The effects of sexual orientation on cigarette smoking and alcohol consumption trends across the different regions of the U.S.

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Summary:

The National Health Interview Survey (NHIS) data from 2013 -2018 was used to investigate the status of smoking and drinking patterns across the U.S. along with the mental health effects associated with smoking and drinking on people belonging to different sexual minority groups. Results indicated that belonging to a sexual minority group increased the odds of feeling more depressed, extreme smoking was associated with depression, and females belonging to sexual minority groups were associated with higher rates of depression.

Literature Review:

While there are extensive variations in alcohol use between different countries, men are expected to consume more alcohol than women (Hughes et al. 2016). Growing warnings indicate that lesbians and bisexual females may be at risk of detrimental health effects of cigarette smoking and alcohol consumption (Burgard et al. 2014). The underlying aspect in association of depression with drunkenness is arguable, i.e., whether depression is caused by alcoholism or vice versa, because in most cases when not drinking, alcoholics show the signs of depression, anxiety, exhaustion, uneasiness, and poor concentration (Crocq. 2003). According to the 2020 report by the National Institute on Drug Abuse (NIDA), there is a comorbidity between people with tobacco usage and mental disorders, and excessive smoking is costing life expectancy, i.e., tobacco

associated diseases reported 53% of deaths among individuals with schizophrenia, 48% among those with bipolar disorders, and 50% among those with depression.

Corresponding to a study based on rates of excessive drinking, recent abstention, and per capita current drinking levels were categorized in six different states: North Carolina and new England with the top drinking level, mid Atlantic, Pacific, and South coast with mild drinking level, and dry South with lowermost drinking level (Kerr 2010). It was discovered that through 1970s to the early 2000s, a pattern of junction in both consumption and consumption mix was apparent in the U.S., but since the early 2000s there has been a turnaround in this trend (Fogarty and Voon 2018). The instant onset of cigarette outbreak is prominent in the U.S.; cigarette use rose tenfold between 1908 - 1925 (from 105 to 1,058 cigarettes per capita), and although by the 1940s, cigarette had been substituted by other form of tobaccos, it is driven by extensive marketing broadcast (U.S. Department of Health and Human Services 2014). According to a cross sectional study, the number of young adults who smoked occasionally begun smoking in early adulthood, and this rate doubled from 2002 - 2018 in the U.S. (Barrington-Trimis et al. 2020).

According to the morbidity and mortality weekly report from January 19, 2018 by the U.S. Center for Disease Control and Prevention (CDC), the proportion of U.S. adults who smoked cigarette dropped from 20.19% in 2005 to 15.5% in 2016, although cigarette smoking prevalence did not shift significantly throughout 2015 - 2016 (Jamal et al. 2019). The ongoing high frequency of cigarette smoking with mental illness is a risk for LGBTQ people and supporting them is the most important challenge encountering the tobacco control community (Drope et al. 2018). Sexual minority subclasses, for instance self-identified bisexual older adults seemed to be at an elevated risk for harmful smoking-associated health concerns because of excessive smoking (McCabe et al. 2018).

Excessive alcohol consumption is the third primary cause of deaths in the U.S. Alcohol consumption in the U.S. soared throughout 1999 - 2014, and alcohol use beyond the existing U.S. recommendations was linked with an increase in the mortality rates, varying from 39% to 126% (Ricci et al. 2020). The differences in alcohol consumption in males and females have shifted over the years in the U.S., with males noticeably still consuming more alcohol than females, but the gaps are narrowing, particularly among adolescent and emerging adults (White 2020). Sexual minority group women are at a greater risk for a number of mental health issues: dependable with a self-care process, anxiety was correlated with harmful drinking, and harmful drinking was linked with depression (Johnson et al. 2013).

Smoking gradually captivates individuals in conjunction with psychiatric troubles and additional substance use disorders such as alcohol use disorder (Lembke and Humphreys 2016). A study conducted in 2018 by Hoffman et al. investigated the association between LGBTQ cigarette and e-cigarette use as a possible risk factor in the U.S. Compared to heterosexuals, probability of tobacco products (both cigarette and e-cigarette) usage between lesbian, gay, and bisexual individuals varies between sexes, by product, and by sexual identity. According to a study, being a part of North Carolina LGBTQ community is associated with worse health. Sexual minority women have higher odds compared to heterosexual women for smoking, drinking, and the risks associated with them (Barnhill, Lee, and Rafferty 2017). For sexual minority women, socialization and conformity intentions might be important. As per a research, sexual minority women drank more on days when they were with heterosexual companions, compared to the days when they drank with sexual minority or varied sexual identity parties (Cadigan, Hughes, and Kaysen 2018).

Methods:

Key hypotheses:

Do cigarette smoking and alcohol consumption patterns fluctuate across different regions of the U.S. or are they similar to each other?

What are the rates of alcohol consumption and cigarette smoking in people with different sexual orientations across the different regions of the U.S.? Are there any variations between LGBTQ and straight people?

Is overconsumption of alcohol and smoking of cigarettes related to mental health issues in people belonging to different sexual orientation groups?

Sample:

This paper uses National Health Interview Survey (NHIS) adult sample data from 1997 - 2018, which is a cross-sectional household interview survey. The target audience for the NHIS survey is the civilian non-institutionalized population dwelling across 50 states and the District of Columbia. NHIS uses geographically clustered sampling methods to select sample of residence units for continuous data collection from January - December. The U.S. Census Bureau is the data collection agent for NHIS. Face-to-face interviews were organized, follow up interviews were conducted via telephone, and in some exceptional cases, on the respondent's request, telephone interviews were conducted instead of face-to-face interviews.

Variables:

Demographic variables:

As described earlier, the years for which NHIS gathered data was from 1997 – 2018, but NHIS started gathering the sexual orientation variable from the year 2013. Hence, the years before 2013

were dropped and this paper will further assess responses from the year 2013 - 2018. Moreover, sexual orientation was recoded into different categories using Stata version 16, such as “Straight”, “Gay/Lesbian”, “Bisexual”, and “Other”. As NHIS age data was limited to “18 or older”, age variable was also recoded into different categories, “18 - 35”, “36 - 50”, “50 - 69”, and “70+”. Race was also recoded to “White”, “Black/African American”, “American Indian/Alaskan Native”, “Asian”, and “Multiple Race” categories. Region, and Gender variables were used as is.

Alcohol drinking & Cigarette smoking status:

Frequency of alcohol consumed in the past year, i.e., days per week was recoded into different categories. Based on the sample responses, 19.53% of people did not have any drink during the week, 37.63% of people consumed for less a day, 25.95% of people drank between 1 to 2 days, 7.96% of people drank between 3 to 4 days, 2.69% of people drank between 5 to 6 days, and 6.2% of people drank all seven days during the week (see Table 1). Cigarette smoking status for current, former, and never was recoded based on the sample responses, 12.85% of the people were current everyday smokers, 3.95% of the people were current someday smokers, 23.4% were former smokers, and 59.8% people never smoked (see Table 2).

Depression Level & Medication for Depression:

Depression level was evaluated as a dependent variable and it is defined as the amount of depression a respondent felt the last time they were depressed, i.e., “a little”, “a lot”, or “somewhere between a little and a lot”. This question was requested from the respondents who reportedly felt depressed at least monthly or who admitted taking anti-depressants. Figure 1 shows that 54.6% of respondents were a little depressed, 14.1% were depressed a lot, and 31.3% were somewhere between a little and a lot depressed. Similarly, the second dependent variable asked

people if they took medications for depression. Figure 2 shows that 90.4% of the respondents replied no, and only 9.6% responded yes to the question.

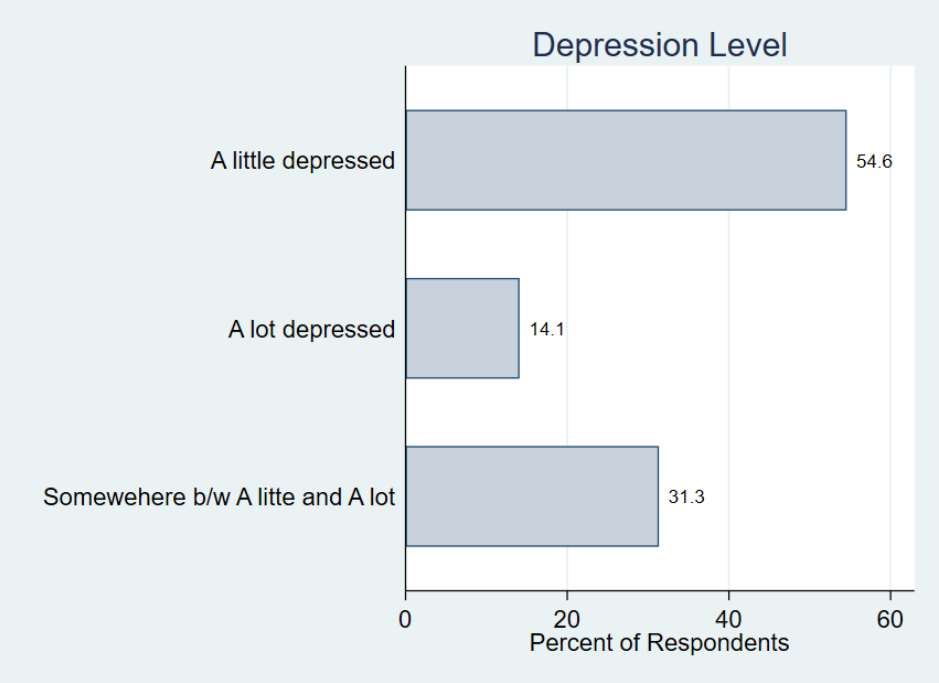

Figure 1: Depression level and its occurrences in the sample.

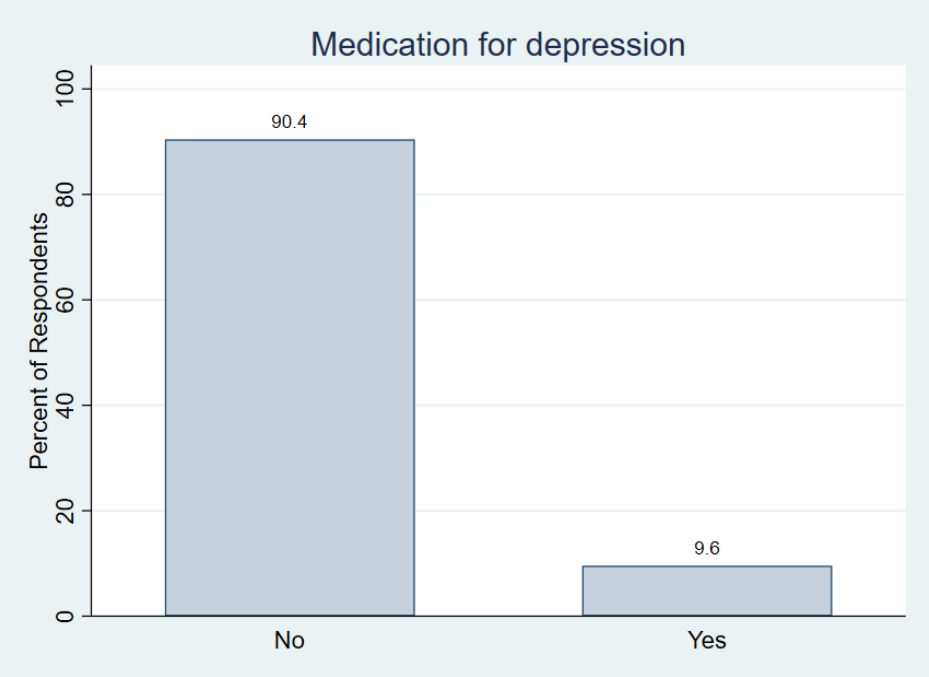

Figure 2: Medication for depression occurrences in the sample.

Methodology for analysis:

Stata version 16 was used for analysis, and "svy:" procedure was used during the analysis to provide population estimation.

Cross tabulation was used to see the pattern of drinking and smoking status across different regions of the U.S., and also for preliminary analysis.

Association between depression level, smoking/drinking status, and sexual orientation was estimated using ordinal logistic regression model. Post model estimation method Average Adjusted Predictions (AAPs) was also applied.

Association between medication for depression, smoking/drinking status, and sexual orientation was estimated using logistic regression models. Post model estimation were also conducted.

Findings:

The cross tabulation of region and alcohol drinking status indicates that the pattern of alcohol drinking status varies for each region, 38% respondents in Northeast, 40% respondents in Northcentral/Midwest, 38% in South, and 39% respondents in West consumed alcohol less than a day (see Table 3). In terms of all seven-days drinking category, only 6.5% of respondents in Northeast, 4.6% of respondents in Northcentral/Midwest, 5.6% of respondents in South, and 6.6% of respondents in West were heavy drinkers (see Table 3). Furthermore, it can be seen in Table 3 that the p value is less than 0.00001 therefore there is a statistical significance and association between the region of residence and drinking status.

Table 4 shows the cross tabulation of region of residence and smoking status, the p value is less than 0.00001 which indicates that there is a statistical significance between the region of residence and smoking status. West is the region where 66% of the respondents did not smoke,

62% of the respondents in Northeast and South were non-smokers, and 58% of the respondents in North central/ Midwest did not smoke (see Table 4). Similarly, in terms of the chain-smokers or everyday smokers, 8% of the respondents in West, 10% of the respondents in Northeast, 13% of the respondents in South, and 15% of the respondents in North central/ Midwest smoked on a daily basis (see Table 4).

Preliminary analysis of depression feel level and drinking status uncovered that 21% of the respondents who drank less than a day were a little depressed, 12% of the respondents who drank less than a day were depressed somewhere between a little and a lot, and only 5% of the respondents who drank less than a day were depressed a lot. The p value in this case was also less than 0.00001, which is an indication of statistical significance between the level of depression and drinking status (see Table 5).

Regression Analysis:

Depression level:

Ordered Logistic regression was conducted to evaluate the odds of depression level signaling the different levels of depression by alcohol drinking status, smoking status, sexual orientation, age, race, and region (see Table 6). Results revealed that drinking all seven days decreased the odds of respondents to move to higher level ($p < 0.05$) of depression than people who never drank by a factor of 0.83. People who drank between 5 to 6 days also had decreased odds to move a higher depression level than people who never drank ($p<0.05$) by a factor of 0.78. Respondents who never smoked showed decreased odds of moving to a higher level of depression than people who smoked everyday ($p<0.05$) by a factor of 0.69. Lastly, responders who quit smoking also showed decreased odds of moving to a higher category of depression than people who smoked everyday ($p<0.05$) by a factor of 0.81 (see Table 6).

Further, the ordinal logistic regression model demonstrated that being Straight decreased the odds of respondents to move to a higher category of depression level than Gay/Lesbian ($p<0.01$) by a factor of 0.64. The higher the age of the respondents, their odds of moving to a higher level of depression decreased compared to respondents in the age group of 18 – 35. The odds for depression were less for Asian respondents compared to that of the White respondents ($p<0.01$) by a factor of 0.74. Living in West region of the U.S. increased the odds of respondents to move to higher level of depression than respondents residing in Northeast ($p<0.01$) by a factor of 1.12 (see Table 6).

Looking at the results of Average Adjusted Predictions (AAPs) for smoke status on depression level, it can be seen that the respondents who never smoked felt less depressed than respondents who smoked every day (57% vs. 48%). Former smokers and current everyday/current someday smokers were depressed a lot compared to non-smokers. Current everyday smokers had higher depression levels, i.e., somewhere between a little and a lot compared to non-smokers (37% vs. 29%) (see Table 7). Correspondingly, the AAPs for drinking status showed that the respondents who drank more felt a little depressed than non-drinkers (53% non-drinkers vs. 58% 5 to 6 days drink vs. 57% who drink all seven days) (see Table 8).

Predicted probability:

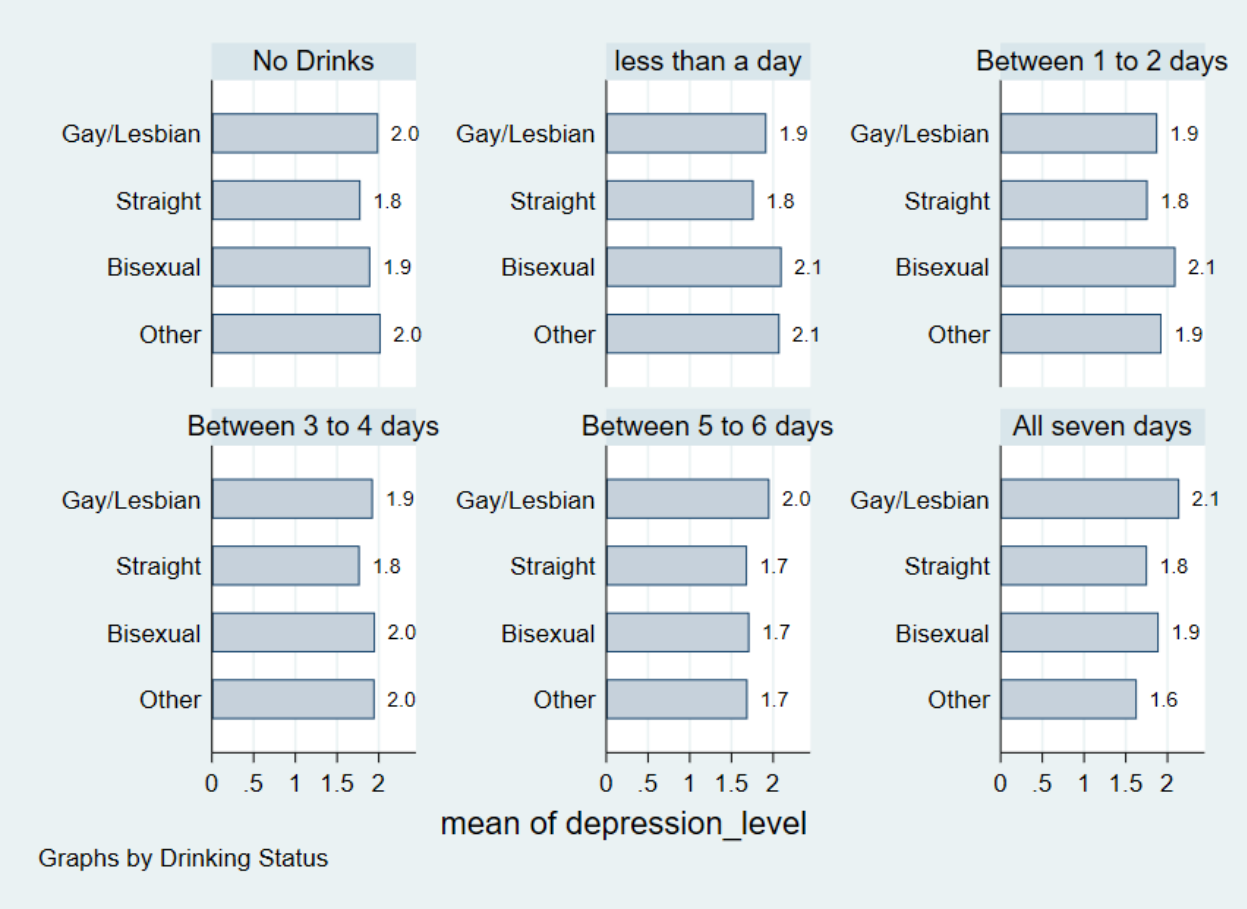

Figure 3: Predicted probability of depression level by sexual orientation across drinking status.

To further look at the sexual orientation, predicted probabilities of depression levels on smoking and drinking by sexual orientation were assessed. Figure 1 shows that in all six drinking categories (Nondrinkers to all seven-day drinkers), Gays/Lesbians and Bisexuals showed signs of higher level of depression than other sexual orientation groups. It could be possible that sexual orientation is dependent on depression levels.

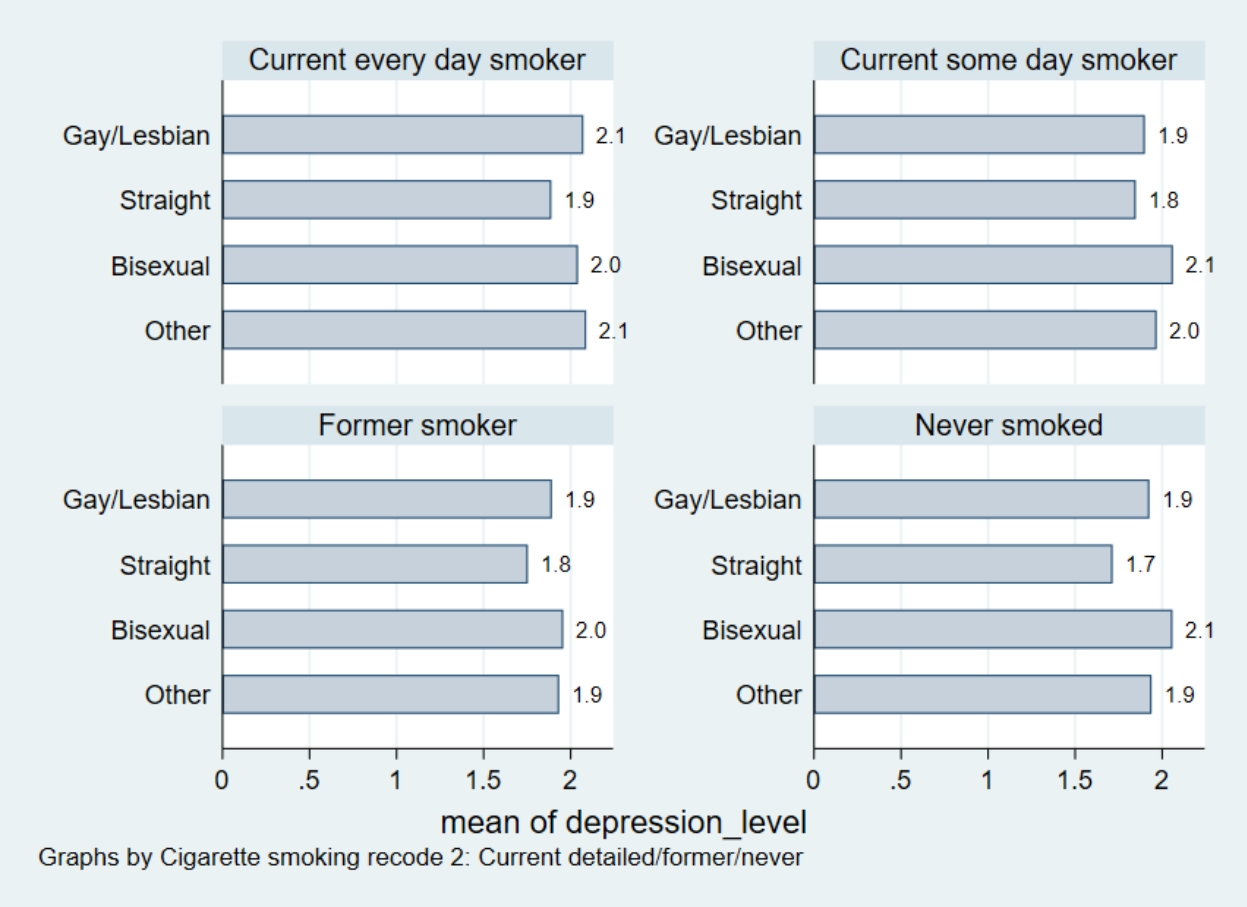

Figure 4: Predicted probability of depression level by sexual orientation across smoking status.

Figure 4 portrays that in everyday smokers, Gays/Lesbians and other sexual orientation groups were depressed the most. In someday smokers as well as non-smokers, bisexuals were depressed the most. In former smokers, bisexuals were depressed the most.

Medication for Depression:

There was a statistical significance among Straight participant as a predictor of taking anti-depressants, i.e., being straight decreased the odds of respondents to take anti-depressants compared to Gay/Lesbians by a factor of 0.29 ($p<0.05$), and there was no significance found

among Bisexuals and Others to take antidepressants compared to Gays/Lesbians (see Table 9). Furthermore, respondents who consumed alcohol at any level showed decreased odds to take anti-depressants compared to people who never drank ($p<0.05$). People whose drinking status was less than a day had lower odds of 0.66, those with drinking status between 1 to 2 had lower odds of 0.50, those with drinking status between 3 to 4 days had odds of 0.59, those with drinking status between 5 to 6 days had odds of 0.53, and those who drank all seven days had odds of 0.60 (see Table 9). On the other hand, for smoking status respondents who smoked less, quit smoking, and never smoked indicated lower odds of taking anti-depressants compared to daily smokers ($p<0.05$), some days smokers showed decrease by a factor of 0.86, former smoker showed decrease by a factor of 0.73, and non-smokers showed decrease by a factor of 0.47 (see Table 9).

The marginal model used medication of depression with controls of sexual orientation by sex (female) portrays that bisexual women are much likely to take anti-depressants (0.27) than other sexual orientation category (0.22), followed by lesbians (0.16), and followed by straight women (0.11) (see Table 10). Figure 5 shows that the female in-take of antidepressants is more than that of males irrespective of sexual orientation. In both genders, straight people are less likely to take anti-depressants. Bisexuals are more likely to take anti-depressants, followed by other sexual orientation category, followed by gays/lesbians (see Figure 5).

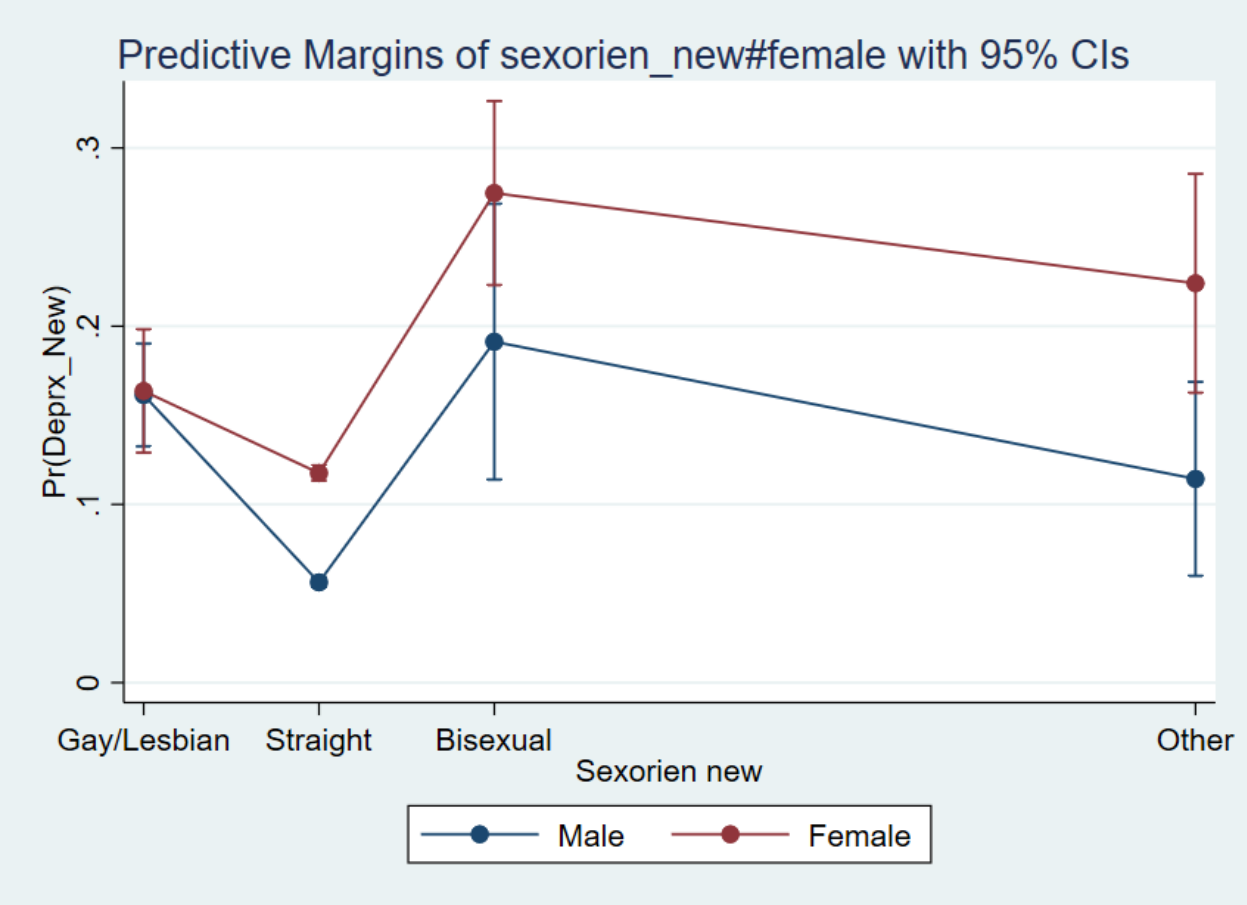

Figure 5: Predicted margin of depression Rx by sexual orientation across gender.

Discussion:

Conferring to the literature review, which shows that female sexual minority groups are at a higher risk to be impacted by several mental health issues, it can be witnessed that females tend to take antidepressants more than males, bisexual women, other categories of sexual identity, and lesbians are susceptible to have mental health issues compared to straight women.

The predicted probability of sexual orientation indicated that regardless of the drinking and smoking status, gays/lesbians and bisexual respondents were at a higher risk of experiencing more

depression than that of straight individuals. The social pressure of being related to a sexual minority group could have caused higher level of depression, as even today, being part of a sexual minority group is considered taboo in a few conservative parts of the U.S.

Furthermore, it was found that respondents who never smoked were less depressed than chain-smokers, and people who quit smoking or smoked somedays were also more depressed than non-smokers. On the contrary, alcoholics (people who drank all seven days) felt less depressed than lifetime abstainers, and people who drank between 5 to 6 days were also less depressed than lifetime abstainers.

The trend of smoking and drinking in different regions of the U.S. differs from one another, but a limitation to this finding is that other underlying factors such as weather, socioeconomic status etc. were not considered.

Tables:

Table 1. Frequency drank alcohol in past year: Days per week

Drinking Status	Freq.	Percent	Cum.
No Drinks	34,496	19.53	19.53
less than a day	66,554	37.67	57.2
Between 1 to 2 days	45,844	25.95	83.15
Between 3 to 4 days	14,066	7.96	91.11
Between 5 to 6 days	4,761	2.69	93.8
All seven days	10,946	6.2	100
Total	176,667	100	

Table 2. Cigarette smoking status: Current detailed/former/never

Cigarette Smoking Status	Freq.	Percent	Cum.
Current everyday smoker	28,730	12.85	12.85
Current some day smoker	8,841	3.95	16.8
Former smoker	52,323	23.4	40.2
Never smoked	133,716	59.8	100
Total	223,610	100	

Table 3: Cross tabulation of region of residence and alcohol drinking status

Number of strata = **352** Number of obs = **176,667**
Number of PSUs = **1,259** Population size = **1,330,649,761**
Design df = **907**

Region of residence	Drinking Status						
	No Drinks	less than a day	Between 1 to 2 days	Between 3 to 4 days	Between 5 to 6 days	All seven days	Total
Northeast	0.1536	0.3823	0.2863	0.0835	0.0287	0.0656	1
North Central/ Midwest	0.1647	0.4047	0.2826	0.0761	0.0252	0.0466	1
South	0.1977	0.3873	0.2581	0.076	0.0248	0.0561	1
West	0.1675	0.3913	0.2574	0.0875	0.0302	0.0661	1
Total	0.1749	0.3914	0.2688	0.0801	0.0269	0.0579	1

Key: row proportion
Pearson:
Uncorrected chi2(15) = **708.6963**
Design-based F (**12.55, 11385.22**) = **19.8535** P = **0.0000**

Table 4: Cross tabulation of region of residence and smoking status

Number of strata = **352** Number of obs = **223,610**
Number of PSUs = **1,259** Population size = **1,688,213,486**
Design df = **907**

Region of residence	Smoking Status				
	Current everyday smoker	Current some day smoker	Former smoker	Never smoked	Total
Northeast	0.1066	0.0345	0.2383	0.6206	1
North Central/ Midwest	0.1505	0.0381	0.2307	0.5808	1
South	0.1303	0.0389	0.2108	0.62	1
West	0.0875	0.0368	0.2146	0.6612	1
Total	0.1206	0.0375	0.221	0.6209	1

Key: row proportion
Pearson:
Uncorrected chi2(9) = **1374.1169**
Design-based F **(8.00, 7255.69) = 54.1760** P = **0.0000**

Table 5: Cross tabulation of depression level and drinking status

Number of strata = **352** Number of obs = **37,657**
Number of PSUs = **1,256** Population size = **282,571,519**
Design df = **904**

Depression level	**Drinking Status**						
	No Drinks	**less than a day**	**Between 1 to 2 days**	**Between 3 to 4 days**	**Between 5 to 6 days**	**All seven days**	**Total**
A little	0.097	0.2117	0.1396	0.0475	0.0174	0.0337	0.5469
A lot	0.0283	0.0545	0.0303	0.0087	0.0033	0.0072	0.1323
Somewhere b/w A little and A lot	0.0561	0.1286	0.0822	0.0285	0.0082	0.0171	0.3208
Total	0.1814	0.3948	0.2522	0.0848	0.0289	0.058	1

Key: cell proportion
Pearson:
Uncorrected chi2(10) = **102.4953**
Design-based F (**9.76, 8819.16**) = **6.0881** P = **0.0000**

Table 6: Ordered Logistic regression assessing estimating odds of depression feel level, with controls of alcohol status, smoke status, sexual orientation, age, race, and region.

```
. svy: ologit  depression_level i.alcdayswk2  i.smokestatus2    i.sexorien_new i.AgeC i.racenew i.region, or
(running ologit on estimation sample)

Survey: Ordered logistic regression

Number of strata   =       352              Number of obs     =       34,761
Number of PSUs     =     1,256              Population size   =  263,513,925
                                            Design df         =          904
                                            F(  21,    884)   =        17.76
                                            Prob > F          =       0.0000
```

depression_level	Odds Ratio	Linearized Std. Err.	t	P>|t|	[95% Conf.	Interval]
alcdayswk2						
less than a day	.9595615	.0364337	-1.09	0.277	.8906562	1.033798
Between 1 to 2 days	.9085615	.0378109	-2.30	0.021	.8373038	.9858835
Between 3 to 4 days	.9036978	.0506542	-1.81	0.071	.8095573	1.008786
Between 5 to 6 days	.7874999	.0680702	-2.76	0.006	.664623	.9330945
All seven days	.8397819	.0542884	-2.70	0.007	.7397179	.9533819
smokestatus2						
Current some day smoker	.8688842	.0570731	-2.14	0.033	.7637924	.9884359
Former smoker	.8108755	.0350524	-4.85	0.000	.7449193	.8826716
Never smoked	.6980475	.0268042	-9.36	0.000	.6473752	.7526861
sexorien_new						
Straight	.6448555	.0522793	-5.41	0.000	.5499988	.7560717
Bisexual	1.08399	.1206946	0.72	0.469	.8712104	1.348738
Other	.9762655	.158388	-0.15	0.882	.7100436	1.342304
AgeC						
36-50	.8917275	.0342791	-2.98	0.003	.8269268	.9616062
51-69	.7477769	.0300891	-7.22	0.000	.6909959	.8092238
70+	.6372048	.0321633	-8.93	0.000	.5771072	.7035607
racenew						
Black/African American	1.031238	.0447159	0.71	0.478	.9471089	1.122839
American Indian/Alaskan Native	.9961093	.1324442	-0.03	0.977	.7673231	1.293111
Asian	.7454205	.0613349	-3.57	0.000	.634262	.8760603
Multiple Race	1.154304	.1067411	1.55	0.121	.9627249	1.384007
region						
North Central/Midwest	1.070057	.0488256	1.48	0.138	.9783976	1.170303
South	1.051996	.0440533	1.21	0.226	.9689946	1.142107
West	1.12072	.0505127	2.53	0.012	1.025843	1.224373
/cut1	-.6487829	.0976575			-.8404448	-.457121
/cut2	-.0809389	.0978806			-.2730385	.1111607

Note: Estimates are transformed only in the first equation.

Table 7: Average adjusted predictions & marginal effects of depression level on Smoke status.

```
. margins smokestatus2

Predictive margins

Number of strata   =       352                Number of obs     =       34,761
Number of PSUs     =     1,256                Population size   =  263,513,925
Model VCE    : Linearized                     Design df         =          904

1._predict   : Pr(depression_level==1), predict(pr outcome(1))
2._predict   : Pr(depression_level==2), predict(pr outcome(2))
3._predict   : Pr(depression_level==3), predict(pr outcome(3))
```

	Delta-method Margin	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_predict#smokestatus2						
1#Current every day smoker	.4866046	.0078143	62.27	0.000	.4712683	.5019409
1#Current some day smoker	.5213322	.0142859	36.49	0.000	.4932948	.5493696
1#Former smoker	.53835	.0066711	80.70	0.000	.5252574	.5514426
1#Never smoked	.5748959	.0050938	112.86	0.000	.5648989	.5848929
2#Current every day smoker	.1377187	.0026355	52.25	0.000	.1325462	.1428912
2#Current some day smoker	.134998	.0028781	46.91	0.000	.1293495	.1406464
2#Former smoker	.1332337	.0025693	51.86	0.000	.1281912	.1382763
2#Never smoked	.1285303	.0024685	52.07	0.000	.1236856	.1333749
3#Current every day smoker	.3756767	.0072345	51.93	0.000	.3614783	.3898752
3#Current some day smoker	.3436698	.0129005	26.64	0.000	.3183515	.3689882
3#Former smoker	.3284163	.0060281	54.48	0.000	.3165857	.3402469
3#Never smoked	.2965738	.0045032	65.86	0.000	.2877358	.3054119

Table 8: Average adjusted predictions & marginal effects of depression level on Drinking status.

```
. margins alcdayswk2

Predictive margins

Number of strata   =       352                Number of obs     =       34,761
Number of PSUs     =     1,256                Population size   =  263,513,925
Model VCE    : Linearized                     Design df         =          904

1._predict   : Pr(depression_level==1), predict(pr outcome(1))
2._predict   : Pr(depression_level==2), predict(pr outcome(2))
3._predict   : Pr(depression_level==3), predict(pr outcome(3))
```

	Delta-method				
	Margin	Std. Err.	t	P>|t|	[95% Conf. Interval]
_predict#alcdayswk2					
1#No Drinks	.5318802	.0077185	68.91	0.000	.5167319 .5470285
1#less than a day	.5419898	.0054803	98.90	0.000	.5312342 .5527455
1#Between 1 to 2 days	.5553111	.0067351	82.45	0.000	.5420928 .5685295
1#Between 3 to 4 days	.5566164	.0111582	49.88	0.000	.5347175 .5785154
1#Between 5 to 6 days	.5897731	.0191046	30.87	0.000	.5522784 .6272677
1#All seven days	.5743695	.0142871	40.20	0.000	.5463298 .6024091
2#No Drinks	.1334711	.0025967	51.40	0.000	.1283749 .1385673
2#less than a day	.1323631	.0025398	52.12	0.000	.1273785 .1373476
2#Between 1 to 2 days	.1307576	.0025319	51.64	0.000	.1257886 .1357266
2#Between 3 to 4 days	.1305915	.0028174	46.35	0.000	.1250622 .1361209
2#Between 5 to 6 days	.1258592	.0036874	34.13	0.000	.1186224 .133096
2#All seven days	.1281794	.0032244	39.75	0.000	.1218512 .1345076
3#No Drinks	.3346487	.0069684	48.02	0.000	.3209726 .3483247
3#less than a day	.3256471	.0048731	66.83	0.000	.3160831 .335211
3#Between 1 to 2 days	.3139312	.0060291	52.07	0.000	.3020987 .3257638
3#Between 3 to 4 days	.312792	.0097382	32.12	0.000	.2936798 .3319042
3#Between 5 to 6 days	.2843677	.0162545	17.49	0.000	.2524669 .3162686
3#All seven days	.2974511	.0121177	24.55	0.000	.2736691 .3212331

Table 9: Logistic Regression estimationg odds of medication for depression by with controls of sexual oreinatation by sex, drinking status, smoking status, age, race, and region.

```
. svy: logit  deprx_new i.sexorien_new##female i.alcdayswk2 i.smokestatus2 i.AgeC i.racenew i.region, or
(running logit on estimation sample)

Survey: Logistic regression

Number of strata   =       352                Number of obs     =       81,622
Number of PSUs     =     1,259                Population size   =  644,467,183
                                                Design df         =          907
                                                F(  25,    883)   =        75.55
                                                Prob > F          =       0.0000
```

deprx_new	Odds Ratio	Linearized Std. Err.	t	P>|t|	[95% Conf.	Interval]
sexorien_new						
Straight	.2999922	.034533	-10.46	0.000	.2393286	.3760324
Bisexual	1.240239	.3671876	0.73	0.467	.6936815	2.217433
Other	.6612832	.202071	-1.35	0.176	.3630235	1.204593
1.female	1.017269	.183387	0.09	0.924	.7141368	1.449073
sexorien_new#female						
Straight#1	2.239073	.4093251	4.41	0.000	1.564055	3.205415
Bisexual#1	1.613654	.5609438	1.38	0.169	.8156754	3.192297
Other#1	2.273045	.8376221	2.23	0.026	1.102857	4.684862
alcdayswk2						
less than a day	.6677253	.0286327	-9.42	0.000	.6138308	.7263517
Between 1 to 2 days	.5002679	.0231337	-14.98	0.000	.4568653	.5477938
Between 3 to 4 days	.5924046	.0417141	-7.44	0.000	.5159424	.6801986
Between 5 to 6 days	.5362657	.0554441	-6.03	0.000	.4377814	.6569053
All seven days	.6083356	.0442838	-6.83	0.000	.5273479	.701761
smokestatus2						
Current some day smoker	.8626132	.0652207	-1.95	0.051	.7436562	1.000599
Former smoker	.7329853	.0326892	-6.97	0.000	.6715576	.8000318
Never smoked	.478442	.0199285	-17.70	0.000	.4408867	.5191964
AgeC						
36-50	1.546015	.0775143	8.69	0.000	1.401132	1.70588
51-69	1.773385	.0843889	12.04	0.000	1.615263	1.946985
70+	1.117057	.0683194	1.81	0.071	.9907089	1.259518
racenew						
Black/African American	.5486061	.0315523	-10.44	0.000	.4900492	.6141602
American Indian/Alaskan Native	.5935298	.1043948	-2.97	0.003	.4202679	.8382214
Asian	.2926148	.0396006	-9.08	0.000	.2243604	.3816333
Multiple Race	.99909	.1214682	-0.01	0.994	.7870064	1.268326
region						
North Central/Midwest	1.185249	.0655191	3.07	0.002	1.063392	1.32107
South	1.069147	.0556619	1.28	0.199	.9653017	1.184164
West	1.008449	.0578428	0.15	0.883	.9010838	1.128606
_cons	.3464238	.0478884	-7.67	0.000	.2641092	.4543934

Note: _cons estimates baseline odds.

Table 10: Model of interaction margin model used for medication taken for depression with control variables .

```
. margins sexorien_new#female

Predictive margins

Number of strata   =       352                  Number of obs     =       81,622
Number of PSUs     =     1,259                  Population size   =  644,467,183
Model VCE    : Linearized                       Design df         =          907

Expression   : Pr(deprx_new), predict()
```

	Delta-method Margin	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sexorien_new#female						
Gay/Lesbian#0	.1613815	.0146659	11.00	0.000	.1325984	.1901646
Gay/Lesbian#1	.1636194	.0176344	9.28	0.000	.1290103	.1982285
Straight#0	.0562752	.0015076	37.33	0.000	.0533163	.0592341
Straight#1	.1175902	.0021851	53.81	0.000	.1133017	.1218787
Bisexual#0	.1912821	.0394254	4.85	0.000	.1139065	.2686578
Bisexual#1	.2746898	.0263066	10.44	0.000	.2230609	.3263188
Other#0	.1143347	.0277321	4.12	0.000	.0599081	.1687614
Other#1	.2240613	.0313014	7.16	0.000	.1626297	.2854929

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Notes:

```
. tab AgeC
```

Collapsed Age	Freq.	Percent	Cum.
18-35	61,725	27.48	27.48
36-50	52,801	23.50	50.98
51-69	72,424	32.24	83.22
70+	37,688	16.78	100.00
Total	224,638	100.00	

```
. tab racenew
```

Self-reported Race (Post-1997 OMB standards)	Freq.	Percent	Cum.
White	174,083	77.69	77.69
Black/African American	30,165	13.46	91.15
American Indian/Alaskan Native	2,437	1.09	92.23
Asian	12,870	5.74	97.98
Multiple Race	4,533	2.02	100.00
Total	224,088	100.00	

```
. tab sexorien_new
```

Sexorien new	Freq.	Percent	Cum.
Gay/Lesbian	3,176	1.72	1.72
Straight	178,100	96.31	98.03
Bisexual	1,744	0.94	98.98
Other	1,895	1.02	100.00
Total	184,915	100.00	

```
. tab region
```

Region of residence	Freq.	Percent	Cum.
Northeast	36,999	16.47	16.47
North Central/Midwest	48,818	21.73	38.20
South	80,550	35.86	74.06
West	58,271	25.94	100.00
Total	224,638	100.00	

```
. tab deprx deprx_new
```

Take medication for depression	deprx_new		Total
	0	1	
No	101,008	0	101,008
Yes	0	10,688	10,688
Total	101,008	10,688	111,696

```
. tab smokestatus2
```

Cigarette smoking recode 2: Current detailed/former/never	Freq.	Percent	Cum.
Current every day smoker	28,730	12.85	12.85
Current some day smoker	8,841	3.95	16.80
Former smoker	52,323	23.40	40.20
Never smoked	133,716	59.80	100.00
Total	223,610	100.00	

```
. tab alcdayswk2
```

Drinking Status	Freq.	Percent	Cum.
No Drinks	34,496	19.53	19.53
less than a day	66,554	37.67	57.20
Between 1 to 2 days	45,844	25.95	83.15
Between 3 to 4 days	14,066	7.96	91.11
Between 5 to 6 days	4,761	2.69	93.80
All seven days	10,946	6.20	100.00
Total	176,667	100.00	