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Changes in spirits purchasing behaviours after privatisation of government controlled sales in Washington, USA

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Abstract

Introduction and Aims: The privatisation of the Washington Liquor Monopoly in 2012 offered a unique opportunity to study spirits purchasing behaviour changes from a government to licensed system.

Design and Methods: Four representative cross-sectional surveys of adults aged 18 and older in Washington state were recruited between January 2014 and October 2015 (Wave 1, N=1202; W2, N=804; W3, N=823; W4, N=662). Analyses compared spirits purchasing behaviours before privatisation from retrospective reports to current reports in the areas of travel distance, spirits quality, purchase frequency and size of bottle. Respondents also directly reported on changes in convenience, selection and prices.

Results: No significant changes were found in these aspects of purchasing. However, subgroup analyses found that younger drinkers 18–29 reduced travel distance and increased purchase frequency while drinkers aged 50 and older travelled further. Reduced travel distances were associated with grocery and drug stores while increased travel distances were associated with liquor superstores, wholesale stores and government stores in bordering states. Respondents reported that liquor purchasing was more convenient after privatisation but that the selection of spirits was better and prices were lower in the government-controlled stores.

Discussion and Conclusions: The government monopoly stores were viewed as offering a wider selection of products and as having lower prices than those in the privatised system. The variety of store types in the licensed system allowed drinkers to select stores based on convenience, selection or prices, so that travel times increased for some buyers, presumably those seeking lower prices or a wider selection.

Keywords

purchasing; privatisation; spirits; price; availability

INTRODUCTION

Studies and reviews of the most effective alcohol policies have identified those focused on increasing the price of alcoholic beverages, such as taxes or minimum unit prices, and those focused on reducing the availability of alcoholic beverage, such as limits on outlet types, density or hours of sale, as the most effective in reducing harmful alcohol use and related problems [1–3]. While the evidence base for these types of policies is generally very strong, much less is known about individual responses to these policies regarding purchasing details such as they type of store visited, distance travelled, product quality choice or container size choice. Few studies have focused on alcoholic beverage purchasing behaviours and none have evaluated individual changes in purchasing choices across a major change in alcohol availability. The privatisation of the Washington Liquor Monopoly in June of 2012 offered a unique opportunity to study spirits purchasing behaviour changes from a government controlled retail system to a licensed system with a variety of store types offering spirits. Our research has found that within Washington prices increased from spring of 2012 to early 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 [4]. These price increases worked against the increase in stores selling spirits from 333 to around 1600, resulting in little change in spirits or total alcohol intake per person [5]. US per capita alcohol intake and spirits consumption were both rising during this period [6]. There was also a significant increase in cross-border purchasing from Idaho and Oregon, although this amounted to only a quarter of one percent of Washington's yearly sales [7]. A study of opinions regarding the privatisation also found that a substantial number of those who voted for privatisation had regrets and would have changed their vote after experiencing the implementation [8].

Few studies have addressed alcohol purchasing in general and most of these have focused on heavy drinkers and lower cost products. An analysis of longitudinal data in a sample of spirits drinkers drawn from the same surveys of Washington used here found that drinkers who drank at risky levels only at some measurement points purchased spirits more frequently, chose larger spirits containers and were more likely to use cannabis when drinking at risky levels [9]. These observations of spirits purchasing occurred after privatisation and so the study had a different focus than the analyses presented here. A survey of alcohol purchasing behaviours in Australia found that heavier drinkers and lower income groups bought cheaper products while younger drinkers tended to purchase more expensive products. The most common store types were large liquor stores and smaller liquor stores, which together included 85% of purchases [10]. Another recent Australian study of factors influencing the anticipated distance drinkers would chose to travel to purchase alcoholic beverages found that price discounting was the main influence for longer distances to purchase for off-premise consumption [11]. A diary study of Irish drinkers found that those purchasing the lowest cost drinks were heavy drinkers with lower incomes and that these were mostly off-premise purchases [12]. A study of heavy drinkers in Scotland found that 90% of their alcohol was bought for off-premise consumption and that they focused on the cheapest beverage types and brands [13]. Finally, a study of US drinkers found that heavier drinkers were more likely to drink spirits and that the heaviest drinkers

reported spending less per drink than others [14]. It has long been recognised that the prices of alcoholic beverages vary widely by type, brand and especially on- and off-premise contexts creating significant opportunities for substitution [15]. A study of Swedish alcohol sales found that price increases resulted in significant quality substitution and that reduced alcohol sales mainly occurred when increases affected lower priced products [16].

The present study utilised data from four representative surveys of the state of Washington conducted in 2014 and 2015 in which questions on both current and pre-privatisation drinking and spirits purchasing behaviours were included. Analyses are focused on within-drinker comparisons of purchasing frequency, distance travelled, brand-derived spirits quality and bottle size across these situations. The type of store patronised after privatisation is also considered in relation to these behaviours. Because the post-privatisation situation can be characterised as having higher spirits prices and more stores selling spirits it was expected that average travel distance would decrease and spirits purchasing frequency would increase in response to the greater number of stores and store types, and that average spirits quality would decrease and bottle size would increase due to higher prices. We also evaluate responses to direct questions on comparisons of convenience, selection and prices for spirits between each drinker's current store and their pre-privatisation state or contract store. Due to limits on questionnaire length and the nature of the privatisation, only spirits purchasing behaviours, not those regarding beer or wine, were included in the surveys.

METHOD

Sample

The sample consists of four representative cross-sectional surveys of adults (aged 18 years and over) in Washington state, with sample recruitment taking place separately in January-April 2014 (Wave 1, N=1202), August-October 2014 (Wave 2, N=804), March-May 2015 (Wave 3, N=823) and August-October 2015 (Wave 4, N=662). Participants were reached via random digit dial sampling, which includes >40% from cell phone exchanges. American Association for Public Opinion Research's AAPOR2 cooperation rates, [17] 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%) and Wave 4 (41.7%, 59.6%). These rates were about 10 percentage points lower than those achieved by the Behavioral Risk Factor Surveillance System surveys in Washington [18]. At survey completion, participants were issued \$10 dollar gift cards. Surveys lasted about half an hour on average. Protocols were approved by the Public Health Institute Institutional Review Board (#I13-010).

Measures

Current spirits drinkers and spirits purchasers were defined by two questions. First they were asked "how often do you usually have drinks containing liquor, including scotch, bourbon, gin, vodka, rum and on so", with 10 response options ranging from "more than once a day", "once a day", to "never had whisky or liquor". Those who answered "less than once a month or at least once a year" or more frequent were defined as current spirits drinkers. Spirits drinkers were then asked "thinking about your most recent liquor purchase at a store, when

was the last time you purchased liquor at a store”, with 10 response options ranging from “today”, “yesterday” to “Not within the past year” and “Never”. Those who purchased spirits last year were then defined as current spirits purchasers.

Current spirits purchasing behaviours.—We focused on four measures of spirits purchasing behaviour in this analysis: travel distance, spirits quality, purchase frequency and size of bottle. *Travel distance* was based on a question asking the current spirits purchasers “how long does it typically take you to get from your home to the store where your last liquor purchase occurred?”, with the response options including “less than 5 minutes”, “5-10”, “10-15”, “15-20” and “20 minutes or more”. To evaluate the *quality of spirits* product purchased, spirits purchasers were first asked the type of their last spirits purchase, such as brandy, gin, rum, tequila, vodka and whisky. Then a detailed list of brands was provided for the respondents to choose from and the spirits quality measure was then coded to “low”, “premium” and “high premium” based on a categorisation of brands utilised in our spirits price study [4]. The measure of *bottle size* was also based on the most recent purchase, with response options including “750 milliliters or ‘fifth’”, “1 liter or ‘quart’”, “1.75 liters or ‘half gallon’”, “50 milliliters or ‘mini’”, “200 milliliters or ‘half pint’”, “375 milliliters or ‘pint’”. If the respondents purchased multiple bottles with different types (involving about 10% of purchasers), the first type reported was used. Last, *purchase frequency* was based on the question “how often do you typically shop for liquor products?” with response options including “daily”, “weekly”, “monthly”, “every couple of months”, “2-4 times per year” and “once a year”.

Current store type was elicited from the question “what was the name of the store where your last liquor purchase occurred”. It was an open-ended question in the first wave and, starting from Wave 2, respondents were asked to choose from popular options such as “Albertsons”, “Costco”, etc. These answers were re-coded and the final store type variable for analysis includes the categories: liquor superstore, liquor store, grocery, drug store, department store, wholesale, border state liquor store, and ‘others’.

Spirits purchasing before privatisation was based on the question “Think about a typical month around this time of year two (or three) years ago around (current month) of 2012, before the privatisation of the liquor stores, how often did you typically shop for liquor products”. Those who shopped liquor at least once a year were defined as spirits purchasers before privatisation. These were then asked to think of the “typical” or “common” purchasing behaviour “this time of the year”. For example, the travel distance question before privatisation was “how long did it typically take you to get from your home to the store where you bought liquor at that time”. Note that store type measure before privatisation was not applicable as Washington was a control state with only monopoly liquor stores.

Self-assessment of spirits purchase experiences.—Respondents were asked to compare three types of purchasing experiences between their current spirits buying and a typical month before privatisation: (i) “Was your experience purchasing liquor more convenient, less convenient or the same as it is today?”; (ii) “For your preferences, was the selection of liquor products two years ago better, worse or the about same as it is today?”; (iii) “Were the prices of liquor products that you purchased two years ago higher, lower or

about same as they are today?”. The items were adapted from selected items on convenience, product selection and prices used in an earlier study [19].

We used the following demographic measures as independent predictors of spirits purchase behaviour change: gender, age (18-29, 30-49, 50+ years), race/ethnicity (non-Hispanic white and others), education (high school graduate or less, some college, college graduate, grad school), household income (annual income no more than \$30 000, more than \$30 000 but no more than \$60 000, more than \$60 000, and missing for income) and marital status (married, spate/divorce/widowed, and never married). An indicator of heavy occasion drinking (had at least one day of 5+/4+ last month for men/women) and spirits volume were also included in the models.

Statistical analysis

The variables describing spirits purchase behaviour change were created with three categories: more/larger, the same, and less/smaller, by comparing purchasing behaviour before and after privatisation in terms of travel distance, spirits quality, purchase frequency and size of bottle. To examine the difference in purchase change, the tests of equality in proportions between “more/larger” and “less/smaller” were performed. Associations were examined between these four change variables on the one hand, and demographic and drinking measures on the other. Bivariate associations were first evaluated using Chi-square tests of independence, with the exception of spirits consumption volume, for which an F-test was performed. Those measures having significant associations ($P<0.05$) with purchasing change variables were then entered together in multinomial logistic regressions to predict purchasing change status (less or more compared to no change). Bivariate associations between the four purchasing change variables and store type was also examined using Chi-square tests. Last, the three variables on self-assessment of the spirits purchase experience were described and their associations with purchase change and store type were examined. Since the purpose of the analysis is to compare respondents’ spirits purchase behaviours between the two periods and examine their behaviour change, only the individuals who made purchases during both periods were analysed. All four datasets were combined in analysis to maximise the valid analytic sample size. All analyses were weighted to represent the total adult population of Washington State, using the sampling weights option of STATA [20].

RESULTS

Table 1 shows the weighted proportions of respondents in the three categories of spirits purchase behaviour change across spirits privatisation (staying the same, less/smaller and more/larger) with respect to four purchasing behaviours: travel distance, spirits quality, purchase frequency and purchase size. When testing the equality of proportions between less/smaller and more/larger groups, no significant differences were found for any of the four purchasing measures.

We also examined how spirits purchasing behaviour change varied by demographic and drinking characteristics. Table 2 shows the bivariate associations. Those measures significantly associated with purchasing change ($P<0.05$) were then entered together to

predict purchasing change in multinomial logistic regressions (less or more versus no change). The significant predictors in final regression models are in bold in Table 2. For example, both age and heavy drinking were significantly associated with change in travel distance in the bivariate analysis, but when entered into the regression together, only age was a significant predictor and therefore highlighted in Table 2.

Compared to the middle aged (30-49 years) and older (50+ years) groups, young people (18-29 years) were more likely to reduce travel distance and less likely to travel the same distance purchasing spirits. Older purchasers were the most likely to increase their travel distance. Non-white purchasers were less likely to change to higher quality than whites. Compared to married people, those who were never married were more likely to change to lower quality, and separate/divorced/widowed people were more likely to stay the same rather than change to higher quality. When predicting change in purchase frequency, there was more change among younger age groups and for heavy occasion drinkers while lower family income groups were more likely to reduce purchase frequency. Older people (50+ years) were more likely to maintain the same purchasing frequency. People with higher family income (>60 k) were less likely to change to less frequent purchasing. Marital status was the only significant predictor of change in bottle size, with those who were never married and separate/divorced/widowed more likely to change to a larger size rather than remain the same.

Table 3 shows associations between spirits purchase behaviour changes and post-privatisation store type. Purchase distance change had the strongest association with store type. Those going to grocery stores were more likely to travel a shorter distance, while those shopping at liquor superstores, wholesale stores (Costco) and going to government controlled stores in bordering states (Oregon or Idaho) travelled longer distances. Change in spirits quality was also significantly associated with current store type, with those purchasing at liquor superstores being more likely to change to higher quality while those purchasing at wholesale stores were more likely to switch to lower quality.

Table 4 presents results regarding how respondents assessed their own spirits purchase behaviours before and after privatisation. Convenience was found to increase after privatisation for more people, with 33% of purchasers stating that their purchase was less convenient before privatisation in contrast to 15% who thought it was more convenient before. In contrast, 23% reported that the selection of spirits before privatisation was better compared 15% reporting that it was worse than their current experience. Consistent with our earlier study finding on increased prices, [4] many more respondents stated that prices were lower before privatisation, 59% compared to only 12% who felt prices were higher then.

DISCUSSION

The literature on alcohol use has included relatively few studies of purchasing behaviour details and no studies that have examined individuals changing behaviours and opinions regarding purchasing across a state privatisation, comparing government controlled store with private store experiences. The privatisation in Washington was characterised by greatly increased availability of spirits at a variety of store types along with increased prices due to

new taxes and fees and private profits. Because these stores varied in locations, selection of brands, pricing strategies and non-spirits products, spirits purchasers had opportunities for choices across these characteristics. Results indicate that older consumers aged 50+ years took advantage of this by traveling further to liquor superstores, wholesale stores and border state stores, which we have found to have had lower prices than other store types in our prior study of Washington price changes [4]. Younger drinkers aged 18-29 years took advantage of increased density by reducing their travel distance to shop at grocery and drug stores. Some consumers, particularly those who were not married, also responded to increased prices by reducing the quality of spirits they purchased. Those who were divorced, separated or widowed also purchased larger containers, which generally have lower prices per standard drink. Changes in spirits quality were associated with store type and shifts to lower quality purchases occurred particularly among those shopping at wholesale, drug and grocery stores.

It is surprising that there was not a significant reduction in travel time for spirits purchasing following an increase by about 5 times in the number of stores selling spirits. A reduction in average spirits quality was also expected in response to increased prices, but this also does not appear to have occurred. Store selection does appear to have been differentially influenced by price or convenience for different demographic groups, with about half of purchasers traveling about the same distance, about a quarter finding a closer, more convenient store, compared to the nearest state-controlled store prior to privatisation, and a quarter choosing to travel farther, presumably for either lower prices on preferred brands or increased brand selection. Other potential reasons for longer travel could include later opening hours and bundling spirits purchases with other desired products. A key finding of our prior study of spirits prices in Washington was that the stores with the lowest prices, liquor superstores and wholesale stores, were not the most convenient types [4]. This lack of correspondence between access and prices has likely helped to mitigate the potential impact of privatisation on alcohol consumption [5].

Limitations of this study include the focus on the respondent's most recent purchase, which may differ from other purchases they may have made, and potential difficulties in recalling or describing the brand, type and size of spirits purchased. Purchases prior to privatisation would be more likely to have occurred at the same monopoly store, but recall of other purchase details such as brand and size could be affected by retrospective recall from 2 to 3 years prior. We expect that the salience of the privatisation would aid recall to some extent. Individuals may also have changed their drinking patterns or other circumstances over time, such that some changes in purchasing behaviour may be due to other factors. This study has focused on spirits purchasing behaviours and there may be differences in purchasing of beer and wine as well as considerations that may be relevant to multiple beverage purchasing occasions that would be missed here.

Nevertheless, these results are relevant to understanding the effects of policy changes and potential complexities of policy evaluation. While most respondents clearly recognised that prices had increased, only about a third felt that purchasing was more convenient and only about a quarter noted the reduced selection of products. It was surprising that there were no significant directional changes in purchasing behaviours across privatisation. While about half of spirits purchasers reported changes in their travel distance, similar numbers changed

in each direction, with about a quarter reducing their travel distance, presumably choosing more convenient stores, and a quarter increasing their travel distance, likely seeking lower prices and greater selection. It is clear that not all store types have the same characteristics, and that more research is needed to characterise retail landscapes for alcoholic beverages and to understand the choices of drinkers, and particularly heavier drinkers, in these varying situations across US state, and in countries around the world.

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Table 1.

Spirits purchase characteristics: changes from before to after privatisation¹

	N	Same	Less/lower/smaller	More/higher/larger	<i>p</i> ²
Purchase travel distance	1187	604 50.3% (46.5%, 54.1%)	289 26.2% (23.0%, 29.7%)	294 23.5% (20.5%, 26.7%)	0.302
Spirits quality	872	655 75.6% (71.7, 79.2%)	133 13.8% (11.2%, 16.9%)	84 10.5% (8.1%, 13.7%)	0.128
Purchase frequency	1193	816 64.7% (61.0%, 68.3%)	187 19.3% (16.4%, 22.6%)	190 16.0% (13.5%, 18.8%)	0.142
Purchase size of bottle	1030	817 79.0% (75.5%, 82.1%)	104 10.0% (7.8%, 12.7%)	109 11.0% (8.8%, 13.8%)	0.584

¹ Unweighted Ns and weighted % with 95% confidence intervals.

² Tests of equality of weighted proportions between the less/smaller and more/larger groups.

Table 2.

Description of demographic and drinking measure groups for spirits purchase characteristics change from pre- to post-privatisation (%)

	Change in travel distance			Change in spirits quality			Change in purchase freq.			Change in bottle size						
	Same	Shorter	Longer	P	Same	Lower	Higher	P	Same	Less	More	P	Same	Smaller	Larger	P
Gender				0.786				0.540				0.499				0.978
Male	51.0	25.0	24.0		76.8	14.0	9.2		65.8	17.7	16.4		79.1	9.8	11.1	
Female	49.7	27.3	23.2		74.2	13.6	12.2		63.4	21.2	15.4		78.9	10.3	10.9	
Age, years				<0.001				0.493				<0.001				0.123
18-29	40.8	40.1	19.1		70.9	15.8	13.3		45.4	33.2	21.4		72.8	12.5	14.7	
30-49	50.2	26.9	22.9		76.2	12.4	11.5		63.2	19.5	17.2		81.0	11.2	7.8	
50+	55.3	19.0	25.7		77.6	14.5	7.9		75.6	12.1	12.3		80.5	7.5	12.0	
Race				0.934				0.043				0.278				0.936
White	50.5	26.4	23.1		73.3	14.1	12.7		63.3	19.3	17.4		79.1	9.7	11.2	
All Other	49.5	25.7	24.8		83.4	13.0	3.6		69.2	19.3	11.5		78.5	10.9	10.6	
Education				0.761				0.430				0.083				0.462
HS grad	53.5	26.0	20.5		78.5	10.3	11.3		63.1	23.5	13.4		82.4	7.0	10.6	
Some college	50.7	26.4	22.9		73.2	15.7	11.2		60.8	21.3	17.9		78.0	10.9	11.1	
College grad	47.2	26.7	26.1		73.5	14.0	12.5		68.0	15.7	16.4		75.3	14.4	10.3	
Grad school	46.7	26.0	27.3		78.1	16.2	5.7		71.9	11.7	16.4		79.0	8.5	12.5	
Family income				0.433				0.978				0.004				0.097
30k	51.3	27.2	21.5		75.5	13.3	11.2		56.6	26.7	16.8		72.2	12.7	15.1	
30-60k	50.1	28.2	21.7		73.2	14.8	12.1		61.3	24.5	14.2		81.4	8.2	10.4	
>60k	48.2	24.5	27.3		77.1	13.5	9.4		71.3	13.2	15.5		82.6	9.8	7.6	
Missing	59.4	26.1	14.5		76.3	14.2	9.5		66.5	11.9	21.6		74.5	7.1	18.5	
Marital status				0.527				0.004				0.085				0.014
Married	51.2	25.2	23.6		75.5	12.1	12.5		66.8	18.4	14.9		82.8	9.0	8.2	
Sep/Div/Wid	53.1	24.2	22.8		85.6	9.6	4.8		68.7	16.5	14.9		74.6	8.7	16.7	
Single	44.6	31.8	23.7		69.0	22.3	8.7		54.3	25.0	20.6		70.6	14.2	15.2	
Heavy drinking				0.037				0.553				0.005				0.553
5+ /4+ 30day	49.9	31.7	18.4		77.0	14.4	8.6		57.2	21.0	21.8		76.8	11.5	11.8	
Not	50.5	23.7	25.8		74.7	13.6	11.7		68.7	18.7	12.6		80.6	9.4	10.0	

	Change in travel distance				Change in spirits quality				Change in purchase freq.				Change in bottle size			
	Same	Shorter	Longer	<i>P</i>	Same	Lower	Higher	<i>P</i>	Same	Less	More	<i>P</i>	Same	Smaller	Larger	<i>P</i>
Mean total spirits drinks in past year	160	204	174	0.317	200	218	173	0.728	160	125	260	0.040	179	233	147	0.282

/ Multinomial logistic regressions predicting change in purchasing behaviour were estimated, entering only significant predictors ($P < 0.05$) from the bivariate analysis shown here. Those variables still significant in regression analysis are highlighted in bold in Table 2.

Table 3.
Percentage change in spirits purchase characteristics pre- and post-privatization by current store type

	N	Travel distance			Spirits quality			Purchase frequency			Bottle size		
		Same %	Shorter %	Longer %	Same %	Lower %	Higher %	Same %	Less %	More %	Same %	Smaller %	Larger %
Liquor superstore	106	32.2	26.1	41.7	70.7	8.6	20.8	72.5	15.6	11.9	83.3	8.8	7.9
Liquor store	72	67.6	13.4	19.0	71.9	13.7	14.4	73.0	19.8	7.3	85.0	6.4	8.6
Grocery	531	54.4	34.2	11.4	78.7	14.2	7.1	65.0	20.1	14.9	78.7	12.7	8.6
Drug store	35	55.4	33.7	11.0	76.0	15.1	8.8	65.4	16.4	18.3	93.3	5.1	1.7
Department	207	48.1	30.4	21.6	77.4	10.3	12.4	54.3	24.3	21.4	83.4	9.7	6.9
Wholesale	171	37.5	12.5	50.0	62.0	28.4	9.6	73.9	12.6	13.5	73.0	5.9	21.2
Border state	25	38.8	10.0	51.2	87.6	6.2	6.1	82.8	14.0	3.2	79.0	10.6	10.4
Other	83	43.4	27.1	29.5	69.0	4.5	26.5	48.2	26.8	25.1	72.9	9.1	18.0
<i>P</i> value ^{<i>J</i>}	<0.001			0.006			0.119			0.052			

^{*J*} Chi-square test between change in purchasing behaviour and store type.

Self-reported spirits purchasing experiences before privatization compared to current experience at the store where the buyer usually shopped at the time of interview

Table 4.

	Same before and after privatisation	Worse (Less/worse/higher) before privatisation	Better (More/better/lower) before privatisation	<i>P</i> ¹
Convenience of purchase	51.7%	32.9%	15.4%	<0.001
Selection of spirits	62.1%	14.6%	23.4%	<0.001
Prices of spirits	28.7%	12.5%	58.9%	<0.001

¹Tests of equality of weighted proportions between the Worse and Better groups.