Title: Examining beverage-specific trends in youth drinking in Australia before and after the implementation of the alcopops tax

Running head: Beverage-specific trends in youth drinking

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Abstract:

Introduction and Aims: Alcohol consumption among young Australians has declined markedly since the early 2000s. As yet, there has been no data on how this decline has been spread across different beverages and instead high-level survey data with significant potential for recall and other bias has been used. Trends in beverage choice among young people following an increase in the 'alcopops' tax have also not received much attention.

Design and Methods: Data on 'yesterday' drinking occasions were obtained from five waves (2004, 2007, 2010, 2013, 2016) of the National Drug Strategy Household Survey. A total of 23,536 respondents aged 14-29 were included in this study. Descriptive and regression analyses were conducted to explore trends in alcohol consumption and changes in beverage preferences.

Results: Youth drinking declined by 45% across the study period, with declines of 66% in premix, 48% in spirits, 46% in beer, and 33% in wine. Consumption of premix was significantly lower in 2013 and 2016 compared to 2007 amongst the overall sample, males, females, respondents aged 14-21 and aged 22-29, light and heavy drinkers. Significant reductions were also observed in the consumption of premix immediately following the tax (2010) for the younger age group, males and light drinkers.

Discussion and Conclusions: Youth consumption of alcohol has declined during the study period with significant variation across beverage types. We found some evidence of a separate impact for the alcopops tax, although for some groups, declines in premix consumption occurred well after the implementation of the tax.

Keywords: Youth drinking, tax, alcohol beverages, alcohol consumption

Introduction

In Australia there have been marked declines in drinking by young people since the early 2000s (1). For example, in a nationwide study of Australian secondary students, 15% of students aged 12 to 17 years reported drinking alcohol in the last week in 2017 compared with 23% in 2008 (2, 3). Similar declines have been observed in alcohol consumption amongst adolescents in Europe and North America (4). For example, overall trends from 25 European countries between 2003 and 2015 illustrated declines in lifetime alcohol use and last thirty day use amongst European students (aged 15 to 16) (5). The declines in youth drinking in Australia have been shown at the aggregate level (see, e.g. 6), but there has been no detailed attempt to unpack the way that consumption of different beverages has shifted over the time period.

These trends have been found using aggregated alcohol consumption survey questions, which have a number of weaknesses, resulting in under-estimation, especially due to recall bias and under-estimation of ‘standard drink’ sizes (7). Thus most surveys typically capture only around half of the data actually consumed in the population (as measured by aggregate sales data) (8, 9). Researchers have shown that recent recall estimates (e.g. asking respondents about their consumption yesterday) are more accurate than longer recall periods (e.g. past month or year) (10). In the National Drug Strategy Household Survey (NDSHS), the use of the yesterday method has been shown to reflect sales data on alcohol consumption well, capturing around 80% of population consumption compared to around 50% for the aggregated measures (11). The yesterday questions have the added benefit of using natural containers in the response options, rather than standard drinks, ensuring more accurate responses. Thus, an analysis of trends in youth drinking using these more detailed data is likely to provide a more accurate reflection of actual drinking trends at a population level.

An additional reason to examine the trends in youth alcohol consumption at the beverage level relates to changes in the tax system in Australia. In April 2008, the Australian Federal government increased the excise tax on spirit-based ready to drink (RTD) beverages - commonly referred to as the ‘alcopops tax’. The increase in taxation of alcopops pushed the price of alcopops up by around 70% and was designed to reduce the risky drinking amongst the younger population (12) who are much more likely to consume alcopops than their older counterparts (13). Premix spirits were the main type of alcohol consumed by Australian youth aged 12-17 and for females aged 18-24 (14).

There have been a handful of previous studies examining the impact of the alcopops tax, but none that considered the important context of broader declines in youth drinking. For example, three months following the introduction of the alcopops tax, a study using market research data found a 26% decrease in alcopops sold compared with the previous year (15), slightly offset by increases in spirits (11%) and beer (2%). These findings were supported by Doran and Digiusto (16), who showed that alcopops sales declined in 2008 and 2009 after three years of steady increases. These studies have relied on aggregate data and are unable to assess whether the alcopops tax actually affected youth consumption. Data from the Australian Secondary Students' Alcohol and Drug survey (ASSAD) raise some doubts. While there was a decline in the proportion of female 12-17 year old drinkers who nominated alcopops as their main drink between 2005 and 2011, there was a substantial *increase* for male adolescents (17).

An alcopops tax was also introduced in Germany in July 2004 which almost doubled the retail price of alcopops. Müller et al. (18) found that German adolescents decreased their consumption of alcopops following the introduction of the tax however a substitution effect was evident as the consumption of spirits significantly increased leading to no overall shift in alcohol consumption. Another important factor in these explorations of beverage choices is the type of drinking occasions being affected.

As the introduction of the alcopops tax was intended to reduce the alcohol consumption amongst risky drinking youth in Australia, we will investigate if there were any differences in beverage specific consumption among light drinkers (consuming less than 5 standard drinks yesterday) and risky drinkers (consuming 5 or more standard drinks yesterday) after the alcopops tax was implemented (19).

Thus, while it is clear from previous work (1, 3, 20) that young people's drinking has declined in recent years, the use of detailed 'yesterday' data provides a good opportunity to more robustly assess these changes and explore how they have played out across specific beverages. Further, it has been eleven years since the introduction of the 'alcopops tax' and there remains no robust age-specific evaluation of its impacts on consumption. The aim of this study is to examine the differences in youth beverage consumption following the introduction of the alcopops tax by using data about 'yesterday' drinking occasions obtained from five waves of the NDSHS. Specifically, we are interested in any changes in beverage consumption between males and females; 14-21 year olds and 22-29 year olds; light drinkers and risky drinkers.

Methods

Participants and procedure

Data was obtained from five waves (2004, 2007, 2010, 2013, and 2016) of the NDSHS (14, 21-24). The NDSHS data was collected via drop-and-collect paper forms, computer assisted telephone interview (CATI; used in 2004, 2007, and 2016), and online surveys (only used in 2016). The survey technical reports have shown that these changes to survey mode have had minimal impact on key variables (see, for example, 25). The NDSHS uses multi-stage, stratified random sampling (14, 21-24). Households were selected within each region and then a respondent was randomly selected within each household. Response rates for the survey vary between 46.0% and 51.1% (response rates for young people specifically cannot be estimated as age-specific response rates are not recorded). Across the five waves of the NDSHS, 124,597 surveys were completed with 24,059 (19.3%) respondents aged between 14 and 29. Respondents who reported consuming alcohol yesterday but did not specify what type of alcohol beverage/s they consumed were excluded (n=523, 2.2%). A total of 23,536 (males=10,235, females=13,301) respondents aged between 14 and 29 were available for analyses across the five waves of the NDSHS.

Measures

Respondents were asked if they had ever tried alcohol and if they have had an alcoholic drink in the last 12 months. Respondents who had consumed any alcohol in the past 12 months were asked "How many standard drinks did you have yesterday?" and were then asked detailed questions about their consumption of up to thirteen different types of alcohol, with responses provided in natural containers (e.g. bottles, pints, nips etc, see 24, p16 for the survey questionnaire). We combined responses to create seven main alcohol beverage types: beer (home-brewed beer, regular strength beer, mid strength beer, and low alcohol beer), wine (cask wine and bottled wine), cider, premixed drinks (premixed spirits in cans or bottles and other premixed drinks – beer or wine based), spirits, fortified wine, and other. Excluding home-made wine (only asked in 2004, 2007, and 2010) and cider (only asked in 2004, 2013, and 2016), the same alcohol beverages were used in each of the five waves of the NDSHS. Cider was included in our 'other' alcohol beverage category and home-made wine included in the 'wine' category. Due to very low consumption rates in our age range of interest, fortified wine was also included in the other category. With these changes, there was a total of five different alcohol beverage types: beer, wine, premixed drinks, spirits, and other.

An Australian standard drink is any beverage with 10 grams of alcohol. For each beverage type, the number of standard drinks for each respondent was calculated by multiplying the number of bottles/glasses/cans/nips a respondent consumed yesterday by the number of standard drinks in a standard container of the beverage. This was calculated by multiplying the volume of the container (in litres) by the percentage of alcohol content of the beverage (in litres) by 0.789 (the specific gravity of ethyl alcohol). The percentage of alcohol content for each beverage type was obtained via the Alcohol Consumption and Purchasing (ACAP) study (27). This number of standard drinks was calculated for all the different alcohol beverage types and volumes (e.g. for a regular strength beer [4.7%] the standard drink for a small beer glass [210ml] was calculated by: 0.210*4.7*0.789 = 0.8). The individual standard drinks were then added across the full range of beverage and container combinations reported to give a respondent's total number of standard drinks consumed yesterday. If a respondent reported consuming more than 30 standard drinks of alcohol yesterday (n=103, 2.30% of yesterday drinkers) their total number of standard drinks was capped at 30 standard drinks (the value used for capping was also obtained from the ACAP study; 29). Their standard drinks consumed yesterday per beverage was adjusted to reflect the adjustments made to their total number of standard drinks consumed yesterday.

Another alcohol consumption variable was created, a dichotomous variable that split youth drinkers into light drinkers (consuming less than 5 standard drinks yesterday) or risky drinkers (consuming 5 or more standard drinks yesterday). This threshold is based on the Australian short-term low-risk drinking guideline (28).

Analysis

All analyses were conducted using Stata version 15.1 (29) and Microsoft Excel to examine the changes in alcohol beverage preference over the five waves of the NDSHS. Specifically, differences in beverage consumption between males and females; 14-21 year olds and 22-29 year olds; light drinkers and risky drinkers across the study period (using mean standard drinks consumed yesterday in 2007 as the reference) were examined by conducting simple linear regressions.

The results were weighted to account for disproportionate representation in the sample compared to population benchmarks based on age, sex, location. An additional weight was calculated to adjust for uneven responses across day of the week, an important issue when using yesterday data (11). This weight was combined with the existing survey weights for all analyses. The unweighted proportions of surveys completed across each day of the week and the weights used to adjust for the underrepresentation are displayed in Table S1 in the supplementary material.

Results

<INSERT TABLE 1 HERE>

The mean standard drinks consumed yesterday by the whole sample (i.e. including respondents who did not drink alcohol in the past 12 months, who will be referred to as long-term abstainers: n=4,733, 20%) are shown in Table 1. Across the total sample, drinking declined significantly over the study, dropping by 45%. The magnitude of the declines were much more marked for males (51%) than females (29%). The proportion of youth consuming alcohol at all yesterday declined by one-fifth since 2004. Even among only those who did consume alcohol yesterday, the proportion who consumed five or more standard drinks yesterday has also decreased during the twelve-year period. Beverage specific mean consumption is shown in Table 2.

<INSERT TABLE 2 HERE>

Consumption of the four main beverage types declined across the study period, with mean drinking levels falling by more than half for premix. The declines for spirits and pre-mix were particularly marked with consumption in 2016 roughly one-third of consumption in 2004**.** Gender-specific estimates are provided in the supplementary material (Table S1 and S2).

Respondents aged between 14 and 29 who reported no alcohol consumption yesterday (yesterday abstainers; n=19,057, 81.0%) were excluded from the remainder of the analyses. A total of 4,479 yesterday drinkers were available for analysis over the five waves: 2004 (n=1,268), 2007 (n=843), 2010 (n=978), 2013 (n=746), and 2016 (n=644). There were 2,359 males and 2,120 females.

To examine the potential role of the alcopops tax in shifting youth consumption, we now examine the mean number of standard drinks consumed yesterday for each beverage over time among yesterday drinkers. This reduces the impact of the overall declining trend in youth drinking (i.e. the increase in long-term abstainers and yesterday abstainers) and focusses explicitly on shifts in beverage choices among yesterday drinkers. Regression analyses for each of the figures are included in the supplementary material (Table S4-S10) with the mean standard drinks consumed yesterday in 2007 used as a reference. Significant coefficients from the regression analyses will be included alongside the interpretation of the figures below.

<INSERT FIGURE 1 HERE>

Figure 1 shows the mean standard drinks consumed in yesterday drinking occasions over time. Consumption of premix among yesterday drinkers peaked in 2004 and 2007 and then dropped by 59% in 2016, with significant reductions in 2010 (beta coefficient= -0.36, $p<0.05$), 2013 (β= -0.83, $p<0.001$) and 2016 (β= -0.92, $p<0.001$) compared to 2007 (Table S4). This decline in premix was partly offset by a steep increase in consumption of ‘other’ beverages in 2013 (β= 0.34, $p<0.001$) and 2016 (β= 0.31, $p<0.001$) compared to 2007 (although this may be an artefact of changes to the questionnaire). Beer was the beverage that young people consumed the most across the five waves.

<INSERT FIGURE 2 HERE>

Figure 2 contains the mean standard drinks consumed yesterday by males, females, respondents age 14 to 21, respondents aged 22 to 29, light drinkers and risky drinkers for each beverage type between 2004 and 2016. For male youth drinkers (Figure 2a and Table S5), premix consumption decreased in 2010 (β= -0.65, $p<0.05$) and 2013 (β= -1.00, $p<0.001$) compared with 2007, and remained stable between 2013 and 2016 (however the mean standard drinks for premix consumed in 2016 was significantly different to 2007: β= -1.02, $p<0.001$). Some of this decline was offset by an increase in ‘other’ consumption in 2013 (β= 0.36, $p<0.001$) and 2016 (β= 0.43, $p<0.001$) compared with 2007. There was an increase in wine consumption between 2007 and 2010 (β= 0.40, $p<0.05$), followed by decreases in the most recent waves of the NDSHS.

There was no reduction in the mean standard drinks consumed yesterday that was premix for females (Figure 2b and Table S6) directly following the implementation of the alcopops tax (between 2007 and 2010). Since then, however, the mean premix standard drinks consumed yesterday has decreased dramatically (significant differences were observed for 2013, β= -0.57, $p<0.05$ and 2016, β= -0.75, $p<0.001$ compared to 2007). The mean standard drinks consumed as wine increased prior to the alcopops tax (β= -0.72, $p<0.05$), since then there were reductions in consumption in 2010, 2013 (β= -0.75, $p<0.05$) and 2016 (β= -0.70, $p<0.05$) compared to 2007.

Respondents aged 14 to 21 (Figure 2c and Table S7) reported more standard drinks consumed as premix yesterday compared to respondents aged 22 to 29. Following the introduction of the alcopops tax, both age groups experienced greater than 50% declines in the mean standard drinks for premix. Regression analyses revealed a significant reduction in premix consumption for both age groups in 2013 (β= -1.51, $p<0.001$ and β= -0.46, $p<0.05$ respectfully) and 2016 (β= -1.38., $p<0.001$ and β= -0.60, $p<0.001$ respectfully) when compared with 2007. In the older age group (Figure 2d and Table S8), there were significant reductions in mean standard drinks consumed yesterday as spirits in 2013 (β= -0.45, $p<0.05$) and wine in 2016 (β= -0.47, $p<0.05$) when compared with 2007.

Yesterday premix consumption followed similar patterns for light (Figure 2e and Table S9) and risky drinkers (Figure 2f and Table S10), with 50% of declines between 2007 and 2016. For light and risky drinkers, premix consumption decreased in 2010 (only significant for light drinkers: β= -0.18, $p<0.05$) and 2013 (β= -0.24, $p<0.05$ and β= -1.38, $p<0.05$, for light and risky drinkers respectfully) compared with 2007, but remained stable between 2013 and 2016 (however the mean standard drinks for premix consumed in 2016 was significantly different to 2007: β= -0.29, $p<0.05$ and β= -1.40, $p<0.001$ respectfully). Similarly, there were increases observed for light and risky drinkers in the mean number of standard drinks consumed as other beverages in 2013 (β= 0.19, $p<0.001$ and β= 0.63, $p<0.001$, respectfully) and 2016 (β= 0.16, $p<0.001$ and β= 0.66, $p<0.05$, respectfully) when compared with 2007.

<INSERT TABLE 3 HERE>

Finally, we present the proportion of all yesterday consumption that was premix in Table 3. This further reduces any impacts of broader drinking declines on the results, providing another way to assess any impacts of the alcopops tax – these data are presented descriptively. Overall premix made up one-fifth of all alcohol consumed in yesterday drinking occasions in 2004, falling to 13% by 2016. In contrast with the male results, there was no reduction in the proportion of all yesterday consumption that was premix for females directly following the implementation of the alcopops tax (between 2007 and 2010). Since then, however, the proportion of all standard drinks consumed yesterday by females as premix has decreased dramatically (from 25% in 2010 to 12% in 2016). A similar pattern was observed for respondents aged 14 to 21, who also reported an increase in proportion of all yesterday consumption that was premix between 2007 and 2010, with a subsequent reduction in 2013 (15%). Reductions in the proportion of all yesterday consumption that was premix were observed for respondents aged 22 to 29, light drinkers and risky drinkers.

Discussion

The use of the yesterday data from the NDSHS provides a more accurate picture of trends in which alcoholic beverages Australian youth were consuming between 2004 and 2016. The proportion of youth that reported consuming alcohol yesterday has decreased in this time which is consistent with other studies that have measured alcohol consumption amongst youth using longer recall periods (1, 3, 20). Using a yesterday measure, we found declines in any drinking, as well as declines in the risky drinking occasions, suggesting the recent reductions in youth drinking involve both an increase in abstention and a decline in heavy drinking among drinkers. Our analyses estimated a decline of 53% in yesterday drinking volume between 2004 and 2016 for the whole population of 14-21 year-olds. This is a steeper decline than has been found in most other survey studies, although comparisons are difficult due to differing age groups and time periods (1). For example, previous analyses of the overall alcohol questions from this survey found a decline of 45% for 15-17 year-olds and 26% for 18-24 year-olds between 2007 and 2013 (20).

These data are also the first to provide beverage-specific breakdowns of the decline in youth drinking in Australia, finding large falls across all main beverage types, with particularly sharp reductions in spirits and premix consumption. Given the broad declines in youth drinking in many high-income countries (30-33), and the decline across beverage types, it is clear that the decline in drinking in Australia has not been entirely driven by the alcopops tax. However, we found that the declines in premix consumption were even larger than would be expected based on the general youth drinking declines alone. Our analyses of beverage preferences amongst drinkers show that the implementation of the alcopops tax was accompanied by a decrease in the proportion of all alcohol consumed yesterday attributable to premix, which declined from 22% in 2007 to 13% in 2016. Premix consumption was significantly lower in 2013 and 2016 compared with 2007 for the overall sample, males, females, respondents aged 14-21, respondents aged 22-29, light drinkers and risky drinkers. In contrast to some claims about substitution to spirits (34), we also found declines in spirit consumption for the sub-groups since 2004 with the exception of respondents aged 14-21 and risky drinkers who both saw increases in spirit consumption in 2013. There did seem to be a significant substitution to 'other' in 2013 and 2016 compared with 2007, although the interpretation of that category is complicated by the varying inclusion of a separate cider item across the survey waves.

These results are partially supported by previous studies that have used sales data, they have found a reduction in alcopops sold following the implementation of the alcopops tax (15, 16). However, Chikritzhs et al. (15) also reported an increase in the sale of spirits and beer which was not significantly observed in this study, suggesting the substitution to spirits may be occurring in older drinkers.

The alcopops tax appeared to have had an immediate effect on yesterday premix consumption amongst the overall sample, males and light drinkers, with reductions observed for 2010, 2013 and 2016 compared with 2007. For some groups, however, the largest declines in premix consumption occurred well after the tax was introduced. For women, premix consumption actually increased between 2007 and 2010 before declining sharply, while for the younger age group a small decline between 2007 and 2010 was followed by a much bigger drop to 2013. These results raise some concerns in terms of directly attributing the changes in premix consumption to the tax change – it's hard to imagine why price effects would operate in different directions across genders in the short-term or why tax changes would take over three years to have an effect. Thus, these changes may relate to broader shifts in tastes and drinking practices that are being seen in many countries in recent years (35). Cross-national work looking specifically at how drinking declines vary across beverage types would provide further insight into whether the changes in premix consumption here are part of broader cultural shifts or driven by price changes (or, more likely, a combination of both).

There are some key limitations to our study. Our analyses cannot directly test the effect of the alcopops tax as there is no reasonable control group (e.g. no jurisdiction in Australia where it was not applied). The data used in this paper are based on a broad population sample, which likely under-represents marginalised young people in various ways. In order to capture under-represented youth other methods such as online purposive sampling (36) can be used in conjunction with broad population samples to obtain a more thorough understanding of young people and their alcohol consumption. The inconsistent inclusion of cider as a specific beverage is a further limitation, making interpretation of shifts in our 'other' category challenging. In the latest ASSAD school survey (3), the proportion of cider consumption has significantly increased from 2% for male and female students in 2011 to 8% and 9% respectively in 2017, suggesting the increases observed in our 'other' category may reflect increases in cider consumption and not just the impact of questionnaire changes.

Broadly, our study provides new estimates of the decline in youth drinking based on the most robust survey questions available, identifying an even larger decline than has been observed using more aggregate survey items. In addition, we find some evidence of a separate impact for the alcopops tax, which corresponded with a sharp decline in the proportion of alcohol consumed as premix.

These findings are further evidence that alterations in the taxation (18) of alcohol products can influence alcohol consumption amongst youth. These findings provide broad support to the use of price-based policies aimed at reducing youth drinking, even when targeted only at specific beverages.

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Figures

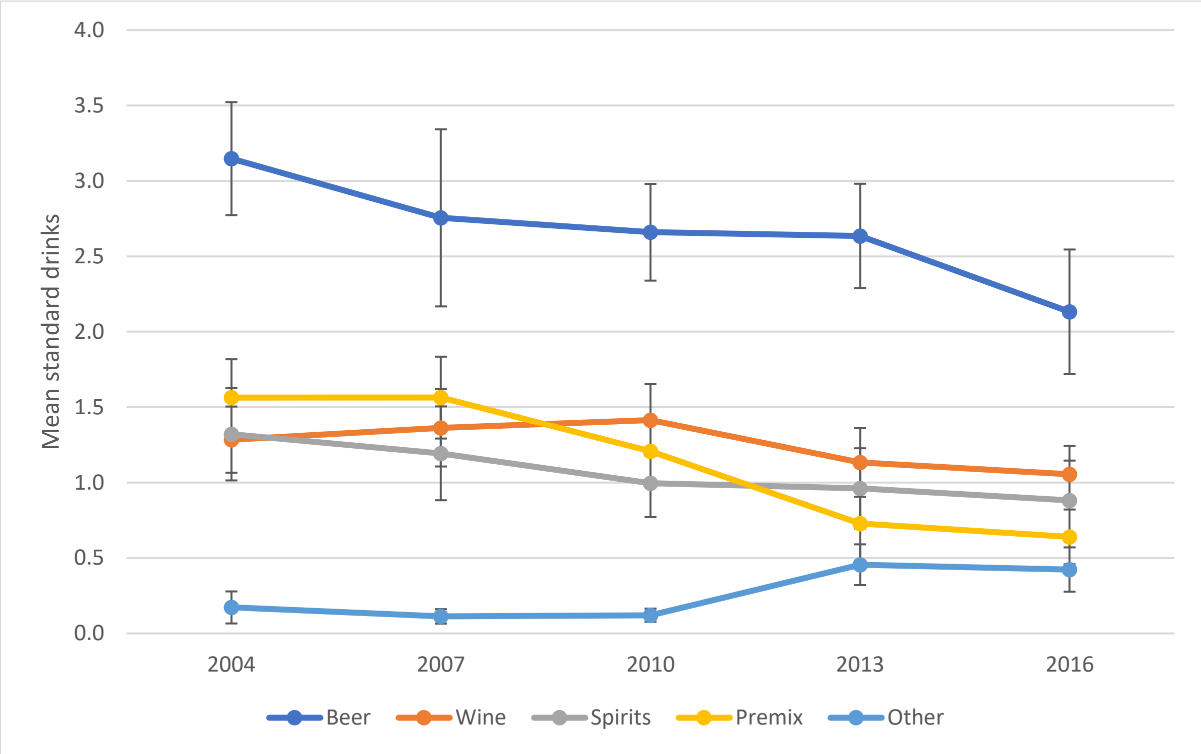

Figure 1. Mean standard drinks consumed by youth drinkers yesterday by beverage type across the five waves of the NDSHS (n = 4,479) with 95% confidence intervals.

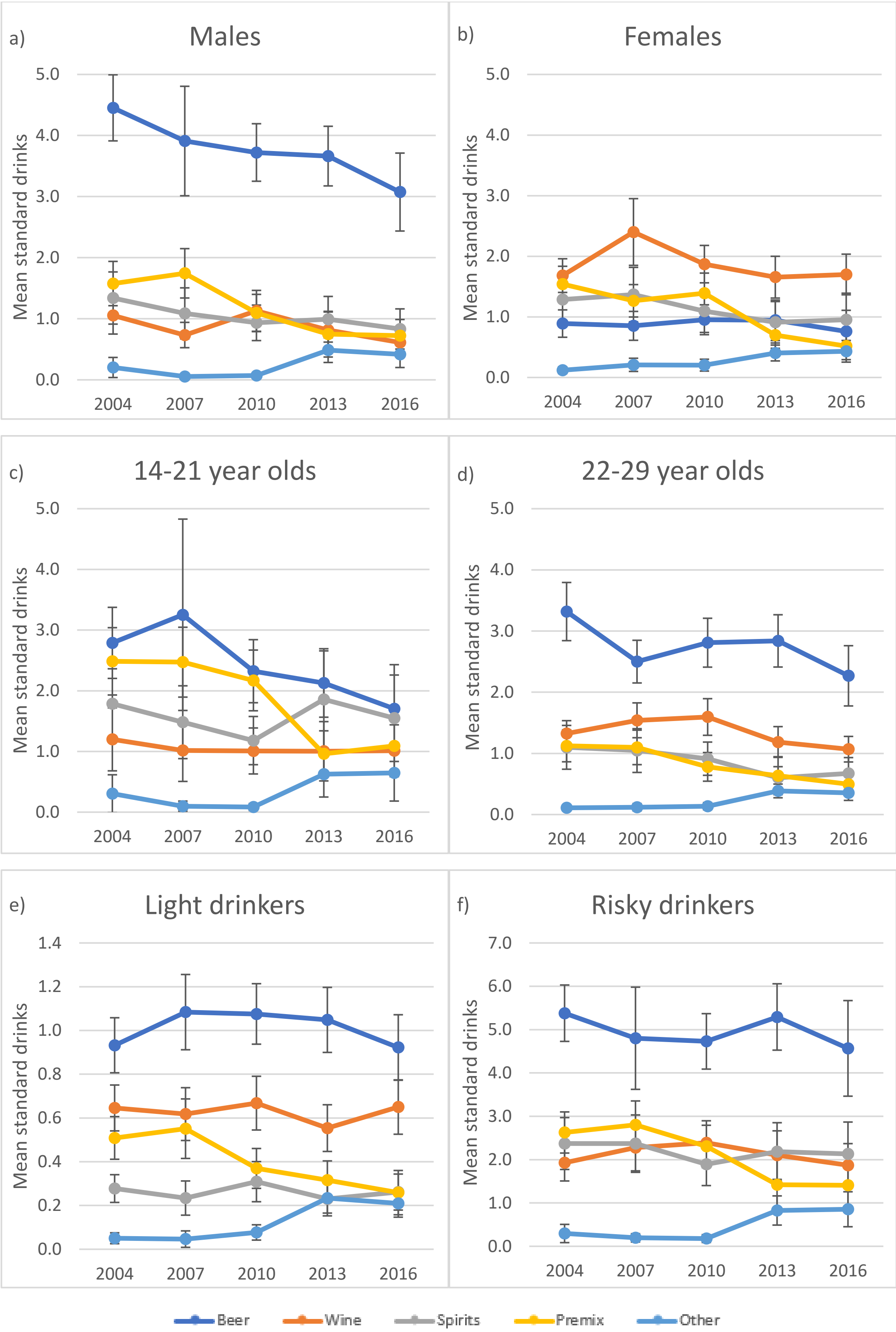

Figure 2. Mean standard drinks consumed yesterday by a) males (n = 2,359) and b) females (n = 2,120), c) respondents aged 14 to 21 (n = 1,197) and d) respondents aged 22 to 29 (n = 3,282), e) light drinkers (n = 2,568) and f) risky drinkers (n = 1,911) by beverage type across the five waves of the NDSHS with 95% confidence interval.

Tables

Table 1. Descriptive statistics for respondents aged 14-29 across five waves of the NDSHS.

	Mean standard drinks (95% Confidence Interval)					Proportions % (95% Confidence Interval)	
	Total sample (n = 23,536)	Males (n = 10,235)	Females (n = 13,301)	14-21 year olds (n=10,771)	22-29 years olds (n= 12,765)	Youth who consumed alcohol yesterday (n = 23,536)	Youth who consumed 5 or more standard drinks yesterday among yesterday drinkers (n = 4,479)
2004	1.40 (1.27, 1.54)	2.03 (1.79, 2.28)	0.76 (0.66, 0.87)	1.01 (0.84, 1.18)	1.83 (1.62, 2.04)	18.76 (17.61, 19.97)	49.81 (46.35, 53.28)
2007	1.32 (1.15, 1.49)	1.75 (1.46, 2.05)	0.88 (0.74, 1.02)	1.02 (0.75, 1.28)	1.65 (1.45, 1.85)	18.87 (17.47, 20.36)	44.96 (40.76, 49.23)
2010	1.16 (1.04, 1.27)	1.51 (1.31, 1.71)	0.78 (0.67, 0.89)	0.75 (0.63, 0.87)	1.56 (1.37, 1.76)	18.06 (16.86, 19.32)	43.35 (39.73, 47.05)
2013	0.96 (0.84, 1.08)	1.33 (1.11, 1.55)	0.57 (0.47, 0.67)	0.65 (0.48, 0.82)	1.23 (1.06, 1.40)	16.21 (14.98, 17.51)	37.4 (33.35, 41.63)
2016	0.77 (0.67, 0.88)	0.99 (0.82, 1.16)	0.54 (0.43, 0.65)	0.47 (0.33, 0.61)	1.03 (0.88, 1.18)	15.01 (13.78, 16.34)	33.18 (28.97, 37.69)

Table 2. Mean standard drinks for beverages consumed amongst all youth aged 14-29 yesterday by beverage type across the five waves of the NDSHS (n = 23,536).

	Mean standard drinks (95% Confidence Interval)				
	Beer	Wine	Spirits	Premix	Other
2004	0.59 (0.51, 0.67)	0.24 (0.20, 0.28)	0.25 (0.19, 0.31)	0.29 (0.24, 0.34)	0.03 (0.01, 0.05)
2007	0.52 (0.40, 0.64)	0.26 (0.21, 0.31)	0.23 (0.16, 0.29)	0.30 (0.24, 0.35)	0.02 (0.01, 0.03)
2010	0.48 (0.41, 0.55)	0.26 (0.21, 0.30)	0.18 (0.14, 0.22)	0.22 (0.17, 0.26)	0.02 (0.01, 0.03)
2013	0.43 (0.36, 0.49)	0.18 (0.14, 0.22)	0.16 (0.11, 0.20)	0.12 (0.08, 0.16)	0.07 (0.05, 0.10)
2016	0.32 (0.25, 0.39)	0.16 (0.13, 0.19)	0.13 (0.09, 0.17)	0.10 (0.07, 0.12)	0.06 (0.04, 0.09)

Table 3. Proportion of premix consumed yesterday amongst all youth aged 14-29, males, females, 14-21 year olds, 22-29 year olds, light drinkers and risky drinkers across the five waves of the NDSHS.

	Proportions % (95% Confidence Interval)						
	Total youth sample (n= 4,479)	Males (n= 2,359)	Females (n= 2,120)	14-21 year olds (n= 1,197)	22-29 year olds (n= 3,282)	Light drinkers (n= 2,568)	Risky drinkers (n= 1,911)
2004	20.9 (19.7, 22.0)	18.3 (16.8, 19.8)	27.9 (26.1, 29.7)	29.0 (26.7, 31.4)	16.1 (14.9, 17.3)	21.1 (19.5, 22.6)	20.8 (19.2, 22.5)
2007	22.4 (20.9, 23.8)	23.2 (21.2, 25.2)	20.8 (18.7, 22.8)	29.7 (26.7, 32.7)	17.4 (15.9, 19.0)	21.8 (19.8, 23.7)	22.5 (20.4, 24.6)
2010	18.9 (17.6, 20.1)	15.8 (14.1, 17.4)	25.2 (23.2, 27.2)	32.1 (29.2, 34.9)	12.5 (11.3, 13.7)	14.8 (13.3, 16.3)	20.1 (18.1, 22.0)
2013	12.3 (11.1, 13.5)	11.2 (9.6, 12.7)	15.1 (13.2, 17.1)	14.6 (12.0, 17.3)	11.3 (9.9, 12.6)	13.3 (11.7, 14.8)	12.0 (10.1, 14.0)
2016	12.5 (11.2, 13.8)	12.8 (11.0, 14.6)	11.9 (10.0, 13.7)	18.2 (14.9, 21.5)	10.2 (8.9, 11.6)	11.2 (9.7, 12.8)	13.0 (10.7, 15.3)