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Smoke-Free Bar Policies and Smokers' Alcohol Consumption: Findings from the International Tobacco Control 4 Country Survey

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Abstract

Background—Cigarette smoking and alcohol consumption are positively correlated, and the concurrent use of tobacco and alcohol exacerbates the health risks associated with the singular use of either product. Indoor smoke-free policies have been effective in reducing smoking, but little is known about any impact of these policies on drinking behavior. The purpose of this study was to evaluate the potential association between the implementation of smoke-free bar policies and smokers' alcohol consumption.

Methods—A prospective, multi-country cohort survey design was utilized. Participants were nationally representative samples of smokers from the United Kingdom, Australia, Canada, and the United States, who were interviewed as part of the International Tobacco Control Four Country Survey (ITC-4) in 2005, 2007, or 2008 (N = 11914). Changes in the frequency and amount of alcohol consumption were assessed as functions of change in the presence of smoke-free bar policies over time.

Results—Overall, changes in alcohol consumption were statistically indistinguishable between those whose bars became smoke-free and those whose bars continued to allow smoking. However, implementation of smoke-free policies was associated with small reductions in the amount of alcohol typically consumed by those who were classified as hazardous drinkers, along with small reductions in the frequency of alcohol consumption among heavy smokers.

Conclusions—Smoking bans in public places, which protect millions of non-smokers from the harmful effects of second-hand smoke, do not appear to be associated with sizable reductions in smokers' alcohol consumption in general, but may be associated with small consumption reductions among subgroups.

Keywords

Smoke-free policies; alcohol consumption; International Tobacco Control Four Country Survey

1. Introduction

Cigarette smokers consume alcohol more frequently and more heavily than nonsmokers (Anthony and Echeagaray-Wagner, 2000; Chiolerio et al., 2006; Dawson, 2000; Kahler et al.,

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2008; Falk et al., 2006), and smoking status is particularly strongly associated with hazardous alcohol consumption and with alcohol use disorders. McKee et al. (2007) found that smokers were more than twice as likely to meet National Institute on Alcohol Abuse and Alcoholism (NIAAA) criteria for hazardous drinking, and were more than three times as likely to meet DSM-IV criteria for alcohol use disorders.

Smokers also tend to smoke more when they are consuming alcohol (Glautier et al., 1996; Griffiths et al., 1976; Mintz et al., 1985), and alcohol consumption increases among smokers when they are smoking (Mello et al., 1987; Barrett and Paschos, 2006). In addition to the health risks caused by smoking (e.g., cardiovascular disease, chronic obstructive pulmonary disease, several cancers, and death (World Bank, 1999)), and heavy alcohol consumption (e.g., hemorrhagic stroke, cirrhosis of the liver, hypertension, gastrointestinal bleeding, several cancers, and death (Rehm et al., 2003)), the concurrent use of tobacco and alcohol further exacerbates the relative risk of death (Grucza et al., 2007; Rosengren et al., 1988), along with the risk of head and neck cancers, cirrhosis, and pancreatitis (Blot et al., 1988; Klatsky and Armstrong, 1992; Marrero et al., 2005; Pelucchi et al., 2007; Vaillant et al., 1991).

Given the disease burden caused by tobacco use, imposed on both smokers and non-smokers who are exposed to secondhand smoke, the World Health Organization Framework Convention on Tobacco Control, Article 8, calls for the implementation of comprehensive smoke-free indoor air laws (World Health Organization, 2005). Accordingly, smoking in indoor public places has been completely banned in the United Kingdom (UK) and Australia since 2007 (Global Smokefree Partnership, 2009). Smoking bans have been increasingly implemented in Canada, with most of the country becoming smoke-free by 2008. The United States (US) has been comparatively slow to implement smoke-free legislation, with only 13 states having such policies as of 2008.

It is well established that smoking bans are effective in protecting non-smokers from second-hand smoke (Heloma et al., 2001; Farrelly et al., 2005; Eisner et al., 1998; Menzies et al., 2006). In addition, such policies may reduce overall levels of smoking (Fitchenberg and Glantz, 2002), may reduce the rate of coronary heart disease (Barnoya and Glantz, 2006; Juster et al., 2007; Sargent et al., 2004), and may motivate smokers to adopt smoke-free policies in their own homes (Borland et al., 2006). Further, given the direct association between smoking and alcohol consumption, theory suggests that the advantages of smoking bans may extend beyond smoking-related benefits to alcohol-related benefits.

Few studies have evaluated the association between smoke-free policies and alcohol consumption. McKee et al. (2009) compared change in alcohol consumption among Scottish smokers before and after Scotland became smoke-free to change in alcohol consumption among smokers in the rest of the UK which did not have smoke-free policies, and found no differences in consumption levels. However, following the implementation of smoke-free policies, moderate and heavy drinking smokers in Scotland did experience greater reductions in the amount of drinks they consumed in bars and pubs relative to smokers in the rest of the UK. Second, Picone et al. (2004), using longitudinal data from the US Health and Retirement Survey (1992–2002), reported that smoking restrictions were associated with reduced alcohol consumption among older adult women. However, smoke-free policies were enacted on a state-by-state basis and measures of alcohol consumption were not specifically tied to the state policies, nor were subgroups of drinkers or smokers evaluated. Lastly, Gallet and Eastman (2007), using economic indicators of alcohol consumption in the US between 1982 and 1998, concluded that smoke-free policies reduced the demand for beer and liquor. They too, however, did not evaluate whether differential associations among subpopulations existed.

Given the limited evidence regarding the association between smoke-free policies and alcohol consumption, particularly among those smokers who stand to gain the most from reduced alcohol consumption (i.e. hazardous drinkers), the purpose of this study was to examine the relationship between change in smoke-free bar policies and change in alcohol consumption using a large-scale, multi-country population survey. Further, we examined this relationship specifically among hazardous drinkers, among heavy smokers, and among those who were both hazardous drinkers and heavy smokers.

2. Methods

2.1. Participants

Nationally representative samples of adult smokers (aged 18+) from the United Kingdom (UK), Australia, Canada, and the United States (US), who were interviewed as part of the International Tobacco Control Four Country Survey (ITC-4), participated in this study. The ITC-4 is an annual cohort survey designed to evaluate the psychosocial and behavioural impacts of national tobacco control policies using standardized data collection methods and measurements. Beginning in 2002, random digit dialling was used to recruit current smokers (i.e. those who smoked at least 100 cigarettes during their lifetimes and reported smoking at least once in the past 30 days) into the study based on strata defined by geographic region and community size. Participants were typically contacted within one week of recruitment to complete the initial survey, and were re-contacted annually to complete follow-up surveys. Response rates ranged from 26% in the US to 50% in Canada, which are comparable with other telephone surveys in these countries. Further, previous analyses have demonstrated good correspondence between the demographic characteristics of those who responded to this survey and the characteristics of respondents from national benchmark surveys, suggesting that non-response is not a source of systematic bias in this study (Hammond et al., 2004). Even so, it is possible that certain subsets of respondents to this survey (e.g. hazardous drinkers) may not be as representative of the corresponding subsets in the general population. Participants were re-contacted in subsequent years to complete follow-up surveys, and those lost to attrition (~20% on average) were replenished each year to maintain a sample size of ~2000 participants per country (International Tobacco Control Policy Evaluation Survey, 2011). Previous analyses of attrition rates have indicated that age, gender, and racial/ethnic groups vary with respect to retention (Thompson et al., 2006); thus, statistical models used in the present analyses were adjusted for these variables. Extensive descriptions of the survey procedures can be found elsewhere (International Tobacco Control Policy Evaluation Survey, 2011; Fong et al., 2006; Thompson et al., 2006).

The present study used data collected in 2005, 2007 and 2008 (i.e. waves 4, 6, & 7), which were the years when respondents were queried about their alcohol consumption. Respondents who participated in any of these waves were included in cross-sectional descriptive statistics (N = 11914). Those who participated in at least two consecutive waves were included in longitudinal analyses (N = 5786). The study protocol was approved by the institutional review boards or research ethics boards of the University of Waterloo (Canada), Roswell Park Cancer Institute (United States), University of Strathclyde (UK), University of Stirling (UK), The Open University (UK), and The Cancer Council Victoria (Australia).

2.2. Measures

2.2.1. Smoke-Free Bar Policies—Given the impracticality of identifying documented smoking bans enacted below the national level (e.g. jurisdictional bans, proprietor-initiated bans, case-by-case exemptions to bans), we inferred the presence/absence of smoke-free policies using participants' responses to the following questionnaire item: "Which of the following best describes the rules about smoking in drinking establishments, bars, and pubs

where you live?” Response options included: “Smoking is not allowed in any indoor area,” “Smoking is allowed only in some indoor areas,” and “No rules or restrictions.” Response categories were collapsed to indicate whether smoking is allowed at all (i.e. allowed in some indoor areas or no rules/restrictions) or is not allowed. Previous analyses assessing the associates of smoking restrictions when measured with ITC self-reports versus documented reports show results to be consistent and robust regardless of source (Borland et al., 2006).

A categorical variable indicating change in smoke-free bar policy was computed by comparing responses in consecutive waves. Since we were unable to pinpoint precisely when during the past year policy change occurred in each respondent’s locale, and since the effects of policy change may not be immediate, it is possible that those who reported the presence of smoke-free policies in consecutive waves may have experienced the hypothesized correlates of policy change during that time. Therefore, we considered the following policy group categories in the analyses: smoking allowed in consecutive waves, change to smoke-free, and change to smoke-free + smoke-free in consecutive waves.

In addition, participants who reported visiting a bar in the last 6 months were asked the following: “The last time you visited, were people smoking inside the pub or bar?” Responses to this item were used as an indication of smoke-free bar policy compliance.

2.2.2. Alcohol Consumption—Alcohol consumption was assessed with the following three measures, as recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2003): frequency of alcohol consumption, amount of alcohol typically consumed, and frequency of binge drinking.

2.2.2.1. Frequency of alcohol consumption: Frequency of alcohol consumption was measured with the item, “During the last 12 months, about how often did you have any kind of drink that contained alcohol?” Response choices included: “Every day,” “5–6 days per week,” “3–4 days per week,” “1–2 days per week,” “Less than once a week but at least once a month,” “Less than once a month,” “Did not drink any alcohol in the past year,” and “Don’t Know.” This variable was treated as continuous using the midpoints of each category and results are presented in days/week units.

2.2.2.2. Amount of alcohol typically consumed: Amount of alcohol typically consumed was measured with the item, “On a typical day when you did drink alcohol, how many alcoholic drinks did you usually have?” Participants were provided the following definitions of a typical drink, which differ between countries: 5 oz wine or 12 oz can of beer (CA & US); 5 oz/150 mL wine or 13 oz can of beer (UK); 150 ml of wine or 375 ml can or stubby of beer (AU). Response choices included categories ranging from “1 drink or less” to “12 or more drinks.” This variable was treated as continuous using the midpoints of each category (with .5 used for “1 drink or less” (among those who reported any drinking), and with 13 used for “12 or more drinks”) and results are presented in drinks/typical day units.

2.2.2.3. Frequency of binge drinking: Frequency of binge drinking was measured with the following item: “Think about any times in the past year when you had more than [5 (male)/4 (female)] alcoholic drinks within a two-hour period. How often did you do this in the past year?” Response choices included: “Every day,” “5 to 6 days a week,” “3 to 4 days a week,” “2 days a week,” “1 day a week,” “2–3 days a month,” “1 day a month,” “3–11 days in the past year,” “1–2 days in the past year,” and “Never.” This variable was treated as continuous using the midpoints of each category and results are presented in number of times/year units.

For each of the above three measures, changes in consumption between consecutive measurements were computed by subtracting the consumption measure in each wave from

the consumption measure in each subsequent wave.¹ Additionally, respondents were classified as hazardous drinkers if they consumed more than 14 (men) / 7 (women) drinks/week (as calculated by frequency of consumption X amount typically consumed), or if they reported at least one binge drinking episode during the past year, per NIAAA guidelines.

2.2.3 Bar Patrons—Analyses were focused on respondents who reported visiting a bar at baseline, as identified with the following item, “In the last 6 months, have you visited a drinking establishment, bar, or pub where you live?” Those who did not patronize bars were considered in analyses as a separate comparison group.

2.2.4. Covariates—The following socio-demographic characteristics were included as covariates in the analyses: country (UK, Australia, Canada, and US), gender, age group (18–24, 25–39, 40–54, and 55+), identified majority/minority group (based on the primary means of identifying minorities in each country, i.e. racial/ethnic group in the UK, Canada, and the US, and English language spoken at home in Australia), level of education (“low” indicated completed high school or less in Australia, Canada, and the US, or secondary/vocational or less in the UK, “moderate” indicated community college/trade/technical school/some university (no degree) in Canada and the US, college/university (no degree) in the UK, or technical/trade/some university (no degree) in Australia, and “high” indicated completed university or postgraduate in all countries), and annual household income (defined as “low” if it was less than US\$30,000 (US, Canada, and Australia) or less than £30,000 (UK), “moderate” if it was between US\$30,000 and US\$59,999 (US, Canada, and Australia) or between £30,000 and £44,999 (UK), or “high” if it was equal to or greater than US\$60,000 (US, Canada, and Australia) or equal to or greater than £45,000 (UK)). The following variables were included in the analyses to adjust for variability associated with smoking-related characteristics: intention to quit (a dichotomous variable measured with the item: “Are you planning to quit smoking within the next month, within the next six months, sometime in the future - beyond six months, or are you not planning to quit?”) and the heaviness of smoking index, HSI (a short form of the Fagerstrom tolerance questionnaire used to measure nicotine dependence (Heatherton et al., 1989)).

2.3. Statistical analyses

All analyses were conducted using Stata Version 11 (2009). Descriptive statistics were used to indicate the prevalence of smoke-free bar policies in each of the four countries during the course of the study period, along with the prevalence of policy noncompliance. The generalized estimating equations (GEE) approach was used to evaluate the longitudinal associations between change in smoke-free bar policy group and (1) change in frequency of alcohol consumption, (2) change in amount of alcohol typically consumed, and (3) change in frequency of binge drinking. These associations were examined overall, as well as specifically among those classified as hazardous drinkers at baseline, among those classified as heavy smokers at baseline (i.e. HSI score of 3 or greater), and among those classified as both hazardous drinkers and heavy smokers at baseline. Additionally, the policy group X bar patron interaction term was tested in all statistical models, and consumption change among those who did not patronize bars was estimated whenever the interaction term was significant.

Specifically, the GEE approach was used to assess change in consumption as a function of smoke-free bar policy change group, comparing the combined “change to smoke-free”

¹Since alcohol consumption was not assessed in wave 5, changes in consumption between waves 4 and 6 were calculated instead. The term “consecutive” is used throughout to refer to consecutive measurements, which may not have been collected in consecutive waves.

group and the “smoke-free in consecutive waves” group to the “smoking allowed at both times” group, along with comparing the individual “change to smoke-free” group to the “smoking allowed at both times” group (i.e. within-person change in consumption was compared between persons comprising different policy-change groups), between pairs of consecutive waves *at the same time*. That is, repeat longitudinal analyses were performed while including respondents present in both pairs of consecutive waves and accounting for the correlated nature of data within persons over time, as well as accounting for the increased time gap in change scores between waves 4 and 6 (Liang and Zeger, 1986; Hardin and Hilbe, 2003). The outcome variables (change scores) were all approximately normally distributed; therefore, all models included a specification for the Gaussian distribution of the dependent variable, along with a specification for the exchangeable within person correlation matrix. All analyses were adjusted for gender, age group, majority/minority group, education, income, intention to quit, HSI, country, baseline alcohol consumption, and time (to remove variability associated with natural trends in changes over time).

3. Results

3.1. Prevalence of smoke-free bar policies during the study period, by country

The percentages of respondents who reported the presence of smoke-free bar policies during the study period are presented in Table 1. Among those who reported the presence of these policies, the percentages who indicated that people were smoking inside bars at last visit are also indicated (i.e. % noncompliant). The largest increase in the prevalence of smoke-free bar policies occurred between 2005 and 2007 in the UK. At the end of the study period, nearly all bars in the United Kingdom, Australia, and Canada were smoke-free, while only 60% of respondents in the United States reported smoke-free bar policies. In all four countries, whenever a substantial proportion of respondents indicated the presence of smoke-free bar policies, relatively small percentages of them reported that people were still smoking inside bars at last visit.

3.2. Change in alcohol consumption as a function of change in smoke-free bar policy

The mean changes in each alcohol consumption measure for each smoke-free bar policy change group are presented in Table 2 for all bar patrons, and separately for patrons who were hazardous drinkers at baseline, those who were heavy smokers at baseline, and those who were both hazardous drinkers and heavy smokers at baseline. Coefficients indicate the fully adjusted differences in consumption changes between those who experienced smoke-free bar policy change and those who did not. Associations did not differ significantly by country, therefore only aggregate data are presented.

Overall, changes in frequency of alcohol consumption, changes in amount of alcohol typically consumed, and changes in frequency of binge drinking were statistically indistinguishable between smoke-free bar policy change groups. However, among patrons who were hazardous drinkers at baseline, those whose bars became or remained smoke-free reported a significantly larger reduction in the amount of alcohol typically consumed compared to those whose bars continued to allow smoking ($b = -0.46$, $p = .011$). Those whose recall of consumption timeframe corresponded most closely to the period when policy change occurred experienced the greatest reductions in consumption ($b = -0.52$, $p = .006$). Among patrons who were heavy smokers at baseline, along with patrons who were both heavy smokers and hazardous drinkers at baseline, those whose bars became or remained smoke-free reported a significantly larger reduction in frequency of alcohol consumption compared to those whose bars continued to allow smoking, $b = -0.25$, $p = .012$ and $b = -0.45$, $p = .007$, respectively. Once again, those whose recall of consumption timeframe corresponded most closely with the period when policy change occurred

experienced the greatest reductions in consumption ($b = -0.30$, $p = .007$ among heavy smokers and $b = -0.48$, $p = .006$ among those who were both heavy smokers and hazardous drinkers). Additionally, heavy smokers who did not patronize bars did not experience any change in frequency of consumption as a function of bar policy change as did their counterparts who did patronize bars ($p < .05$ for bar policy change group X bar patron interaction term). No other statistically significant associations were found.

4. Discussion

Findings from this study indicate that indoor smoke-free bar policies, which are generally implemented alongside other clean indoor air policies, are not associated with significant reductions in alcohol consumption among smokers in general, but changing to a smoke-free air environment may be associated with small reductions in the amount of alcohol typically consumed by hazardous drinkers, along with small reductions in the frequency of alcohol consumption among heavy smokers.

These findings should be considered in light of the following study limitations: reliance on self-reported smoke-free bar policies and self-reported alcohol consumption measures (though it is unlikely that underreporting of alcohol consumption would systematically differ between policy change groups), inability to assess alcohol consumption inside bars per se, inability to account for secular trends in changes in consumption, relatively small sample sizes, which were insufficient to support further stratified analyses, and inability to evaluate whether there is an association between smoke-free laws and non-smokers' alcohol consumption. Balanced against these weaknesses are the following noteworthy strengths: (1) use of nationally representative samples of smokers from four countries, (2) use of NIAAA guideline-based measurements of alcohol consumption outcomes, (3) use of the cohort design, which allowed for within-person change to be compared between persons who did and did not experience policy change, and (4) use of generalized estimating equations, which allowed for repeat analyses to be performed, thereby maximizing power while controlling for natural trends in changes over time.

Results from this study are generally consistent with those reported in previous research. McKee et al. (2009) evaluated the differences in changes in alcohol consumption between Scottish smokers who experienced smoke-free policy change and smokers in the rest of the UK who did not experience policy change, and found that smoke-free bar policies were not associated with decreases in alcohol consumption overall, but were associated with reduced alcohol consumption *inside bars* among heavy drinking smokers. This bar-specific association may suggest that the generally small consumption reductions that we found here would be larger if we were able to consider location-specific consumption. While Picone et al. (2004), and Gallet and Eastman (2007) used notably different methods and measures, they too concluded that alcohol consumption decreases to some extent following the implementation of smoking bans.

However, it is also possible that the reductions in consumption that we observed here may be attributed in part to secular trends at work in the places that implement smoke-free policies. Indeed, we only found one significant interaction between bar policy change group and bar patronization. That is, heavy smokers who did not patronize bars did not experience a reduction in frequency of consumption as a function of policy change, while heavy smoking bar patrons did experience a significant reduction. While our ability to assess consumption change among non-bar patrons was limited due to small sample sizes, the absence of additional interactions suggests that the overall environment in which policy change occurs may contribute to the consumption reductions that are seemingly due to bar

policy change itself. Further study is needed to isolate any unique association between bar-specific policy change and alcohol consumption change.

While hazardous drinkers reported consuming somewhat less alcohol following smoke-free bar policy change, and heavy smokers reported consuming alcohol somewhat less frequently following policy change, this finding should not be interpreted as suggesting that policies have an adverse economic impact on bars as a whole. Instead, it is likely that, while a small subgroup of patrons may reduce/stop visiting bars following smoke-free legislation, other groups may increase/start visiting these establishments. Indeed, McKee et al. (2009) found that heavy drinking Scottish smokers were less likely to go to bars following the change to smoke-free, but non-smokers were more likely to go to bars following the change. Additionally, economic evaluations of smoke-free policies have consistently shown that there is no net adverse economic impact of smoke-free legislation on the hospitality industry (Hirasuna, 2006; Scollo et al., 2003; Melberg & Lund, 2010; Lund & Lund, 2011). Finally, previous research indicates that most smokers accept and comply with indoor smoke-free policies (Borland et al., 2006), and results from the present study indicate that compliance with policies was indeed high whenever the presence of policies was largely acknowledged.

In conclusion, while findings from this study do not indicate that smoke-free bar policies substantially reduce alcohol consumption among smokers in general, and the consumption reductions among subgroups were relatively small, the numerous smoking-related health benefits of smoking bans in public places remain clear: they have protected millions of non-smokers from the harmful effects of second-hand smoke (Heloma et al., 2001; Farrelly et al., 2005; Eisner et al., 1998; Menzies et al., 2006), have been implicated as a factor in reducing smokers' overall consumption of cigarettes (Fichtenberg and Glantz, 2002), in reducing coronary heart disease (Barnoya and Glantz, 2006; Juster et al., 2007; Sargent et al., 2004), and in motivating smokers to implement smoke-free policies in their own homes (Borland et al., 2006).

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Table 1
Self-reported presence of smoke-free bar policies during the study period, by country

Year	All Countries			United Kingdom			Australia			Canada			United States		
	N	Smokefree %	Incompliant ¹ %	N	Smokefree %	Incompliant ¹ %	N	Smokefree %	Incompliant ¹ %	N	Smokefree %	Incompliant ¹ %	N	Smokefree %	Incompliant ¹ %
2005	4658	23.0%	19.2%	1278	3.7%	59.6%	1297	14.0%	39.8%	1142	53.4%	8.7%	941	24.8%	22.4%
2007	4327	82.3%	7.0%	1165	97.3%	4.6%	1307	87.6%	6.8%	1020	87.8%	5.0%	835	46.4%	18.6%
2008	3514	92.0%	4.6%	1057	100.0% ²	2.2%	924	100.0% ²	5.3%	880	97.8%	2.4%	653	59.9%	13.8%

Cross-sectional measures among smokers who visited a bar in the last 6 months at each wave; not limited to those present in two consecutive waves

¹ Among those who reported the presence of smokefree bar policies; this measure was retrospectively recalled and could span the time prior to smokefree policies

² This percentage is not self-reported

Table 2

Change in alcohol consumption as a function of change in smoke-free bar policy overall, among hazardous drinkers, among heavy smokers, and among those who are both hazardous drinkers and heavy smokers

Strata	Smokefree policy	N ¹	Frequency of consumption			Amount typically consumed			Frequency of binge drinking		
			Number of days per week (overall mean ~2 days/week)			Number of drinks per typical day (overall mean ~3.5 drinks/day)			Number of times per year (overall median 0 times/year)		
			Mean change ²	Coeff.	p	Mean change ²	Coeff.	p	Mean change ²	Coeff.	p
All	Smoking allowed	512	-0.12	ref	511	-0.01	ref	503	3.05	ref	
	Smokefree	3799	-0.13	0.784	3774	-0.19	-0.22	0.058	0.08	-0.82	0.729
	Change to smokefree	1766	-0.09	0.703	1751	-0.28	-0.23	0.064	0.30	-0.41	0.875
Hazardous Drinkers	Smoking allowed	259	-0.30	ref	257	0.04	ref	250	1.94	ref	
	Smokefree	2261	-0.28	0.613	2248	-0.43	-0.46	0.011	-3.33	-2.41	0.568
	Change to smokefree	1033	-0.20	0.563	1026	-0.53	-0.52	0.006	-3.40	-2.57	0.574
Heavy Smokers	Smoking allowed	307	-0.02	ref	306	-0.15	ref	303	2.00	ref	
	Smokefree	2220	-0.17	0.012	2205	-0.19	-0.07	0.657	-0.02	-1.22	0.719
	Change to smokefree	978	-0.17	0.007*	968	-0.25	-0.16	0.360	0.81	-0.76	0.839
Both	Smoking allowed	146	-0.14	ref	144	-0.28	ref	141	-2.39	ref	
	Smokefree	1268	-0.35	0.007	1261	-0.41	-0.07	0.782	-3.94	-2.99	0.638
	Change to smokefree	544	-0.28	0.006	541	-0.51	-0.22	0.409	-3.74	-3.39	0.620

Among those who reported visiting a bar at baseline; Multivariate analyses were adjusted for country, time, gender, age group, minority group, education, income, intention to quit, HSI, and baseline drinking measure; Mean change values do not account for any covariates

¹Ns indicate number of unique individuals

²Means consider multiple observations per individual

* p<.05 for policy groupXbar patron interaction term