

## Perceived Mental Health, Cigarettes Per Day and Time to First Cigarette Among Female Sexual Minority Smokers

Steven A. Branstetter, Ph.D.<sup>1\*</sup>

<sup>1</sup>The Pennsylvania State University Department of Biobehavioral Health 219 BBH Building University Park, PA 16802

Received 09-10-2024

Revised 10-10-2024

Accepted 20-11-2024

Published 21-11-2024



Copyright: ©2024 The Authors. Published by Publisher. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Abstract:

#### Objective:

This study explores how mental health and socio-demographic factors influence smoking behaviors and nicotine dependence among sexual minority females (SMF).

#### Methods:

Data from Wave 5 of the Population Assessment of Tobacco and Health (PATH) study, with 34,309 adults, were analyzed. Participants reported sexual orientation, smoking habits, and perceived mental health. Conditional process analysis assessed how mental health mediates the relationship between sexual minority status and smoking.

#### Results:

SMF had a higher smoking prevalence (28.2%) compared to heterosexual women (24.5%), but smoked fewer cigarettes per day (12.90 vs. 13.67) and had lower nicotine dependence, as indicated by a longer time to first cigarette (139.94 vs. 95.88 minutes). Mental health fully mediated the association between sexual minority status and smoking frequency. Lower income was linked to poorer mental health and higher smoking frequency, but not nicotine dependence.

#### Conclusions:

SMF smoke more frequently but are less nicotine-dependent than heterosexual women. Mental health challenges and socio-economic factors drive smoking behaviors in SMF. Addressing these factors may reduce smoking in this population.

**Keywords:** Sexual Minority Females, Smoking Behavior, Nicotine Dependence, Mental Health, Minority Stress, PATH Study.

#### Introduction:

Individuals who identify as lesbian, bisexual, queer or transgender experience a range of health disparities, including increased risk of certain

cancers, obesity, cardiovascular disease, and other chronic conditions<sup>1</sup>. The minority stress model suggests that such disparities may be the result of

several factors including social and institutional discrimination, isolation, limited access to, and utilization of, health care, poor training of health care workers, and other issues<sup>2,3</sup>. Unfortunately, the overall body of research into the physical and mental health disparities in lesbian, gay, bisexual and transgender (LGBT) populations lags behind the work in the area of age, race, and other disparities<sup>4</sup>. Uniquely, sexual minority females (SMF) may have unique disparities resulting from experiencing discrimination and stressors based on both gender and sexual orientation. For example, SMF experience significantly higher rates of depression, mental distress, and mortality than their heterosexual peers<sup>5,6</sup>. Moreover, SMF have reported more poor mental health days in the previous 30, and are more likely to have used marijuana or cocaine than both heterosexual and gay or bisexual men<sup>7</sup>.

Among the many disparities experienced by SMF is an increased risk of cigarette smoking. Research has demonstrated an increased prevalence of smoking among sexual minority populations as a whole and within SMF populations in particular<sup>8,9</sup>. For example, in one study nearly 40% of SMF were found to be current smokers compared to just over 24% of heterosexual females<sup>10</sup>. Sexual Minority Females tend to start smoking at an earlier age and report less treatment-seeking behavior than heterosexual women<sup>10,11</sup>. Despite being more likely to be a current smoker, some evidence suggests that sexual minority females smoke fewer cigarettes per day than heterosexual females<sup>10,12</sup>. However, other research suggests SMF smokers may use more tobacco/nicotine products than their heterosexual counterparts, and that SMF consequently have higher levels of nicotine dependence<sup>13</sup>.

Among all populations, there is a strong association between higher rates of cigarette smoking and mental health issues, including anxiety, depression, post-traumatic stress disorder, and other psychiatric conditions<sup>14-16</sup>. Not only are those suffering from poor mental health more likely to be current smokers, but they are also more likely to smoke more frequently, are more dependent on nicotine, and are less likely to quit<sup>17,18</sup>. This pattern

is consistent in female populations: women in general who suffer from any mental illness have a greater risk of smoking and tend to smoke more cigarettes than women without mental illness<sup>19</sup>. Given that SMF suffer from more mental health issues and are more likely to be smokers than heterosexual women, and that these disparities persist despite marginal improvements in structural stigma<sup>20</sup>, a more complete understanding of the interplay between mental health, smoking and nicotine dependence among this population is warranted. Indeed, compared to other populations, relatively little is known about the frequency of cigarette smoking and nicotine dependence among SMF and even less is known about how factors such as mental health, employment, income, education, and race may be uniquely associated with smoking frequency and nicotine dependence in this vulnerable population. This study examines the nuanced relationships between mental health, smoking behaviors, and the socio-cultural contexts that shape the experiences among SMF populations. By examining these connections, we aim to inform policies and practices that promote health equity and improve overall well-being for sexual minority women.

## Methods:

### *Data*

Data for the current study come from Wave 5 of the Population Assessment of Tobacco and Health (PATH) study<sup>21</sup>. The PATH study is a nationally representative, longitudinal study of tobacco use behaviors, attitudes, and health outcomes among youth and adult populations in the United States. Wave 5 of the PATH study was collected between 2018 and 2019 and includes data from 34,309 adults. The present study was deemed exempt by the Institutional Review Board at the Pennsylvania State University.

All participants responded to a series of questionnaires that included items assessing demographic variables (age, self-reported gender, race, education, household income), sexual orientation (gay, lesbian, bisexual or heterosexual), and current cigarette use behaviors (current

smoking status, number of cigarettes per day, nicotine dependence as indicated by the time to first cigarette of the day<sup>22-24</sup>).

### Measures

**Cigarette use.** The study defined current established smokers as those individuals who had smoked at least 100 cigarettes in their lifetime and currently smoked all or some days. Cigarettes per day were assessed with the item “*On average, about how many cigarettes do you now smoke each day?*” Responses were provided in number of cigarettes.

**Nicotine Dependence.** Nicotine dependence was assessed with the item “*How soon after you wake up do you typically smoke your first cigarette of the day?*” Responses were given in minutes between waking in the morning and smoking. The time to the first cigarette of the day (TTFC) is one of the most robust indicators of nicotine dependence, toxicant exposure, and future cessation success or failure<sup>22-24</sup>.

**Perceived Mental Health.** All participants were asked “*in general, how would you rate your mental health, which includes stress, depression, and problems with emotions?*” Responses were provided on a Lickert scale from 1=Excellent to 5=Poor.

**Sexual Orientation.** Participants who identified as lesbian, gay bisexual or something else were coded as “sexual minority,” and participants who identified as straight were coded as “heterosexual.”

**Demographics.** See Table 1 for all demographic variables and response categories.

### Statistical analysis

Data were analyzed using IBM SPSS Statistics (Version 27). We sought to examine how perceived mental health may be associated with the frequency of cigarette smoking and nicotine addiction differently between sexual minority and heterosexual females, controlling for a range of socio-demographic variables using Conditional Process Analyses<sup>25</sup>. Conditional Process Analyses in this content help create a more direct understanding of how mental health may mediate

the association between SMF and cigarette use and dependence while controlling for socio-demographic variables that are often associated with smoking.

### Results:

#### Sample

Wave 5 of the PATH Adult Questionnaire included data from 34,309 adults. The sample was 48.9% male, 51.1% female. A total of 56.3% were between the ages of 18 and 34 years, 23.5% were between 35 and 54 years and 25.4% were over the age of 55. Most of the sample was white (71%) and did not identify as Hispanic (78.5%). Among the male sample, 93% reported their sexual orientation as heterosexual and 7% identified as gay or bisexual. Among the female sample, 86% identified as heterosexual and 14% identified as lesbian or bisexual. Table 1 for full sample descriptive statistics.

#### Smoking behaviors and nicotine addiction

In the total sample, 25.1% were current smokers; 24.9% of heterosexual men, 26.1% of sexual minority men, 24.5% of heterosexual women, and 28.2% of sexual minority women. Overall, among current smokers, the sample smoked an average of 14.47 cigarettes per day (CPD; SD = 8.45); heterosexual males smoked 15.72 CPD (SD = 8.83), sexual minority men smoked 12.86 CPD (SD=8.18), heterosexual women smoked 13.67 CPD (7.96), and sexual minority women smoked 12.90 CPD (8.17). Sexual minority females smoked significantly fewer cigarettes than heterosexual men,  $F(3,6305) = 37.00, p < .001$ . On average, the Time to First Cigarette (TTFC) for the sample waited 107.06 minutes (SD=187.68), heterosexual males waited 110.98 (SD=189.31) minutes, sexual minority males waited 115.49 (SD=184.66) minutes, heterosexual women waited 95.88 (SD=180.32) minutes, and sexual minority women waited 139.94 (SD=214.75) minutes. Sexual minority women waited significantly longer to have their first cigarette of the day after waking than heterosexual men, sexual minority men, and heterosexual women,  $F(3, 9203) = 13.41, p < .001$ .

*Sexual minority status, perceived mental health, smoking frequency and dependence*

Results (see Table 2 and Figure 1) suggest that perceptions of current mental health fully mediate the association between sexual minority status and the number of cigarettes smoked per day. Specifically, sexual minority status was significantly related to higher levels of perceived mental health (mediator),  $b = .29$ ,  $t(3165) = 4.84$ ,  $p < .001$  and perceived mental health was significantly related to cigarettes per day,  $b = .57$ ,  $t(3165) = 4.64$ ,  $p < .001$ . However, when considering the mediating effect of perceived mental health, there was no direct effect of sexual minority status on cigarettes per day,  $b = .01$ ,  $t(3165) = -.02$ ,  $p = .98$ . Notably, lower levels of household income were also associated with perceived mental health,  $b = -.15$ ,  $t(3165) = 8.35$ ,  $p < .001$ , and had no direct association with cigarettes per day,  $b = -.10$ ,  $t(3165) = -.83$ ,  $p = .40$ , suggesting that the association between lower income and cigarettes per day is mediated through perceived mental health.

Analyses examining the association between sexual minority status, and perceived mental health on nicotine dependence, as measured by time to the first cigarette of the day (TTFC), controlling for the number of cigarettes smoked, found that only cigarettes per day and household income were significantly associated with TTFC. Neither sexual minority status nor perceived mental health was associated with nicotine addiction, see Table 3.

**Discussion:**

The present study examined the complex relationships between mental health, smoking behaviors, and nicotine dependence among sexual minority females (SMF), using data from the Population Assessment of Tobacco and Health (PATH) study. Our findings offer valuable insights into how sexual minority status and mental health intersect to influence smoking behaviors, and they highlight key differences between SMF and their heterosexual counterparts.

As expected, we found that sexual minority women have a higher prevalence of smoking compared to

heterosexual women, with 28.2% of SMF reporting being current smokers compared to 24.5% of heterosexual women. This aligns with previous studies showing higher rates of smoking among sexual minority populations, particularly sexual minority women, who tend to have smoking rates that exceed those of both heterosexual women and sexual minority men<sup>26,27</sup>. This disparity underscores the importance of addressing sexual orientation as a risk factor for tobacco use.

Despite a higher overall prevalence of smoking in SMF populations, the present study noted a lower number of cigarettes per day and lower levels of nicotine dependence between SMF and heterosexual women. Specifically, SMF smoked fewer cigarettes per day on average (12.90 cigarettes per day) compared to heterosexual women (13.67 cigarettes per day) and heterosexual men (15.72 cigarettes per day) and about the same as sexual minority men (12.86 cigarettes per day). Additionally, SMF had correspondingly lower nicotine dependence, as measured by the time to first cigarette (TTFC). SMF waited longer after waking up to smoke their first cigarette (139.94 minutes) than heterosexual women (95.88 minutes), heterosexual men (110.98 minutes), and sexual minority men (115.59). Thus, despite the higher prevalence of smoking, SMF use fewer cigarettes per day and are less dependent on nicotine compared to their heterosexual counterparts. This could be explained by the fact that mental health factors, such as anxiety, depression, and stress, may influence the frequency with which SMF smoke, while their physical nicotine dependence might not be as strong.

The role of mental health in shaping smoking behaviors among SMF was a central focus of this study. Our results show that mental health fully mediated the relationship between sexual minority status and smoking frequency. In other words, the poorer mental health experienced by SMF—likely resulting from minority stress—contributed to higher rates of smoking. This finding supports the minority stress model<sup>27</sup>, which suggests that sexual minority individuals face chronic social stressors, including discrimination and social stigma, that

negatively affect their mental health. Previous research has found that sexual minority individuals are at increased risk for mental health conditions such as depression, anxiety, and substance use disorders, which in turn are associated with higher rates of smoking<sup>28</sup>. Our findings highlight the importance of addressing mental health needs in efforts to reduce smoking behaviors among sexual minorities.

Socioeconomic factors also played an important role in smoking behaviors in this study. Lower household income was associated with poorer mental health and higher cigarette consumption, which is consistent with a large body of literature linking financial stress to tobacco use<sup>29</sup>. Our study found that the relationship between income and smoking frequency was mediated by mental health, reinforcing the idea that socioeconomic stressors impact smoking behaviors through their effect on mental well-being. This is consistent with research suggesting that individuals with lower socioeconomic status (SES) are at higher risk for both smoking and poor mental health<sup>30,31</sup>. Given that sexual minority women are disproportionately affected by both minority stress and socioeconomic disadvantages, public health interventions must take into account the intersections of income, mental health, and tobacco use in this population.

While this study contributes important insights, there are several limitations. First, the cross-sectional design limits our ability to draw causal conclusions about the relationships between sexual minority status, mental health, and smoking. Longitudinal studies would be valuable in exploring the temporal dynamics of these

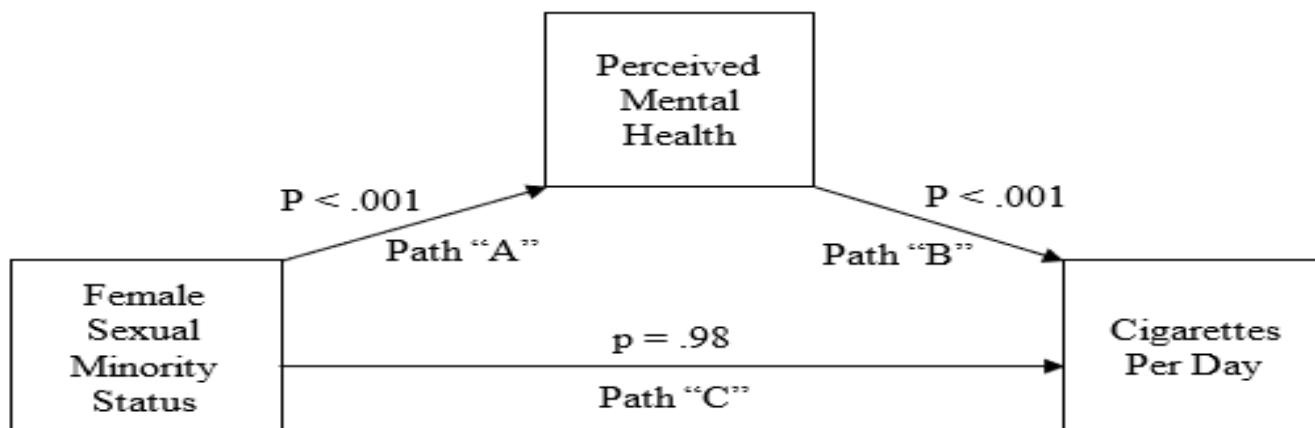
associations and clarifying the causal pathways. Additionally, this study did not fully capture the experiences of all sexual minority women, particularly those from racial or ethnic minority backgrounds, transgender individuals, or those with intersecting marginalized identities. Future studies should disaggregate sexual minority populations by factors such as race, gender identity, and age to better understand how these intersecting identities influence smoking behaviors and nicotine dependence.

In conclusion, this study highlights the significant role of mental health in explaining higher smoking rates among sexual minority females. Although SMF populations may have a higher prevalence of smoking than their heterosexual counterparts, the number of cigarettes smoked per day and, correspondingly, nicotine dependence, are lower. This suggests that mental health challenges, rather than physical addiction, may drive the increased smoking frequency in SMF. Interventions aimed at improving mental health, addressing socioeconomic disparities, and targeting smoking behavior through tailored programs for sexual minority populations could be effective in reducing smoking and improving overall health outcomes for SMF. Future research should explore these findings in greater depth, particularly by considering the complex interactions between mental health, nicotine dependence, and other psychosocial factors in this vulnerable population.

**Disclosure:**

The author(s) declare that there are no conflicts of interest related to this work. Additionally, no external funding was received for the preparation or conduct of this study.

**Figure 1: Mediation Model**



**Table 1: Descriptive Statistics**

	Heterosexual Male (n=15446)	Sexual Minority Male (n=1142)	Heterosexual Female (n=14890)	Sexual Minority Female (n=2420)
	Percent			
Age in years				
18-24	34.8	48	31	53.2
25-34	20.9	26.6	21.1	27.3
35-44	12.5	8.8	13.5	9.3
45-54	10.7	6.8	12	5.8
55-64	11.2	6.1	12	3.1
65 and above	9.9	3.7	10.4	1.3
Race				
White Alone	71.3	73.8	71.3	66.9
Black Alone	16.6	12.6	17.8	16.9
Other	12	13.6	10.9	16.2
Household Income				
< \$10,000	13.1	18.6	18.2	25.1
\$10,000 - \$24,999	17.8	20.2	20.9	24.4
\$25,000 – \$49,999	23	24.4	22.3	22..4
\$50,000 - \$99,999	25.6	20.6	22.1	17.6
>\$100,000	20.4	16.3	16.5	10.6
Mental Health				
Excellent	27.7	18.2	20.6	12.2
Very Good	31.5	24.6	28.1	17.5
Good	25.9	26.3	29.5	25.7
Fair	11.7	21.0	16.9	29.4
Poor	3.2	9.9	4.9	15.3
Education				
Less than HS	12.8	12	10.4	14.3
GED	6.9	5.4	5.0	6.5
High School Graduate	26.1	24.3	23.7	25.4
Some college (no degree) or associates degree	33.4	36.7	37.1	38.2
Bachelor's degree or advanced degree	20.8	21.7	23.8	15.6
Current Smoker	24.9	26.1	24.5	28.2
	Mean (SD)			
Time to First Cigarette	95.54 (155)	115.49 (184)	95.88 (180)	139.94(214)
Cigarettes Per Day	15.72 (8.8)	12.86 (8.18)	13.67 (7.96)	12.90 (8.17)

**Table 2: Conditional Process Model 1: Path “A”**

	Coef.	S.E.	t	p	LLCI	ULCI
Sexual Minority Status	.29	.06	4.83	.00	.17	.41
Age	-.02	.01	-1.96	.05	-.05	.00
Race	.03	.03	.98	.32	-.03	.09
Education Level	-.03	.01	-1.73	.08	-.06	.00
Household Income	-.15	.01	-8.35	.00	-.19	-.11

Dependent Variable: Perceived Mental Health

Model fit:  $F(5,3165) = 30.74, p < .001$ .

LLCI = Lower Limit Confidence Interval

ULCI – Upper Limit Confidence Interval

**Table 3: Conditional Process Model 2: Paths “B” and “C”**

	Coef.	S.E.	t	p	LLCI	ULCI
Sexual Minority Status	-.01	.42	-.02	.98	-.83	.81
Perceived Mental Health	.56	.12	4.63	.00	.32	.80
Age	.65	.09	6.59	.00	.45	.84
Race	-1.91	.22	-8.59	.00	-2.35	-1.48
Education Level	-.22	.12	-1.82	.06	-.46	.01
Household Income	-.10	.12	-.83	.40	-.36	.14

Dependent Variable: Cigarettes Per Day

Model fit:  $F(6,3164) = 24.33, p < .001$

LLCI = Lower Limit Confidence Interval

ULCI – Upper Limit Confidence Interval

## References:

1. Hafeez H, Zeshan M, Tahir MA, Jahan N, Naveed S. Health Care Disparities Among Lesbian, Gay, Bisexual, and Transgender Youth: A Literature Review. *Cureus*. 9(4):e1184. doi:10.7759/cureus.1184
2. Jennings L, Barcelos C, McWilliams C, Malecki K. Inequalities in lesbian, gay, bisexual, and transgender (LGBT) health and health care access and utilization in Wisconsin. *Prev Med Rep*. 2019;14:100864. doi:10.1016/j.pmedr.2019.100864
3. Frost DM, Lehavot K, Meyer IH. Minority stress and physical health among sexual minority individuals. *J Behav Med*. 2015;38(1):1-8. doi:10.1007/s10865-013-9523-8
4. Barker M. Gay and Lesbian Health Disparities: Evidence and Recommendations for Elimination. *Journal of Health Disparities Research and Practice*. 2012;2(2). https://digitalscholarship.unlv.edu/jhdrp/vol12/iss2/6

5. Gonzales G, Henning-Smith C. Health Disparities by Sexual Orientation: Results and Implications from the Behavioral Risk Factor Surveillance System. *J Community Health*.2017;42(6):1163-1172. doi:10.1007/s10900-017-0366-z
6. Laughney CI, Eliason EL. Mortality Disparities Among Sexual Minority Adults in the United States. *LGBT Health*. 2022;9(1):27-33. doi:10.1089/lgbt.2020.0482
7. Operario D, Gamarel KE, Grin BM, et al. Sexual Minority Health Disparities in Adult Men and Women in the United States: National Health and Nutrition Examination Survey, 2001–2010. *Am J Public Health*. 2015;105(10):e27-e34. doi:10.2105/AJPH.2015.302762
8. Jamal A, King BA, Neff LJ, Whitmill J, Babb SD, Graffunder CM. Current Cigarette Smoking Among Adults - United States, 2005-2015. *MMWR Morb Mortal Wkly Rep*. 2016;65(44):1205-1211. doi:10.15585/mmwr.mm6544a2
9. Johnson SE, Holder-Hayes E, Tessman GK, King BA, Alexander T, Zhao X. Tobacco Product Use Among Sexual Minority Adults. *Am J Prev Med*. 2016;50(4):e91-e100. doi:10.1016/j.amepre.2015.07.041
10. Ehlke SJ, Ganz O, Kendzor DE, Cohn AM. Differences between adult sexual minority females and heterosexual females on menthol smoking and other smoking behaviors: Findings from Wave 4 (2016–2018) of the population assessment of tobacco and health study. *Addict Behav*. 2022;129:107265. doi:10.1016/j.addbeh.2022.107265
11. McCabe SE, West BT, Matthews AK, et al. Sexual orientation, tobacco use, and tobacco cessation treatment-seeking: Results from a national U.S. survey. *Behav Med*. 2021;47(2):120-130. doi:10.1080/08964289.2019.1676191
12. Branstetter SA. COVID-Related Mental Health and Smoking in Sexual Minority Women. *Advanced Journal of Social Science*. 2023;12(1):53-58. doi:10.21467/ajss.12.1.53-58
13. Evans-Polce RJ, Veliz P, Kcomt L, Boyd CJ, McCabe SE. Nicotine and Tobacco Product Use and Dependence Symptoms Among US Adolescents and Adults: Differences by Age, Sex, and Sexual Identity. *Nicotine Tob Res*. 2021;23(12):2065-2074. doi:10.1093/ntr/ntab127
14. Smith PH, Mazure CM, McKee SA. Smoking and mental illness in the U.S. population. *Tob Control*. 2014;23(e2):e147-153. doi:10.1136/tobaccocontrol-2013-051466
15. Trosclair A, Dube SR. Smoking among adults reporting lifetime depression, anxiety, anxiety with depression, and major depressive episode, United States, 2005-2006. *Addict Behav*. 2010;35(5):438-443. doi:10.1016/j.addbeh.2009.12.011
16. Prochaska JJ, Das S, Young-Wolff KC. Smoking, Mental Illness, and Public Health. *Annu Rev Public Health*. 2017;38:165-185. doi:10.1146/annurev-publhealth-031816-044618
17. Lawrence D, Mitrou F, Zubrick SR. Smoking and mental illness: results from population surveys in Australia and the United States. *BMC Public Health*. 2009;9:285. doi:10.1186/1471-2458-9-285
18. Snell M, Harless D, Shin S, Cunningham P, Barnes A. A longitudinal assessment of nicotine dependence, mental health, and attempts to quit Smoking: Evidence from waves 1-4 of the Population Assessment of Tobacco and Health (PATH) study. *Addict Behav*. 2021;115:106787. doi:10.1016/j.addbeh.2020.106787



19. Lipari RN, Van Horn S. Smoking and Mental Illness Among Adults in the United States. In: *The CBHSQ Report*. Substance Abuse and Mental Health Services Administration (US); 2013. Accessed July 8, 2024. <http://www.ncbi.nlm.nih.gov/books/NBK430654/>
20. Salway T, Delgado-Ron JA, Rich AJ, Dharma C, Baams L, Fish J. Trends in mental health and smoking disparities between sexual minority and heterosexual adults in Canada, 2003–2020. *SSM - Population Health*. 2024;27:101697. doi:10.1016/j.ssmph.2024.101697
21. Hyland A, Ambrose BK, Conway KP, et al. Design and methods of the Population Assessment of Tobacco and Health (PATH) Study. *Tob Control*. 2017;26(4):371-378. doi:10.1136/tobaccocontrol-2016-052934
22. Branstetter SA, Muscat JE. Time to First Cigarette and 4-(Methylnitrosamino)-1-(3-Pyridyl)-1-Butanol (NNAL) Levels in Adult Smokers; National Health and Nutrition Examination Survey (NHANES), 2007–2010. *Cancer Epidemiology, Biomarkers & Prevention*. 2013;22(4):615-622. doi:10.1158/1055-9965.EPI-12-0842
23. Branstetter SA, Muscat JE, Mercincavage M. Time to First Cigarette: A Potential Clinical Screening Tool for Nicotine Dependence. *Journal of Addiction Medicine*. 2020;14(5):409-414. doi:10.1097/ADM.0000000000000610
24. Branstetter SA, Mercincavage M, Muscat JE. Predictors of the nicotine dependence behavior time to the first cigarette in a multiracial cohort. *Nicotine & Tobacco Research*. 2015;17(7):819-824. doi:10.1093/ntr/ntu236
25. Hayes AF. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Press; 2013:xvii, 507.
26. McCabe SE, Hughes TL, Bostwick WB, West BT, Boyd CJ. Sexual orientation, substance use behaviors and substance dependence in the United States. *Addiction*. 2009;104(8):1333-1345. doi:10.1111/j.1360-0443.2009.02596.x
27. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull*. 2003;129(5):674-697. doi:10.1037/0033-2909.129.5.674
28. Lehavot K, Simoni JM. The Impact of Minority Stress on Mental Health and Substance Use Among Sexual Minority Women. *Journal of consulting and clinical psychology*. 2011;79(2):159. doi:10.1037/a0022839
29. Siahpush M, McNeill A, Borland R, Fong GT. Socioeconomic variations in nicotine dependence, self-efficacy, and intention to quit across four countries: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control*. 2006;15 Suppl 3(Suppl 3): iii71-75. doi:10.1136/tc.2004.008763
30. Cano MT, Pennington DL, Reyes S, et al. Factors associated with smoking in low-income persons with and without chronic illness. *Tobacco Induced Diseases*. 2021;19:59. doi:10.18332/tid/138241
31. Lawrence D, Hafekost J, Hull P, Mitrou F, Zubrick SR. Smoking, mental illness and socioeconomic disadvantage: analysis of the Australian National Survey of Mental Health and Wellbeing. *BMC Public Health*. 2013;13(1):462. doi:10.1186/1471-2458-13-462