowledge of harm caused by secondhand smoke by smoking status and sexual orientation.

	Current Smokers		Nonsmokers	
	Heterosexual (N=2,757)	**Gay & Bisexual (N=126)**	**Heterosexual (N=13,509)**	**Lesbian & Bisexual (N=303)**
SHS is not harmful	16%	4%[c]	6%	5%[c]
SHS is harmful*	84%	96%	94%	95%

Source: Alaska BRFSS Supplemental File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between heterosexual current smokers and LGB current smokers.

- Regardless of sexual orientation, the majority of current smokers and nonsmokers believe that breathing secondhand smoke is harmful; however, current smokers are significantly less likely than nonsmokers to believe in the harmful effects (84% vs. 93%; $p < 0.01$).
- Among current smokers, heterosexual adults are less likely than gay, lesbian, and bisexual adults to believe secondhand smoke causes harm ($p < 0.01$).

Knowledge of Harm: Controlling for Age

Given the age differences by sexual orientation among Alaska BRFSS respondents, knowledge of the harmful effects of secondhand smoke was reexamined controlling for age:

Table 8c. Models predicting knowledge of harm caused by secondhand smoke from sexual orientation and age, by gender.

		Men			Women		
Model	**Variable**	**OR**	**95% CI**	***p***	**OR**	**95% CI**	***p***
Age	**Age**	0.99	0.98-0.99	<0.01	0.97	0.96-0.98	<0.01
Sexual Orientation	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian/Bisexual	2.12	0.95-4.73	0.07	1.26	0.59-2.67	0.56
Sexual Orientation & Age	**Heterosexual**	*Ref.*			*Ref.*		
	Gay/Lesbian/Bisexual	1.92	0.86-4.29	0.11	0.89	0.42-1.92	0.77
	Age	0.98	0.98-0.99	<0.01	0.97	0.96-0.98	<0.01

Source: Alaska BRFSS Supplemental File, 2012-2015

- Age is significantly associated with knowledge of harm among men and women, regardless of sexual orientation. The likelihood of indicating secondhand smoke is harmful decreases with respondents' age—that is, older adults are less likely to report knowing about the dangers of breathing secondhand smoke.
- Among men, the relationship between knowledge of harm and sexual orientation is changed slightly when controlling for age. When age is not controlled, gay and bisexual men are about two times more likely than heterosexual men to indicate that secondhand smoke is harmful, but the effect is only marginally significant (OR = 2.12, p = 0.07).

After age is controlled, the odds of gay and bisexual men indicating secondhand smoke is harmful decrease slightly and the effect loses marginal significance (OR = 1.92, p = 0.11).

- Sexual orientation is not statistically related to knowledge of harm among women regardless of controlling for age.

Protecting People from Secondhand Smoke

The Supplemental BRFSS also assesses respondents' attitudes about whether people should be protected from the smoke of other people's cigarettes. Respondents who indicate they agree or strongly agree that people should be protected from secondhand smoke were contrasted with respondents who reported that they disagree, strongly disagree, or don't know. Due to small sample sizes, gay and bisexual men were compared as a group to heterosexual men, and lesbian and bisexual women were compared as a group to heterosexual women.

Findings show that attitudes differ significantly between men and women, but not by sexual orientation.

Table 8d. Attitudes about protecting people from secondhand smoke by gender and sexual orientation.

	Men		Women	
	Heterosexual (N=7,613)	**Gay & Bisexual (N=175)**	**Heterosexual (N=5,803)**	**Lesbian & Bisexual (N=185)**
People do not need protection from SHS	15%	12%[c]	7%	10%
People should be protected from SHS	85%	88%	93%	90%

Source: Alaska BRFSS Supplemental File, 2012-2015

[c] This number may be statistically unreliable and should be interpreted with caution.

- Regardless of sexual orientation, women are more likely than men to agree or strongly agree that people should be protected from other people's cigarette smoke (93% vs 85%; $p < 0.01$).
- Sexual orientation is not associated with either men's or women's attitudes about protecting people from secondhand smoke.

Attitudes about protecting others from cigarette smoke differ significantly by smoking status, but not by sexual orientation within smoking status:

Table 8e. Attitudes about protecting people from secondhand smoke by smoking status and sexual orientation.

	Current Smokers		Nonsmokers	
	Heterosexual (N=2,766)	Gay & Bisexual (N=126)	Heterosexual (N=13,510)	Lesbian & Bisexual (N=302)
People do not need protection from SHS	19%	14%	9%	8%
People should be protected from SHS	81%	86%	91%	92%

Source: Alaska BRFSS Supplemental File, 2012-2015

- Eighty-one percent of current smokers agree or strongly agree that people should be protected from secondhand smoke, significantly less than nonsmokers (90%, $p < 0.01$).
- Sexual orientation is not significantly related to smokers' or nonsmokers' beliefs about protecting others from secondhand smoke.

Response to Smokefree Policies Enacted in Bars and Cocktail Lounges

Policies restricting where people can smoke have made cigarette use less socially acceptable and less convenient, and thus, have encouraged cessation and discouraged uptake of smoking.[xiv] Studies across the country show that comprehensive clean indoor air policies—where smoking is prohibited in restaurants, bars, and cocktail lounges—help protect workers and patrons from secondhand smoke exposure and do not have an adverse impact on the hospitality industry.[xv] In addition, clean indoor air policies passed by states and local municipalities have been shown to be extremely effective at increasing smoking cessation.[xvi,xvii] For nonsmokers, the likelihood that they will visit smokefree bars may increase since secondhand smoke exposure is no longer an issue. To monitor behavior changes related to changes in policy, respondents on the Supplemental BRFSS who live in areas where indoor smokefree policies apply to bars and cocktail lounges are asked whether they visit these establishments more often, less often, or no differently since the implementation of the smokefree policy. Analysis of the data includes only those respondents who reported knowing that smoking is not allowed in bars in their community; respondents who said smoking is allowed in bars, did not know if it was allowed, or said that there were no bars in their community were not included in the analysis. Due to small sample sizes, gay and bisexual men were compared as a group to heterosexual men, and lesbian and bisexual women were compared as a group to heterosexual women. Contrasts were also tested between smokers and nonsmokers.

Results indicate that behavior related to visiting establishments with smokefree policies are significantly different between men and women, and marginally different by sexual orientation among women:

Table 8f. Changes in behavior after implementation of smokefree policies in bars and cocktail lounges by gender and sexual orientation.

	Men		Women	
	Heterosexual (N=3,002)	**Gay & Bisexual (N=95)**	**Heterosexual (N=5,803)**	**Lesbian & Bisexual (N=185)**
Visit bars less since implementation of smokefree policy [†]	6%	[s]	4%	9%[c]
Visit bars more/no different since implementation of smokefree policy	94%	98%	97%	91%

Source: Alaska BRFSS Supplemental File, 2012-2015

[s] This number is suppressed because it is statistically unreliable.

[†] Marginally significant difference between lesbian/bisexual women and heterosexual women.

- The majority of men and women reported visiting bars either more or no differently since smokefree policies were implemented, although women more so than men (96% vs. 94%, $p < 0.05$).
- Among men, more heterosexual men than gay and bisexual men reported visiting bars *less* since smokefree policies were implemented, but the difference was not significant ($p = 0.12$).
- Lesbian and bisexual women tended to indicate they also visited bars less since smokefree policies were implemented. Nine percent of lesbian and bisexual women said they visit bars less now that smoking is not allowed, versus only 4% of heterosexual women ($p = 0.06$).

Behavior related to visiting smokefree bars differs significantly by smoking status:

Table 8g. Changes in behavior after implementation of smokefree policies in bars and cocktail lounges by smoking status and sexual orientation.

	Current Smokers		Nonsmokers	
	Heterosexual (N=1,097)	**Gay, Lesbian, Bisexual (N=53)**	**Heterosexual (N=5,215)**	**Gay, Lesbian, Bisexual (N=154)**
Visit bars less since implementation of smokefree policy	13%	[s]	3%	[s]
Visit bars more/no different since implementation of smokefree policy	87%	92%	97%	96%

Source: Alaska BRFSS Supplemental File, 2012-2015

[s] This number is suppressed because it is statistically unreliable.

- Current smokers are significantly more likely than nonsmokers to say that they visit bars *less* since smoking has not been allowed (13% vs. 3%, $p < 0.01$), however the vast

majority of both groups report that they visit bars either more or no differently since smokefree policies were implemented.

- Behavior changes in response to smokefree policies were not possible to estimate within smoking status by sexual orientation.

Preference for Nonsmoking Spaces

The Supplemental BRFSS further measures respondents' attitudes and opinions about secondhand smoke via a single question about where they like to spend time, specifically: "Do you disagree or agree with the following statement: I prefer to spend time where people are not smoking." Respondents who indicate they agree or strongly agree were contrasted with respondents who reported that they disagree, strongly disagree, or don't know if they prefer to spend time where people are not smoking.

Findings show different preferences by gender and, for women, by sexual orientation:

Table 8h. Preferences for nonsmoking spaces by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=7,356)	**Gay (N=91)**	**Bisexual (N=81)**	**Heterosexual (N=8,565)**	**Lesbian (N=101)**	**Bisexual (N=145)**
Do not prefer to spend time where people are not smoking*	15%	11%[c]	22%	10%	16%[c]	25%
Prefer to spend time where people are not smoking	85%	89%	78%	90%	84%	75%

Source: Alaska BRFSS Supplemental File, 2012-2015

[c] This number may be statistically unreliable and should be interpreted with caution.

* Significant difference between bisexual women and heterosexual women.

- The majority of both men and women prefer to spend time where people are not smoking, however men and women are statistically different. Eighty-five percent of men indicate they prefer to spend them where people are not smoking versus 90% of women ($p < 0.01$).
- Men's preferences for spending time in places where people are not smoking are no different by sexual orientation ($p = 0.34$).
- Bisexual women's preferences for spending time in places where people are not smoking are significantly different from those of heterosexual women. Only 75% of bisexual women state they prefer to be in places where people are not smoking, versus 90% of heterosexual women ($p < 0.01$).

Not surprisingly, preferences for spending time where people are not smoking differ significantly by smoking status. Differences are also present by sexual orientation among nonsmokers. Due to

small sample sizes, gay, lesbian, and bisexual adults were compared as a group with heterosexual adults within smoking status:

Table 8i. Preferences for nonsmoking spaces by smoking status and sexual orientation.

	Current Smokers		Nonsmokers	
	Heterosexual (N=2,499)	**Gay, Lesbian, Bisexual (N=117)**	**Heterosexual (N=13,324)**	**Gay, Lesbian, Bisexual (N=300)**
Do not prefer to spend time where people are not smoking	64%	36%	6%	9%
Prefer to spend time where people are not smoking [m]	57%	64%	94%	91%

Source: Alaska BRFSS Supplemental File, 2012-2015

[m] Marginally significant difference between LGB nonsmokers and heterosexual nonsmokers.

- Regardless of sexual orientation, 94% of nonsmokers prefer to spend time where people are not smoking versus only 58% of current smokers ($p < 0.01$).
- Among current smokers, preferences for spending time where people are not smoking did not differ by sexual orientation ($p = 0.40$).
- LGB nonsmokers are marginally less likely than heterosexual nonsmokers to report that they prefer to spend time where people are not smoking. Ninety-four percent of heterosexual adults prefer to spend time in places where people are not smoking versus 91% of bisexual adults ($p = 0.07$). This may suggest that LGB adults as a subpopulation may be more accepting of smoking behavior in general, regardless of personal smoking status.

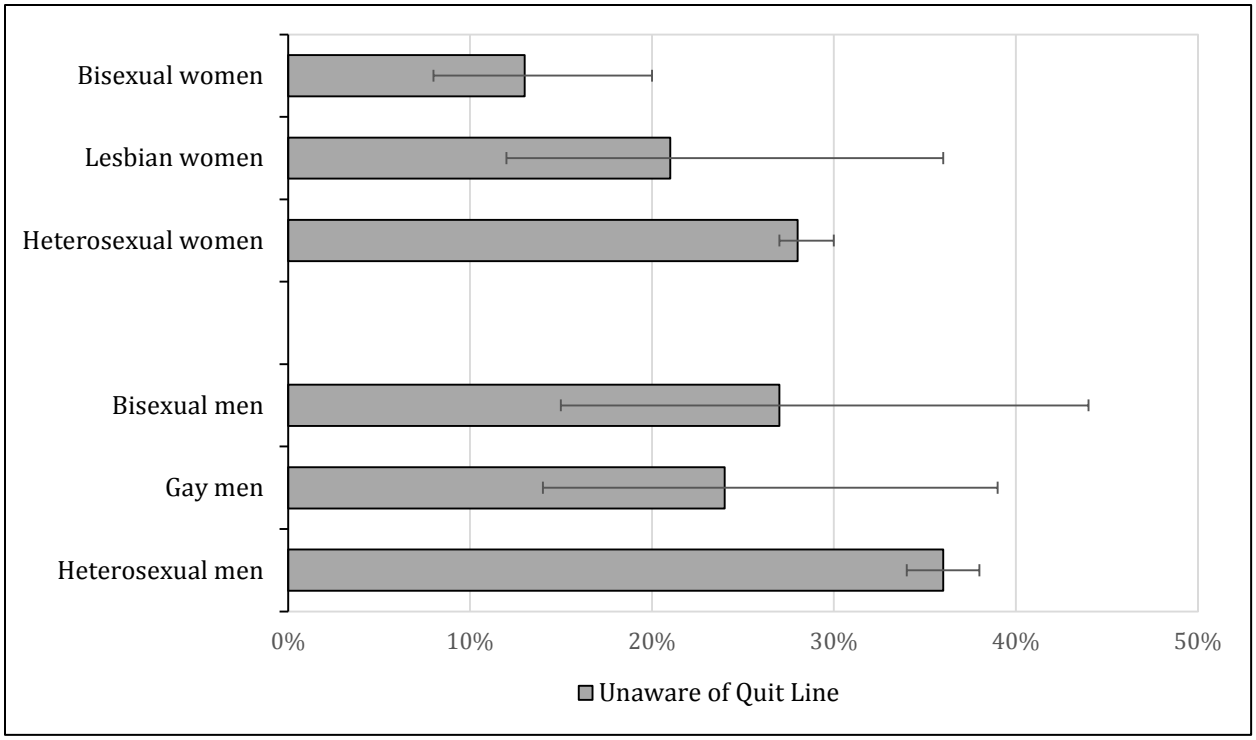
Section 9: Awareness of Alaska's Tobacco Quit Line

Given the relatively small number of LGB respondents on the Supplemental BRFSS, we do not have enough analytic power to examine many of the smoking cessation-related questions by gender and sexual orientation—especially since most of these questions pertain to current smokers only. However, one cessation indicator that is answered by all respondents on the Supplemental BRFSS (i.e., both smokers and nonsmokers) is awareness of Alaska's Tobacco Quit Line.

Alaska's Tobacco Quit Line is a free, confidential service that provides tips and resources for tobacco users who are thinking about quitting or ready to quit. The Quit Line offers services like text messages, emails, and access to a limited supply of free nicotine replacement therapy (i.e., nicotine patches, gum, and lozenges). Tobacco users can also request support from quitting "coaches" either via telephone or on the web. Alaska's Tobacco Quit Line offers resources for users of all tobacco types (including Iqmik) and provides specialized services for teen users. Tobacco quitlines are widespread across North America, and evidence suggests they are generally effective in helping users quit[xviii]—however a few studies show less effectiveness with certain subpopulations including American Indian and Alaska Native people.[xix,xx]

Respondents' awareness of the Quit Line is assessed on the Supplemental BRFSS via one question: "Are you aware of the Alaska Tobacco Quit Line, which is a telephone service that can help people quit smoking or using smokeless tobacco?"

Figure 9a. Awareness of Alaska's Tobacco Quit Line by gender and sexual orientation.



Source: Alaska BRFSS Supplemental File, 2012-2015

Table 9a. Awareness of Alaska's Tobacco Quit Line by gender and sexual orientation.

	Men			Women		
	Heterosexual (N=7,611)	Gay (N=92)	Bisexual (N=81)	Heterosexual (N=8,724)	Lesbian (N=104)	Bisexual (N=150)
Unaware of Quit Line*	36%	24%	27%	28%	21%	13%
Aware of Quit Line	64%	76%	73%	72%	79%	87%

Source: Alaska BRFSS Supplemental File, 2012-2015
* Significant difference between bisexual women and heterosexual women.

- The majority of both men and women are aware of Alaska's Tobacco Quit Line, however significantly more women than men report knowing about it (72% vs. 64%, $p < 0.01$).
- Awareness of the Quit Line is the same among men, regardless of sexual orientation.
- Bisexual women are significantly more likely than heterosexual women to be aware of the Quit Line. Twenty-eight percent of heterosexual women reported that they did not know about the Quit Line, versus only 13% of bisexual women ($p < 0.01$).

Certainly, the most important target group for Alaska's Tobacco Quit Line is current tobacco users, including current smokers. Among current smokers, awareness of the Quit Line appears to differ by sexual orientation. Due to small sample sizes, gay, lesbian, and bisexual adults were combined and contrasted as a group with heterosexual adults:

Table 9b. Awareness of Alaska's Tobacco Quit Line among current smokers by sexual orientation.

	Current Smokers	
	Heterosexual (N=2,768)	Gay, Lesbian, Bisexual (N=124)
Unaware of Quit Line*	20%	10%[c]
Aware of Quit Line	80%	90%

Source: Alaska BRFSS Supplemental File, 2012-2015
[c] This number may be statistically unreliable and should be interpreted with caution.
* Significant difference between LGB and heterosexual current smokers.

- Eighty-one percent of current smokers are aware of Alaska's Tobacco Quit Line.
- LGB smokers are significantly more likely to report they are aware of the Quit Line compared to heterosexual smokers ($p < 0.05$).

Discussion

Our findings add to and confirm previous research on smoking and tobacco use among individuals from the LGB community. In general, results show significant differences by gender, sexual orientation, Alaska Native race, and smoking status. Large disparities were found among women relative to sexual orientation within nearly every tested indicator including smoking status, marijuana and e-cigarette use, binge drinking, exposure to secondhand smoke, knowledge about secondhand smoke, visiting establishments after smokefree policies were implemented, and preferences for spending time where people are not smoking. Disparities among women were particularly evident in comparisons between bisexual women and heterosexual women, and in some cases between bisexual women and lesbian women (e.g., current smoking). When disparities were present among women by sexual orientation, lesbian and bisexual women fared worse than heterosexual women without exception, and those disparities persisted despite controlling statistically for age. Aside from gay men's significantly higher prevalence of binge drinking, the level of disparity found among women based on sexual orientation was not found among men. This is consistent with recent observations that differences in tobacco use by sexual orientation may be declining among men, but not among women.[xxi]

Findings also confirm previous research on smoking and tobacco use among Alaska Native people, and add to this work by testing for differences among Alaska Native and non-Native people based on sexual orientation. In general, Alaska Native people were significantly more likely than non-Native people to be current smokers and to use SLT and marijuana regardless of sexual orientation. Findings indicate only two significant differences between LGB and heterosexual Alaska Native people. Gay and lesbian Alaska Native people were significantly less likely than heterosexual Alaska Native people to report current SLT use, and LGB Alaska Native people were significantly more likely to report using e-cigarettes compared to heterosexual Alaska Native people. Smoking, binge drinking, and marijuana use were not statistically different among LGB and heterosexual Alaska Native people. For non-Native people, patterns were similar to those found among women based on sexual orientation; that is, non-Native LGB respondents were significantly more likely than non-Native heterosexual respondents to be current smokers, use e-cigarettes, use marijuana, and engage in binge drinking.

With regard to secondhand smoke exposure, findings again show significant differences by sexual orientation among women, but not men. Lesbian and bisexual women were significantly more likely than heterosexual women to report two or more smokers living in the home (including themselves).

In a similar vein, results indicate that the tendency to have smokefree policies in the home differs by sexual orientation among women and by smoking status. Bisexual women are significantly less likely than heterosexual women to have a smokefree policy in the home. Nearly a quarter of bisexual women report that they do not have a smokefree policy in the home, compared to less than 10 percent of heterosexual women. Not surprisingly, nonsmokers are more likely than

smokers to have a smokefree policy in the home regardless of sexual orientation. However, 11% of LGB nonsmokers report not having a smokefree policy in the home versus only 5% of heterosexual nonsmokers—a statistically significant difference ($p < 0.05$). This may indicate a more general acceptance of smoking within the LGB community, regardless of personal smoking status.

Knowledge of the harmful effects of secondhand smoke exposure differs significantly by gender and marginally by sexual orientation among men, with gay and bisexual men being more likely than heterosexual men to indicate that secondhand smoke is harmful. Comparing current smokers to nonsmokers, heterosexual current smokers are significantly less likely than LGB current smokers to agree that breathing secondhand smoke is harmful to one's health. Age is significantly associated with knowledge of harm among both men and women, regardless of sexual orientation, such that older adults are less likely than younger adults to indicate knowing about the dangers of breathing secondhand smoke. This finding is particularly interesting given the generally higher prevalence of smoking among younger adults—that is, it would seem that younger adults continue to expose themselves to the health risks of smoking and smoking behavior despite knowing the associated danger.

We also see differences in visiting establishments after smokefree policies are implemented and attitudes toward secondhand smoke exposure among women based on sexual orientation. Compared to heterosexual women, lesbian and bisexual women tend to report that they visit bars and cocktail lounges less frequently now that smokefree policies have been implemented. Bisexual women are also significantly less likely than heterosexual women to indicate a preference for spending time in places where people are not smoking. Similar to some of our other findings, this difference remains—though marginally—when examined among nonsmokers alone. That is, LGB nonsmokers tend to be less likely than heterosexual nonsmokers to indicate a preference for spending time where people are not smoking.

The results showing higher exposure to secondhand smoke at home, combined with rejection of smokefree policies and ambivalence toward nonsmoking spaces, raises a question as to whether the higher prevalence of smoking among LGB adults (particularly bisexual women) may be due at least in part to a broad, general acceptance of smoking within the subpopulation. Key to eradicating disparities in smoking and tobacco use within the LGB community is discovering if this general acceptance exists and, what can be done by public health practitioners to ensure it is addressed. What is particularly notable is that there is widespread awareness of resources meant to support quitting, but we do not know what impact this has on quitting behavior within the LGB population. This could be due in part to our lack of sufficient sample and analytic power to review whether quit indicators are different by sexual orientation. Bisexual women—who are the most at risk according to the evidence here—are also the most likely group to be aware of Alaska's Tobacco Quit Line. Nearly 90% of bisexual women are aware of the Quit Line—higher than any other group. This disparity remains when the focus is only on current smokers, although bisexual and gay/lesbian current smokers are equally knowledgeable about the Quit Line. This

leads to the question: can this resource be leveraged more effectively to address the needs of smokers within the gay, lesbian, and bisexual community, particularly bisexual women?

Limitations

Like all research, the current study has several limitations. First, not everyone who is invited to respond to the Alaska BRFSS survey agrees to participate. While the overall response rate is over 60%, Alaska has seen a decline in participation consistent with the rest of the country.[xxii]

In addition, our analysis relies upon respondents' honesty to the questions on the survey, particularly the question about sexual orientation. Because of the sensitivity associated with one's sexual orientation, some respondents may be reluctant to disclose such information on a phone survey.

Recommendations

Our findings demonstrate disparities in tobacco use by sexual orientation in Alaska. To address these observed disparities, we recommend the following set of action for individual Alaskans; communities, organizations, and programs service the LGBT community; healthcare providers and community resource centers; and the State of Alaska Tobacco Prevention and Control (TPC) program.

Individual Alaskans can do their part to address tobacco-related disparities by sexual orientation through support for tobacco-free environments and quality healthcare services for the LGBT community. Smokers can ask their provider for brief tobacco intervention and referral to cessation services, such as Alaska's Tobacco Quit Line.

Communities, organizations, and programs that serve the LGBT community can encourage healthy social norms through collaborating and engaging with LGBT community members in the promotion of smokefree and tobacco-free environments at the workplace-, community-, and statewide-levels. Examples of groups to engage with include the Rainbow Alliance, Identity, Inc., and LGBT HealthLink. In addition, organizations serving the LGBT community should support and promote tobacco-free LGBT gatherings such as pride parades and picnics. These events should not accept tobacco sponsorship or industry funds.

Healthcare providers and community resource centers can address the higher prevalence of tobacco use among LGBT community members by ensuring organizational policies address providing quality and confidential treatment to LGBT patients. Examples include requiring cultural competency training among providers and staff, implementing non-discrimination policies that include protections for LGBT patients and staff, providing trauma-informed care (due to the higher prevalence of trauma experienced in LGBT populations[xxiii]), recognizing diversity within the LGBT population[xxiv], collecting data on sexual orientation and gender identity to ensure that patients are referred to appropriate services (such as cancer screening), and requiring brief tobacco interventions (ask, advise, assess, assist, and arrange) for all patients.

The TPC program recognizes the LGBT community as a priority population. Future plans for addressing tobacco-related disparities in this population include ensuring cultural competency training for program staff and Alaska's Tobacco Quit Line staff, supporting cultural competency training for local cessation sources, including LGBT community members in public education campaigns, monitoring federal-level policies which may impact our prevention efforts (e.g., repeal of the Affordable Care Act, rolling back of protections for transgender rights), supporting Anchorage PrideFest, and partnering with outreach groups and other state programs who engage with the LGBT community.

The TPC program can also recommend improvements to sexual orientation and gender identity measures in current surveillance systems, such as the Alaska BRFSS and the Alaska Youth Risk

Behavior Survey (YRBS). Currently, the YRBS does not ask questions related to sexual orientation or gender identity. The Standard BRFSS measures sexual orientation ("Do you consider yourself to be: 1) straight, 2) lesbian or gay, 3) bisexual) and the Supplemental BRFSS measures sexual orientation ("Do you think of yourself as: A) Gay or lesbian, B) Straight, that is, not lesbian or gay, C) Bisexual, or D) something else?"), but neither survey measures gender identity. Proposed improvements to these measures include the addition of gender identity to the Standard and Supplemental BRFSS, questions on sexual attraction and sexual behavior, and exploring ways to add both sexual orientation and gender identity questions to YRBS.

Although findings indicated a higher proportion of lesbian and gay community members residing in Anchorage, TPC program efforts should reach beyond Anchorage and other urban areas to include LGBT communities living in rural parts of the state. Prior evidence suggests that rural LGBT communities face challenges accessing quality, inclusive, and affirming healthcare due to their geographical isolation and higher prevalence of anticipated, internalized, or enacted stigma.[xxv] The TPC program should ensure that LGBT communities in rural areas receive an equitable level of recognition, education, and referrals for cessation services.

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