Research Brief:

Sugary Drink Consumption in Australian Secondary School Students

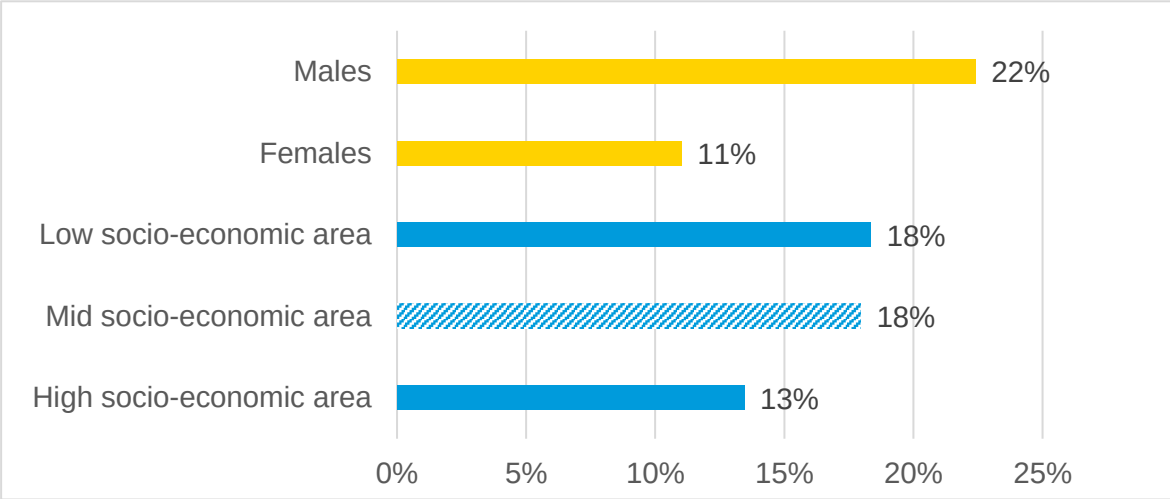
The National Secondary Students' Diet and Activity (NaSSDA) survey is an important initiative of Cancer Council Australia that provides regular monitoring of young people's beliefs and behaviours surrounding diet and physical activity, as well as their experience of food marketing, to inform obesity prevention policy development and evaluate implemented strategies. This research brief summarises the current prevalence of sugary drink consumption among Australian secondary school students and changes over time. It also explores the potential impact of the Western Australian *LiveLighter® Sugary Drinks* campaign on consumption levels in that state.

Nationally representative cross-sectional samples of Australian secondary school students in year levels 8 to 11 (ages 12 to 17 years) were surveyed in 2009-10 (n=13,790 from 238 schools), 2012-13 (n=10,309 from 196 schools) and 2018 (n=9,102 from 104 schools) using a self-report web-based questionnaire. Survey questions and statistical methods are described in the appendices.

Results

Current National Prevalence of Sugary Drink Consumption

In 2018, 17% of Australian secondary school students reported consuming four or more cups of sugary drinks per week, with male students significantly more likely than female students to be classified as high sugary drink consumers. Sugary drink consumption (≥4 cups per week) varied significantly by socio-economic area, with those residing in low compared to high socio-economic areas being higher consumers. However, there was no significant difference in consumption across year levels or between students residing in metropolitan and regional or remote areas.

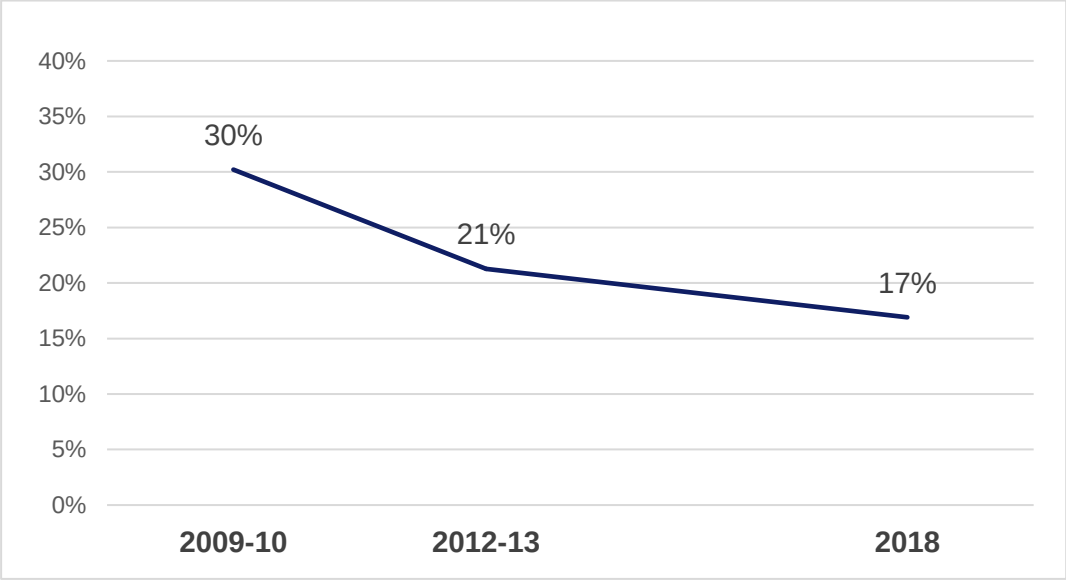


National prevalence of consuming ≥4 cups of sugary drinks per week by sex and socio-economic area.

Note: Filled bars denote significant difference compared to high socio-economic area at $p<0.01$.

National Trends in Sugary Drink Consumption

The proportion of Australian secondary school students reporting they consume four or more sugary drinks per week significantly decreased over time, with the same rate of decrease observed among male and female students.



National prevalence of consuming ≥4 cups of sugary drinks per week over time.

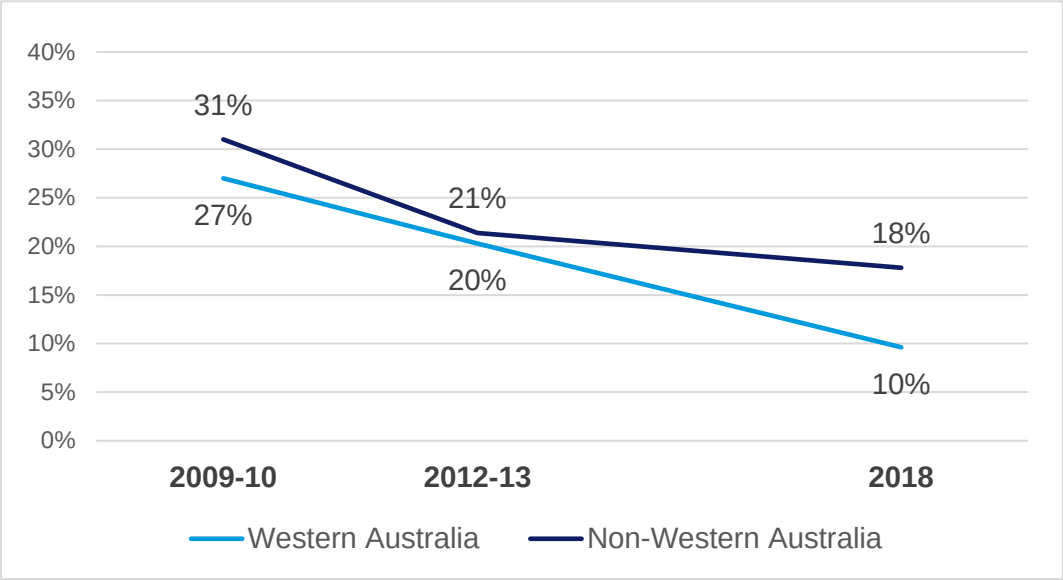
Trends in Sugary Drink Consumption in Western Australia

In 2012, Western Australia launched the *LiveLighter*® campaign that aims to increase awareness and understanding of the health consequences of being above a healthy weight and encourage the adoption of simple changes towards leading a healthier lifestyle.

Since 2013, this campaign has had a specific focus on reducing consumption of sugary drinks. Seven bursts of the Western Australian *LiveLighter*® *Sugary Drinks* mass media campaign have aired in the intervening period between the 2012-13 and 2018 NaSSDA survey rounds, including an 11-week burst in the first half of 2018 prior to the commencement of NaSSDA data collection in 2018. This regular stream of paid mass media campaign activity addressing sugary drink consumption over an extended period of time has not been replicated elsewhere in Australia (see below for examples of campaign material).

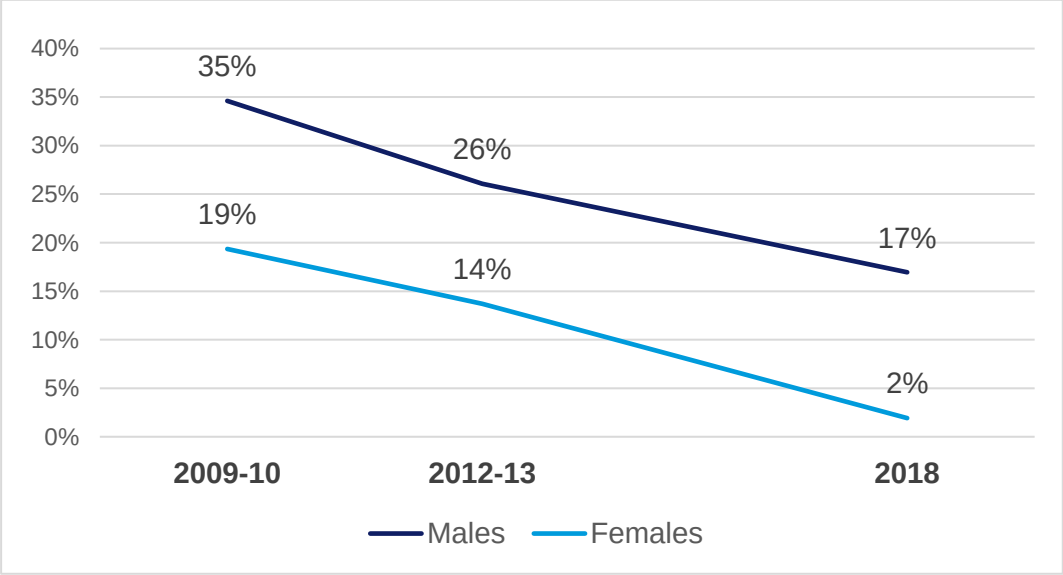
Acknowledgements: LiveLighter® State of Western Australia 2016. Reproduced with permission.

The proportion of students in Western Australia who reported consuming four or more sugary drinks per week in 2018 was significantly lower compared to 2012-13, whereas this significant decrease was not observed in the other states and territories combined.



Prevalence of consuming ≥4 cups of sugary drinks per week over time by state.

Trends in sugary drink consumption were similar for males and females in the non-Western Australia sub-sample. However, within Western Australia, the significant decline in the proportion of students consuming four or more sugary drinks per week between 2012-13 and 2018 was more pronounced among females compared to males.



Prevalence of consuming ≥4 cups of sugary drinks per week in Western Australia over time by sex.

Summary

- Around one in six Australian secondary school students reported high consumption (≥4 cups per week) of sugary drinks, with this level of intake more common among both males and students residing in low socio-economic areas.
- Nationally, the proportion of students reporting they consume four or more cups of sugary drinks per week has almost halved since 2009-10 (30% cf. 17%).
- Steeper declines in students' sugary drink consumption were observed in Western Australia (cf. all other states and territories combined) between 2012-13 and 2018, coinciding with the repeated airing of the *LiveLighter® Sugary Drinks* campaign in this state.
- Government investment in a *LiveLighter® Sugary Drinks* style of campaign may hasten declines in students' sugary drink consumption.

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Appendices

Methods

Questionnaire

Consumption of sugary drinks was assessed by asking students "How much soft drinks (like Coke, lemonade), cordials or sports drinks (like Gatorade) do you usually drink? (1 cup = 250ml, one can of soft drink = 1 ½ cups). Do not include diet soft drinks, diet cordials, or diet sports drinks". Response options included: 'I don't drink soft drinks, cordials or sports drinks'; 'less than one cup a month'; 'about '1-3 cups a month'; 'about 1-3 cups a week'; 'about 4-6 cups a week'; 'about 1-2 cups a day'; 'about 3-4 cups a day'; and '5 cups or more a day'. Students who indicated they consumed four or more cups (≥1 litre) per week were classified as "high sugary drink consumers".

Students recorded their sex, year level and residential postcode. A measure of socio-economic area was determined according to the Socio-Economic Index for Areas (SEIFA) Index of Relative Socio-economic Disadvantage based on student's residential postcode[1, 2, 3]. Using the national deciles to create quintiles, students were categorised into low (first and second quintiles), mid (third and fourth quintiles) and high (fifth quintile) socio-economic area groups. Postcode of residence was also used to classify the home location of students as metropolitan or rural/regional according to the Australian Statistical Geography Standard Remoteness Structure[4, 5].

Data Analyses

Data were analysed using Stata/MP 14.2 and weighted by state, education sector, year level and sex to bring each sample in line with the population of students enrolled in Australia[6, 7, 8]. Clustering of students within each school was adjusted for in all analyses.

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[1] Australian Bureau of Statistics (2008). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia - Data only, 2006. Catalogue no. 2033.0.55.001. Canberra: Australian Bureau of Statistics.

[2] Australian Bureau of Statistics (2013). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011. Catalogue no. 2033.0.55.001. Canberra: Australian Bureau of Statistics.

[3] Australian Bureau of Statistics (2018). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016. Catalogue no. 2033.0.55.001. Canberra: Australian Bureau of Statistics.

[4] Australian Bureau of Statistics (2013). Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness structure, July 2011. Catalogue no. 1270.0.55.005. Canberra: Australian Bureau of Statistics.

[5] Australian Bureau of Statistics (2018). Australian Statistical Geography Standard (ASGS): Volume 5 – Remoteness Structure, July 2016. Catalogue no. 1270.0.55.005. Canberra: Australian Bureau of Statistics.

[6] Australian Bureau of Statistics (2010). *Schools Australia, 2009*. Catalogue no. 4221.0. Canberra: Australian Bureau of Statistics.

[7] Australian Bureau of Statistics (2014). *Schools Australia, 2013*. Catalogue no. 4221.0. Canberra: Australian Bureau of Statistics.

[8] Australian Bureau of Statistics (2019). *Schools Australia, 2018*. Catalogue no. 4221.0. Canberra: Australian Bureau of Statistics.

Logistic regression analyses were conducted to test for significant differences in current national prevalence estimates of students consuming four or more cups of sugary drinks per week by sex, year level, socio-economic area and home location. Changes in national prevalence estimates across survey rounds (2009-10 vs. 2012-13 and 2012-13 vs. 2018) were also assessed using logistic regression. An interaction term was added to this model to determine whether change over time differed in Western Australia compared to all other states and territories combined. Further interaction testing was conducted to examine if trends in sugary drink consumption, at the national level and within the Western Australia and non-Western Australia sub-samples, varied by sex.

A significance level of $p<0.20$ was accepted for interaction tests [9]. A conservative significance level of $p<0.01$ was accepted for all other analyses except those using the smaller Western Australia sub-sample ($p<0.05$). All models controlled for sex, year level, socio-economic area, home location and education sector.

Supplementary Tables

Table 1. Number of respondents across survey waves.

Table 2. Weighted proportions and change over time in consumption of ≥4 cups of sugary drinks in Western Australia and non-Western Australia by sex.

[9] Kirkwood B, Sterne J. (2003). Essential medical statistics. (2nd ed). Malden, Massachusetts: Blackwell Science.

Table 1. Number of respondents across survey waves.

	2009-10	2012-13	2018
National			
Males	6,997	5,140	4,363
Females	6,793	5,169	4,739
Total	13,790	10,309	9,102
Western Australia			
Males	832	724	171
Females	669	682	438
Total	1,501	1,406	609
Non-Western Australia			
Males	6,165	4,416	4,192
Females	6,124	4,487	4,301
Total	12,289	8,903	8,493

Note: Unweighted observations are reported.

Table 2. Weighted proportions and change over time in consumption of ≥4 cups of sugary drinks in Western Australia and non-Western Australia by sex.

	Prevalence (%) *			2012-13 (ref 2009-10)			2018 (ref 2012-13)		
	2009-10	2012-13	2018	Adj. OR†	95% CI	*P*-value	Adj. OR†	95% CI	*P*-value
National									
Males	38.01	27.71	22.40	0.62	0.54-0.70	**<0.001**	0.77	0.64-0.93	**0.008**
Females	22.23	14.51	11.02	0.59	0.49-0.71	**<0.001**	0.74	0.55-1.00	0.050
Total	30.21	21.27	16.91	0.60	0.54-0.68	**<0.001**	0.76	0.63-0.92	**0.004**
Western Australia									
Males	34.61	26.06	16.95	0.65	0.47-0.91	**0.013**	0.49	0.26-0.90	**0.023**
Females	19.35	13.71	1.92	0.67	0.49-0.90	**0.010**	0.11	0.05-0.26	**<0.001**
Total	27.12	20.30	9.62	0.65	0.50-0.84	**0.001**	0.37	0.21-0.65	**0.001**
Non-Western Australia									
Males	38.43	27.89	23.05	0.61	0.53-0.70	**<0.001**	0.80	0.66-0.97	0.024
Females	22.57	14.59	12.14	0.58	0.48-0.72	**<0.001**	0.82	0.61-1.10	0.179
Total	30.59	21.37	17.80	0.60	0.53-0.68	**<0.001**	0.81	0.67-0.97	0.024

*Unadjusted prevalence estimates.
†Odds ratios adjusted for sex, year level, socio-economic area, home location and education sector.
Bold values denote statistical significance. A significance level of $p<0.01$ was employed for analyses conducted at the national level and on the non-Western Australia sub-sample; a significance level of $p<0.05$ was employed for analyses conducted on the Western Australia sub-sample.