



Reversal of voters' positions since the privatization of spirits sales in Washington State

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ARTICLE INFO

Keywords:

Liquor
Spirits
Privatization
Washington State
Alcohol policy

ABSTRACT

In 2011, Washington State voters approved Initiative 1183 (I-1183), the privatization of liquor sales. The aim here was to examine how voter support for privatization has changed since I-1183 passed. Data came from five state-representative surveys, with recruitment between 2014 and 2016 (N = 4,290). Primary outcomes were voting on I-1183 (vs. not), voting for (vs. against) I-1183, and changing vote for I-1183 to against among those who voted for it (vs. not changing). Bivariate and multivariable logistic regressions were used for analyses. Results show that voting for (vs. against) I-1183 was related to 2.59 ($P < 0.001$) times greater odds of wanting to change one's vote. This difference was large enough to have changed the result of the election if voters could know their later opinions. Among those who voted for I-1183, odds of retracting support were positively related to total past 12-month drink volume. Those who agreed that number of stores selling liquor should decrease were more likely to change votes from for to against, while those who considered that youth alcohol abuse has remained the same since privatization were less likely to change votes. Thus, in the years immediately following liquor privatization in Washington State, public opinion has changed enough to shift the result of the election from supporting privatization to rejecting it. Findings are especially relevant for other US states and countries considering privatization.

1. Introduction

Voters in Washington State approved Initiative 1183 (I-1183) in November 2011, ending the state's monopoly on distilled-liquor sales and allowing privatized retail sales as of July 2013. Washington is the first state to fully privatize both liquor distribution and retail sales, as well as the first to have neither government control of liquor sales nor a mandated three-tier system; these mark the most fundamental state-wide alcohol policy changes since Prohibition was repealed in 1933.

Privatization remains a hot button topic in the US and in countries like Canada and those in Scandinavia with government monopolies. The province of Ontario, Canada currently maintains a "quasi-monopoly," with the Liquor Control Board of Ontario controlling retail and distribution since 1927. However, Ontario's premier loosened regulations in 2019 by allowing alcohol sales in corner stores, and is pushing for full privatization by the spring of 2020 (Pattison, 2019). US states that have most recently considered privatization include Pennsylvania and North Carolina. In 2018, a candidate for governor of Pennsylvania proposed leasing the state's wholesale liquor system and privatizing sales to increase revenue (Hanna et al., 2018); his opponent called the proposal "abracadabra math," claiming that privatization could

actually cost the state money (Wolfman-Arent, 2018). The current North Carolina governor has similar plans to introduce a bill reforming the government monopoly into privatized sales in 2019. As in Pennsylvania, proponents of the North Carolina bill call for a "separation of hooch and state," (The Wilson Times, 2018) arguing that privatization will increase state revenue because the state monopoly system is inefficient, interferes with the free market, raises prices, limits selection and makes buying alcohol inconvenient (The Observer Editorial Board, 2018). Opponents to privatization in North Carolina claim that the government monopoly better protects public health (McAdams, 2018).

Government alcohol policies are more likely to be enacted and sustained when the majority favors a policy, while softening public opinions may lead to weakened or overturned regulations (Greenfield et al., 2004; Latimer et al., 2003). Therefore, it is crucial both to understand the I-1183 outcomes and how implementation evolves over time, and to assess public opinions and attitudes toward the perceived outcomes periodically. Notably, demographic differences in opinions regarding alcohol policies have been found in prior studies; for example, lighter drinkers and abstainers favor government control of alcohol sales (Greenfield et al., 2007). However, there is a dearth of studies of opinions and attitudes following major alcohol legislation

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<https://doi.org/10.1016/j.pmedr.2020.101112>

Received 10 December 2019; Received in revised form 7 April 2020; Accepted 30 April 2020

Available online 23 May 2020

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(Wagenaar and Toomey, 2000). One study on the federally mandated warning label on alcoholic beverages showed that already high favorability for the container warning increased following its 1989 implementation (Greenfield et al., 2007; Room et al., 1995). This contrasted with other policy options like those on increasing alcohol taxes or reducing availability, which significantly declined.

A previous study of 1,202 Washington State residents recruited from January–April 2014, six months after private sales began, concluded that the result of the I-1183 vote would have been different if voters could know their future opinions of the actual situation resulting from privatization (Subbaraman and Kerr, 2016). Most notably, those who voted for I-1183 had almost eight times the odds of wanting to change their votes compared with those who voted against it, and re-categorizing these votes to against would have changed the election outcome.

1.1. Current study

The aim here was to examine how voter support for privatization has changed since I-1183 passed. We expand previous results by examining the relationship between demographics, overall drinking and spirits use, and policy opinions, as well as how these variables relate to wanting to change one's vote on I-1183. We use a series of repeated cross-sectional data collected in 2014–2016, the years immediately following the rollout of privatized sales. We hypothesize that 1) the results of our prior study will be confirmed, with substantially more yes voters wishing to change their vote than no voters, and 2) negative opinions toward alcohol taxes and concerns about wider availability and youth access under the new regime will be related to wanting to change one's vote.

2. Methods

2.1. Sample

The series of Privatization of Spirits in Washington (PSW) Surveys, conducted from January 2014–December 2016 by ICF International, was designed to evaluate impacts of the privatization of spirits sales and the legalization of adult use cannabis in Washington State. The cross-sectional sample consists of six representative surveys of newly-selected adults (aged 18 +) in Washington, with recruitment occurring separately in January–April 2014 (Wave 1, N = 1202), September–October 2014 (Wave 2, N = 804), March–May 2015 (Wave 3, N = 823), August–October 2015 (Wave 4, N = 662), March–April 2016 (Wave 5, N = 610), and September–November 2016 (Wave 6, N = 1391). Respondents were selected using a state random probability sample obtained via random digit dial (RDD). Landline numbers were dialed by a computer and one adult in the household was randomly selected. Cell phone numbers were dialed manually in accordance with laws pertaining to cellular phone contacts, and interviews were conducted with the individual who answered the cell phone and identified as an adult Washington resident. For each wave, the sample was split approximately evenly between landline and cell interviews. AAPOR2 cooperation rates (The American Association for Public Opinion Research, 2011), complete and partial interviews as a percentage of identified eligible respondents, (landline, cell) were: Wave 1 (50.8%, 59.5%), Wave 2 (45.8%, 62.4%), Wave 3 (43.7%, 61.5%), Wave 4 (41.7%, 59.6%), Wave 5 (49.4%, 60.9%) and Wave 6 (45.3%, 63.0%). At survey completion, participants were issued \$10 gift cards. Surveys lasted about half an hour on average. Protocols were ethically approved by the Public Health Institute Institutional Review Board (#I13-010).

2.2. Measures

Primary outcomes were voting on I-1183 (vs. not voting), voting for (vs. against) I-1183, and changing vote for I-1183 to “against” among those who voted for it (vs. not changing). *I-1183 voting behavior* was

determined by the question “Did you vote for or against proposition I-1183 privatizing liquor sales in 2012?”, with the response options (1) For, (2) Against, (3) Did not vote, (97) Don't know, and (99) Refused. Those who answered “For” or “Against” in I-1183 voting question were asked the I-1183 *re-voting opinion* question: “Would you still vote the same way given your current understanding of the proposition's effects?”, with response options (1) Yes, (2) No, (97) Don't know, and (99) Refused.

Primary exposures were drinking behaviors measured for the past 12 months. *Current drinking* was defined by whether the respondent drank any wine, beer, or liquor, while *current spirits drinkers* were those who had any liquor. *Spirits purchasing status* (yes/no) was based on whether the current spirits drinker purchased any spirits. These measures were combined into a drinking/purchasing status categorical variable: (1) non-current drinker, (2) current non-spirits drinker, (3) current spirits drinker, but not spirits purchaser, and (4) current spirit drinker and purchaser. *Volume consumption* of wine, beer and spirits was calculated for each beverage separately, based on the questions 1) “How often do you usually have drinks containing wine/beer/spirits?” with response options ranging from “more than once a day”, “once a day”, to “about once a month” and “less than once a month but at least once a year” and 2) “On those days when you drank wine/beer/spirits, how many drinks do you typically have?”. A drink was defined as 5 oz of wine, 12-ounce bottle of beer, or 1.5 oz of liquor. The drinking and purchasing status variable, 12-month spirits volume and total volume (wine, beer and spirits combined) were used to predict both I-1183 voting behavior and re-voting opinion measures.

Several other questions about *opinions related to alcohol policies and youth drinking* were also asked: (a) “Do you think taxes on Liquor should be increased, decrease, or remain the same?”, (b) “Do you think taxes on Beer should be increased, decrease, or remain the same?”, (c) “Do you think that the number of stores selling Liquor should be increased, decreased or remain the same?”, and (d) “Do you think youth alcohol abuse has increased, decreased, or remained the same since liquor sales were privatized in June of 2012?”. These opinion variables were used to predict whether respondents would change their votes, and were selected based on the known effects of I-1183 on tax rates and spirits availability and consequences of privatization in other locations (Subbaraman and Kerr, 2016). Participants could also respond “Don't know” or refuse to answer other opinion questions.

2.3. Statistical analysis

To evaluate robustness of findings from our study on I-1183 voting behavior and opinions using only Wave 1 data (Subbaraman and Kerr, 2016), the current analyses only used Waves 2 to 6. We first examined whether the I-1183 voting behavior and opinions on re-voting differed over time, and whether the proportions differed in a given year between people who voted (or would vote) “for” vs. “against” in I-1183 voting (re-voting). Data from the five waves were grouped into three survey years (Wave 2: year 2014, Waves 3 and 4: 2015, and Waves 5 and 6: 2016). Differences in proportions between “for” vs. “against” (or “yes” vs. “no”) were tested for each year. Linear trend effects were tested by examining whether time significantly predicted opinion outcomes in simple regressions.

The five datasets (Waves 2 to 6) were then combined in multi-variable logistic regressions to predict I-1183 voting behavior and re-voting opinions. For I-1183 voting behavior, demographics, drinking and purchasing status, and volume consumption of spirits and total beverages (both log-transformed) were first used to predict whether the respondent voted or not on I-1183, then for those who voted, whether voting was “for” or “against.” When I-1183 re-voting opinion was examined, two types of analysis were performed, separately predicting *changing to re-vote against I-1183* for those who voted for it in 2012, and *changing to re-vote for I-1183* for those who voted against in 2012. Other opinion measures related to alcohol policies and youth drinking

Table 1
Demographic and drinking characteristics in Washington across 2014–2016 surveys.

	2014	2015	2016	p ²
	n = 804	n = 1485	n = 2001	
Gender (%)				0.999
Male	49.6	49.6	49.7	
Female	50.4	50.4	50.3	
Age (%)				0.995
18–29	22.8	21.7	21.9	
30–49	33.8	34.2	34.0	
50+	43.5	44.0	44.2	
Education (%)				0.880
HS grad or less	35.4	33.9	34.6	
Some college	33.8	34.6	34.3	
College grad	16.0	16.8	17.9	
Grad school	14.9	14.7	13.3	
Race (%)				0.778
White	75.1	75.0	73.5	
Non-white	25.0	25.0	26.5	
House income (%)				0.440
≤ \$30 k	31.0	28.4	30.7	
31 k–80 k	42.8	44.9	40.6	
> 80 k	15.7	15.6	18.1	
Missing	10.6	11.2	10.6	
Employment (%)				0.840
Full-time employed	56.3	55.2	56.5	
Not full-time employed	43.7	44.8	43.5	
Spirits status (%)				0.478
Non-drinkers	28.5	27.9	29.4	
Non-spirits drinkers	16.6	15.6	15.6	
Spirits drinkers/non-buyers	14.2	14.1	16.8	
Spirits drinker/buyers	40.7	42.4	38.3	
12mo Volume – spirits (drinks, mean) ³	181	158	157	0.774
12mo Volume – all beverages (drinks, mean) ⁴	436	364	364	0.510

¹ 2014 only used Wave 2 data.

² Chi-square test for categorical variables and F-test for continuous variables.

³ For spirits drinkers only.

⁴ For drinkers only.

problems were also used as predictors, in addition to demographics and drinking/purchasing variables, when the I-1183 re-voting opinion was assessed.

Multivariable regression models predicting both I-1183 voting and re-voting behaviors also adjusted for year of survey, gender (male, female), age (18–29, 30–49, 50 +), race/ethnicity (non-Hispanic white, other), education (≤ high school graduate, some college, college graduate, ≥ graduate school), household income (annual income ≤ \$30,000, \$31,000–\$80,000, > \$80,000, not stated) and employment status (full-time employed, other). All analyses applied sampling weights adjusting for the probability of selection and weighted the data to represent the total adult population of Washington State (Statacorp., 2017).

3. Results

Table 1 displays respondent demographics and drinking characteristics across survey years. Table 2 shows how respondents reported their voting behavior (how voted on I-1183) and I-1183 re-voting opinion (if re-voted on I-1183) over time. For data across all three years, significantly more people reported they had voted for I-1183 in 2012 than against it, consistent with actual election results. However, for all three years, more people would vote “against” than “for” if they re-voted on I-1183, although these differences were not statistically significant in bivariate tests. There were no significant trends in I-1183 re-voting opinions over time, indicating that that pattern of regret among those voting for I-1183 persisted through 2016.

Table 2
Cross-sectional trend of opinion on 1183 (%).

	2014	2015	2016	p ²
	n = 804	n = 1485	n = 2001	
<i>How you voted 1183:</i>				
For	32.5*	32.6*	29.9**	0.212
Against	25.3	27.3	24.1	0.357
Didn't vote 1183	31.8	30.2	32.8	0.569
Don't know	9.8	9.2	12.6	0.061
Refused	0.6	0.7	0.6	
<i>If you re-voted 1183:</i>				
For	26.4	27.8	25.4	0.517
Against	29.5	29.3	26.8	0.171
Didn't vote 1183	31.8	30.2	32.8	0.569
Don't know	11.7	12.0	14.2	0.132
Refused	0.6	0.7	0.8	
<i>(Among 1183 voters only)</i>				
For	45.6	46.4	47.1	0.641
Against	51.1	49.0	49.6	0.732
Don't know	3.2	4.6	3.0	
Refused	0.1	0.1	0.3	

† P < 0.1, *P < 0.05, **P < 0.01, ***P < 0.001, test of difference in proportions between “For” and “Against” or between “Yes” and “No” in a given year.

¹ 2014 only used Wave 2 data.

² Test of linear trend cross time.

Table 3 presents results from multivariable logistic regressions predicting 1) whether the respondents voted or not on I-1183, and 2) among those who voted, whether the voting was “for” or “against.” People of older age, white race, higher education, higher household income and full-time employed were more likely to have voted in the election including I-1183. Spirits drinkers and buyers were also more likely to have voted compared with non-current drinkers. Neither spirits volume nor total alcohol (wine, beer and spirits combined) volume was significantly related to voting on I-1183 or not. When predicting voting for vs. against I-1183, younger people aged 18–29 were more likely to vote for the proposition than those aged 50 and older. I-1183 was also more likely to be supported by whites and people with higher household income, though the effects were not significant at the traditional P < 0.05 level (P < 0.10). Compared with non-current drinkers, non-spirits drinkers, spirits drinkers/non-buyers and spirits drinkers and buyers were all more likely to vote for I-1183. The strongest support was observed among spirits drinkers and buyers, who had three times of odds voting for I-1183 than non-current drinkers. However, when both spirits and total alcohol volume were in the model, only total alcohol volume significantly predicted voting for I-1183.

Table 4 shows results from multivariable logistic regressions predicting, 1) wanting to change one’s vote among those who voted and 2) changing one’s vote to “against” among those who voted for I-1183. Most notably, voting for I-1183 was related to 2.59 (P < 0.001) times the odds of wanting to change one’s vote compared to those who voted against. Those with some college education (vs. ≤ high school graduate) and lower household income (vs. those with > \$80 K) were more likely to change their votes, both overall and among the “for” voters. Among those who voted for, the odds of retracting support for I-1183 increased with total past 12-month drink volume. Finally, those who agreed that number of stores selling liquor should decrease were more likely to change their voting from “for” to “against,” as were those who endorsed an increase in youth alcohol abuse since privatization, compared to those who thought youth alcohol abuse has not changed. These results suggest that there may be at least two types of voters who changed their support for I-1183 for different reasons: a group of heavier drinkers and a group who think there are too many stores selling liquor and/or increases in youth alcohol abuse. Notably, year was not significantly related to outcomes, indicating that the odds of wanting to

Table 3
Logistic regressions predicting 1183 voting in 2012.

	Predicting Voted versus Didn't Vote				Predicting Voted For vs. Against ¹			
	Model 1		Model 2		Model 1		Model 2	
	OR	95% CIs	OR	95% CIs	OR	95% CIs	OR	95% CIs
<i>Year (vs. 2014)</i>								
2015	1.02	(0.76, 1.36)	1.02	(0.76, 1.37)	0.96	(0.73, 1.26)	1.00	(0.76, 1.31)
2016	0.89	(0.67, 1.18)	0.90	(0.68, 1.19)	1.03	(0.79, 1.35)	1.06	(0.81, 1.38)
<i>Gender (Male vs. Female)</i>	0.83	(0.67, 1.04)	0.83	(0.67, 1.04)	1.38	(1.12, 1.69)**	1.30	(1.06, 1.61)*
<i>Age (vs. 18–29)</i>								
30–49	2.02	(1.49, 2.75)***	2.00	(1.47, 2.72)***	0.91	(0.61, 1.36)	0.94	(0.63, 1.41)
50+	5.80	(4.27, 7.88)***	5.64	(4.15, 7.67)***	0.68	(0.47, 0.99)*	0.69	(0.48, 1.01)†
<i>Education (vs. HS grad or less)</i>								
Some college	1.97	(1.51, 2.58)***	1.94	(1.48, 2.53)***	0.95	(0.71, 1.28)	0.95	(0.71, 1.28)
College grad	2.67	(1.94, 3.68)***	2.64	(1.91, 3.64)***	1.21	(0.88, 1.66)	1.20	(0.87, 1.65)
Grad school	2.77	(1.99, 3.86)***	2.71	(1.94, 3.78)***	0.82	(0.59, 1.13)	0.81	(0.58, 1.12)
<i>Race (Non-white vs. White)</i>	0.60	(0.45, 0.79)***	0.60	(0.45, 0.79)***	0.77	(0.57, 1.05)†	0.78	(0.57, 1.06)
<i>House income (vs. ≤ \$30 k)</i>								
31 k–80 k	1.96	(1.49, 2.57)***	1.92	(1.46, 2.52)***	1.34	(1.00, 1.78)†	1.34	(1.00, 1.79)†
> 80 k	2.04	(1.43, 2.91)***	2.04	(1.43, 2.92)***	1.43	(1.00, 2.05)†	1.37	(0.95, 1.97)†
Missing	1.15	(0.79, 1.65)	1.15	(0.79, 1.67)	1.18	(0.78, 1.79)	1.19	(0.78, 1.80)
<i>Employment (Not full-time vs. full)</i>	0.79	(0.61, 1.01)†	0.79	(0.62, 1.02)†	1.08	(0.86, 1.36)	1.11	(0.88, 1.39)
<i>Spirits status (vs. Non-drinkers)</i>								
Non-spirits drinkers	1.09	(0.79, 1.50)	0.97	(0.63, 1.49)	1.80	(1.31, 2.47)***	1.33	(0.86, 2.06)
Spirits drinkers/non-buyers	1.15	(0.84, 1.58)	1.07	(0.65, 1.76)	2.01	(1.43, 2.83)***	1.20	(0.75, 1.92)
Spirits drinker/buyers	1.90	(1.42, 2.52)***	1.76	(0.98, 3.16)†	3.01	(2.29, 3.95)***	1.48	(0.89, 2.48)
12mo Volume – spirits (log)			0.96	(0.85, 1.09)			1.06	(0.95, 1.18)
12mo Volume – all beverages (log)			1.05	(0.95, 1.15)			1.10	(1.002, 1.20)*

† P < 0.1, *P < 0.05, **P < 0.01, ***P < 0.001.

¹ Among those who had voted only.

change one’s vote did not change over time.

Post hoc analyses considering three levels of drinking (abstinence, drinking within US guidelines of < 7 drinks/week for women or < 14 drinks/week for men, or drinking that amount or more) provides some support for this hypothesis. Abstainers were found to have higher rates of endorsement for decreasing spirits stores (35% vs. 15% for heavier drinkers) and for increased youth alcohol abuse since privatization (30% vs. 8% for heavier drinkers). Most of those who would change their votes to no answered that stores should remain the same and that youth abuse remained the same. Among those with these responses were higher proportions of heavier drinkers than the other two drinker groups, with 81% of heavier drinkers reporting same or don’t know for the number of stores and 85% for youth abuse, suggesting that reasons associated with their own drinking was the main motivator for wanting to change their vote. A separate set of *post hoc* sensitivity analyses showed that the results displayed in Tables 2 and 3 did not change if adjusting for survey wave (i.e., sample) instead of year, demonstrating their robustness.

4. Discussion

Using a series of repeated cross-sectional data collected in 2014–2016, the years immediately following the opening of privatized liquor stores in Washington State, we find that voting for privatization was related to greater odds of wanting to change one’s vote compared to voting against privatization. This difference is large enough to shift the result of the election from supporting privatization to rejecting it, if voters had known their future opinions based on experience. This confirms a similar result utilizing the independently collected first survey of the series utilized here (Subbaraman and Kerr, 2016). Education and income predicted changing votes to against, with those with some college education or household incomes < \$80 K having greater odds of changing votes. The odds of retracting support for I-1183 were positively correlated with total past 12-month drink volume, a finding not seen in our prior study likely due to lower power. On the other hand, and as expected, those who agreed that number of stores selling

liquor should decrease were more likely to change their voting from “for” to “against,” as were those who considered that youth alcohol abuse has increased.

The finding that increased alcohol consumption volume positively predicts regret regarding a yes vote on I-1183 is an important extension of our prior work. Heavier drinkers would be expected to have mixed feelings regarding privatization. Our prior research has shown that Washington liquor prices increased from 2012 to 2014 by 15% on average for 750 ml spirits bottles, with wide variation across brands, container sizes and store types, while prices in both bordering states did not increase (Kerr et al., 2015). Furthermore, the accessibility of spirits also increased substantially, with the number of stores selling spirits rising from 333 to ~ 1,600, though stores with the lowest prices, liquor superstores and wholesale stores, were not the most convenient types (Kerr et al., 2015). So while some heavier drinkers likely appreciated increased access, it appears that others may have been unhappy with price increases and/or the need to travel farther to stores with lower prices and better selections.

The decision to replace the monopoly on spirits sales and the three-tier system in Washington was decided by a vote of the people. As noted in a commentary of our previously published paper, the fact that I-1183 passed through ballot could imply that the consequences of spirits consumption to society were not deemed serious enough for voters to reject the proposition (Leimar, 2016). A 2014 Swedish general population survey found that individuals view alcohol-related consequences for society vs. themselves differently, e.g., 75% responded that the negative consequences of alcohol outweigh the positive for society as a whole, while only 48% responded that the positive consequences outweigh the negative for the respondent personally (Leimar, 2016; Holmberg et al., 2015). Interestingly, the authors concluded that the perception of alcohol having a negative effect on society strongly relates to support of restrictive policies in Sweden, e.g., not wanting to privatize alcohol sales, while the perception of the positive effects of alcohol consumption for the respondent personally was not significantly related to opinions on privatization (Leimar, 2016; Holmberg et al., 2015).

Table 4
Logistic regressions predicting how voters would change their votes on I-1183.

	Would change vote vs. not change (among voters only, n = 2625)		Would change vote to Against vs. would not change vote (among those who voted For, n = 1365)	
	OR	95% CIs	OR	95% CIs
<i>Year (vs. 2014)</i>				
2015	0.68	(0.46, 1.01)†	0.69	(0.42, 1.14)
2016	0.77	(0.52, 1.13)	0.75	(0.46, 1.22)
<i>Gender (Male vs. Female)</i>				
Gender	0.92	(0.68, 1.25)	0.87	(0.60, 1.26)
<i>Age (vs. 18–29)</i>				
30–49	0.91	(0.51, 1.63)	1.17	(0.56, 2.43)
50+	1.12	(0.64, 1.97)	1.59	(0.77, 3.26)
<i>Education (vs. HS grad or less)</i>				
Some college	1.61	(1.06, 2.46)*	1.83	(1.09, 3.07)*
College grad	1.15	(0.72, 1.85)	1.23	(0.69, 2.18)
Grad school	1.26	(0.76, 2.08)	1.14	(0.62, 2.11)
<i>Race (Non-white vs. White)</i>				
Race	1.16	(0.76, 1.76)	0.87	(0.50, 1.50)
<i>House income (vs. ≤ \$30 k)</i>				
31 k–80 k	0.74	(0.50, 1.09)	0.61	(0.37, 1.02)†
> 80 k	0.57	(0.35, 0.94)*	0.32	(0.17, 0.61)**
Missing	0.49	(0.27, 0.88)*	0.32	(0.15, 0.66)**
<i>Employment (Not full-time vs. full)</i>				
Employment	1.07	(0.77, 1.48)	1.05	(0.70, 1.58)
<i>Spirits status (vs. Non-drinkers)</i>				
Non-spirits drinkers	1.06	(0.48, 2.34)	0.92	(0.35, 2.44)
Spirits drinkers/non-buyer	0.71	(0.33, 1.50)	0.47	(0.19, 1.20)
Spirits drinker buyers	0.93	(0.42, 2.02)	0.75	(0.28, 2.00)
<i>12mo Volume – spirits (log)</i>				
12mo Volume – all beverages (log)	0.96	(0.82, 1.12)	0.97	(0.81, 1.16)
<i>12mo Volume – all beverages (log)</i>				
Voted For on 1183 (vs. Against)	2.59	(1.64, 4.07)***	N/A	
<i>Tax on liquor should... (vs. Increase)</i>				
Decrease	2.42	(1.03, 5.72)*	2.08	(0.76, 5.71)
Remain the same	1.17	(0.51, 2.72)	0.68	(0.26, 1.79)
Don't know	1.56	(0.35, 6.86)	0.93	(0.17, 5.12)
<i>Tax on beer should... (vs. Increase)</i>				
Decrease	0.72	(0.31, 1.65)	0.77	(0.29, 2.04)
Remain the same	1.01	(0.46, 2.21)	1.21	(0.48, 3.01)
Don't know	0.54	(0.11, 2.69)	0.99	(0.16, 6.30)
<i>Number of stores selling liquor should... (vs. Increase)</i>				
Decrease	1.88	(0.79, 4.44)	8.13	(2.91, 22.73)***
Remain the same	1.86	(0.88, 3.92)	1.78	(0.71, 4.46)
Don't know	0.87	(0.24, 3.20)	1.02	(0.23, 4.49)
<i>Youth alcohol abuse has ... since liquor sales privatized in 2012 (vs. Increased)</i>				
Decreased	1.43	(0.58, 3.50)	0.52	(0.20, 1.37)
Remained the same	0.92	(0.58, 1.45)	0.46	(0.26, 0.80)**
Don't know	1.11	(0.65, 1.88)	0.76	(0.36, 1.61)

† $P < 0.1$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Meenakshi Sabina Subbaraman ran the statistical analyses, managed the literature search, and wrote the first draft of the manuscript. William Kerr was the PI of the grant, developed the research question, and assisted with interpreting the results and editing the final manuscript. Both authors have approved the final manuscript.

The I-1183 election was primarily funded by Costco Wholesale Corporation, an American membership-only warehouse retailer that spent ~ \$20,000,000 promoting the initiative (Ballotpedia, 2011). In the US, initiative measures can be proposed by individuals or corporations and can occur every year, while presidential elections occur every four years; this may bias voter turnout as presidential election years consistently have higher turnout (McDonald, 2014). For example, 53.0% of eligible voters voted on I-1183 in 2011, a non-presidential election year, (Wyman, 2011), while 81.3% voted on I-502 (adult use cannabis legalization) in 2012, a presidential election year (Reed, 2012). Published results from Wave 1 of this sample show that correlates of voting on I-1183 were similar to those of voting on I-502, which

partially alleviates concern regarding bias, though spirits drinkers were more likely to vote (vs. not vote) on I-1183. Thus spirits drinkers may have a more vested interest in I-1183 than I-502, which is unsurprising.

4.1. Strengths and limitations

Data came from a large, general population sample of Washington residents interviewed during the years immediately following the rollout of private alcohol sales. The current results likely represent Washington State's general population opinions as studies of voting behavior show that policy opinions tend to be similar between voters and non-voters (Leighley and Nagler, 2007). The current results also replicate those found using a separate sample (Subbaraman and Kerr, 2016), demonstrating their robustness. However, results do rely on self-reported voting behavior, policy opinions, and alcohol consumption, which are subject to biases such as social acceptability. The wording of questions may also unintentionally influence responses, e.g., ordering response categories vs. allowing open-ended responses. In addition, at the time of the last survey, five years had passed between the privatization election and data collection, and there may be unforeseen consequences that sway public opinion in the future e.g., if the number of alcohol outlets continues to increase. Furthermore, factors such as geographic location, political affiliation, and industry ties are potential correlates of voting that may affect results; however, these data are not currently available. Finally, the timing of this project's funding was not in time for a survey before the I-1183 election (November 2011) or actual privatization (July 2013).

5. Conclusions

In the years immediately following the opening of privatized liquor stores in Washington State, we find that public opinion has changed enough to shift the result of the election from supporting privatization to rejecting it. These findings are particularly relevant for other countries and US states considering privatization.

CRedit authorship contribution statement

Meenakshi S. Subbaraman: Conceptualization, Funding acquisition, Investigation, Supervision, Writing - review & editing. **Yu Ye:** Conceptualization, Funding acquisition, Investigation, Supervision, Writing - review & editing. **William C. Kerr:** Conceptualization, Funding acquisition, Investigation, Supervision, Writing - review & editing.

Funding

This study was funded by the US National Institutes of Health's National Institute on Alcohol Abuse and Alcoholism, R01AA021742. Content and opinions are those of authors and do not reflect official positions of NIAAA or NIH. Drs. Subbaraman and Kerr have received contracts and travel support from the National Alcohol Beverage Control Association.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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