Restricting television advertising of unhealthy foods

Publication citation: Brown V, Ananthapavan J, Veerman L, Sacks G, Lal A, Peeters A, Backholer K, Moodie M (2018). The potential cost-effectiveness and equity impacts of restricting television advertising of unhealthy food and beverages to Australian children. *Nutrients* 10(5)

The intervention

- Legislation to implement restrictions of unhealthy food and beverage marketing on free-to-air television (TV) until 9:30pm.
- The intervention was modelled at the population level, and by socioeconomic position based on Socio-Economic Indexes for Areas (SEIFA) for quintile 1 (Q1, most disadvantaged) and quintile 5 (Q5, least disadvantaged).

What we already know

- A mix of legislated broadcasting standards and voluntary self-regulatory measures currently exist, however Australian children are still exposed to TV advertising of unhealthy foods and beverages while watching shows not specifically designed for children.
- Australian children with a lower socioeconomic position (SEP) are more likely to watch TV and for longer periods of time compared to those with a higher SEP, and may therefore be exposed to greater levels of TV advertising for unhealthy foods and beverages compared to children with a higher SEP.

Key elements of the modelled intervention

- Intervention effectiveness was based on meta-analysis of experimental studies, with adjustments for compensatory intake and 'real-world' applicability.
- Older adolescents and adults may also benefit from reduced exposure to TV advertisements for unhealthy foods, however the modelled benefits were limited to benefits in children aged 5-15 years.
- Costs included legislative costs and on-going compliance costs. Sensitivity analysis explored the effect of including short-term (1 year) loss of revenue to TV networks.

Key findings

- The intervention would cost $5.9M and result in a mean decrease in energy intake of approximately 115kJ/day and a mean BMI reduction of 0.35kg/m^2.
- The intervention would be dominant, resulting in 88,396 HALYs gained and total healthcare cost-savings of $784M over the lifetime of the modelled population.
- The intervention may reduce health inequities, resulting in 1.5 times more HALYs gained and 1.4 times higher total cost-savings in children living in the most disadvantaged areas compared to the least disadvantaged areas.
- The intervention remained dominant when short-term loss of revenue to TV networks were included (probability of being cost-effective was 100%).

Conclusion

The intervention demonstrates significant potential for cost-effectiveness, positive equity effects and is feasible, sustainable and acceptable to the Australian general public. However, there is limited direct evidence of effectiveness, and it is likely to be opposed by industry stakeholders.

Scenarios description and cost-effectiveness results

Table 1 *Description of selected scenarios*

	Base case * Restricting TV advertising to children	Scenario 1 Incorporating short-term loss of revenue to TV networks	Scenario 2 Smaller effect estimate#, loss of revenue to TV networks included
Risk factor(s) addressed by intervention	BMI		
Population targeted	Australian population children 2010, aged 5-15 years		
Weighted average reduction in body weight (95% UI)	Population: 0.82kg (0.51 to 1.02)	Population: 0.82kg (0.51 to 1.02)	0.28kg (0.16 to 1.88)
Weighted average reduction in BMI, kg/m² (95% UI)	Population: 0.35kg/m² (0.22 to 0.44) Q1: 0.39; Q5: 0.30	0.35kg/m² (0.22 to 0.44)	0.12kg/m² (0.07 to 0.8)
Effect decay	100% maintenance of effect		
Costs included	Cost of legislation, administration and compliance	Base case plus short-term (1 year) TV network loss of revenue, based on percentage of published estimate of overall TV advertising revenue	
Type of model used	Child matrix model		

*Notes: *Base case scenario estimated at the population level (i.e. all Australian children aged 5 to 15 years, and by SocioEconomic Index for Areas (SEIFA) quintiles. # Smaller effect estimate based on most conservative meta-analysis result and higher rate of adjustment to real-world setting. BMI: body mass index; kg: kilogram; m: metre; Q1: most disadvantaged Socioeconomic Index for Areas (SEIFA) quintile; Q5: least disadvantaged SEIFA quintile; TV: television; UI: uncertainty interval.*

Table 2 *Cost-effectiveness results, mean (95% UI)*

	Base case (population level)	Base case (Q1)	Base case (Q5)	Scenario 1	Scenario 2
Total HALYs gained	88,396 (54,559 to 123,199)	17,512 (10,372 to 25,155)	11,321 (6,812 to 15,679)	88,453 (53,764 to 123,373)	33,463 (4,299 to 89,269)
Total intervention costs	$5.9M ($5.8M to $7M)	$1.2M ^ ($1.1M to $1.3M)	$1.2M ^ ($1.1M to $1.3M)	$105M ($84M to $132M)	$105M ($84M to $132M)
Total healthcare cost savings	$784M ($376M to $1B)	$128M ($60M to $198M)	$92M ($45M to $138M)	$788M ($373M to $1B)	$296M ($34M to $816M)
Total net cost *	-$778M (-$1B to -370M)	-$126M (-$197M to -$59M)	-$91M (-$136M to -$44M)	-$683M (-$868M to -$289M)	-$191M (-$684M to -$50M)
Mean ICER ($/HALY gained)	Dominant (Dominant to Dominant)				Dominant (16,432 to Dominant)
Probability of being cost-effective #	100%				99.5%
Overall result	**Dominant**				

*Notes: Dominant: the intervention is both cost-saving and improves health; B: billion; HALY: health adjusted life year; ICER: incremental cost effectiveness ratio; M: million; Q1: most disadvantaged Socioeconomic Index for Areas (SEIFA) quintile; Q5: least disadvantaged SEIFA quintile; $: 2010 Australian dollars; * Negative total net costs equate to cost savings; # The willingness-to-pay threshold for this analysis is $50,000 per HALY; ^ Assumed attribution of one-fifth of total intervention cost to each quintile.*

Figure 1 ***Cost–effectiveness plane (base case)***

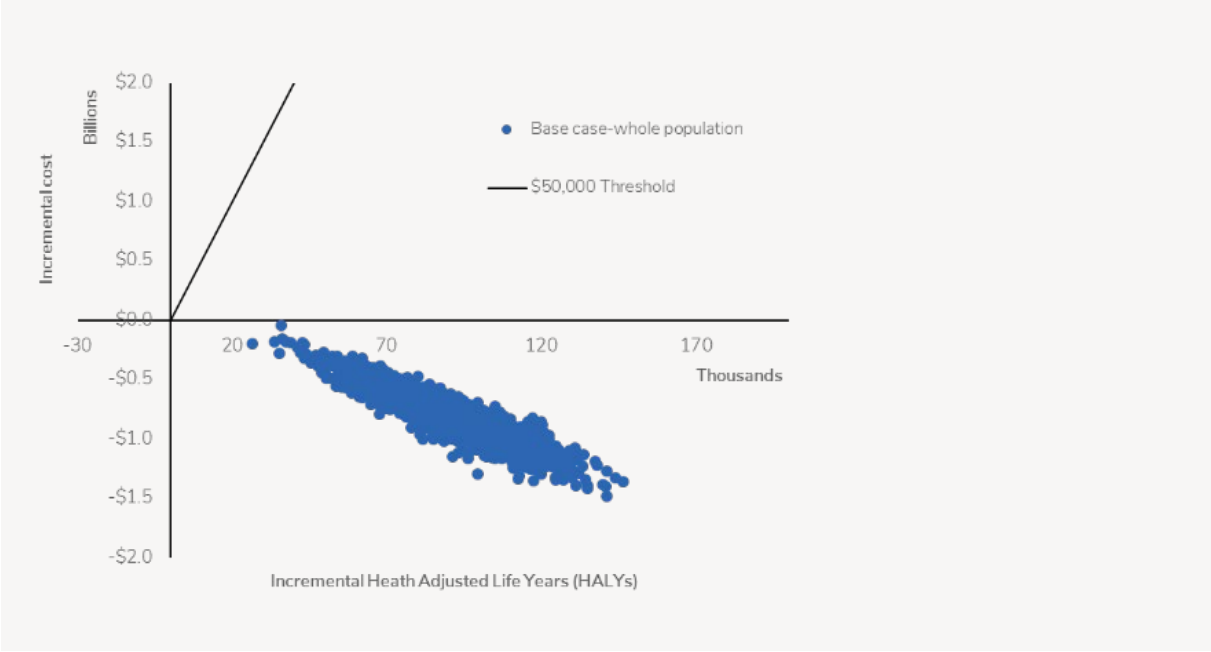
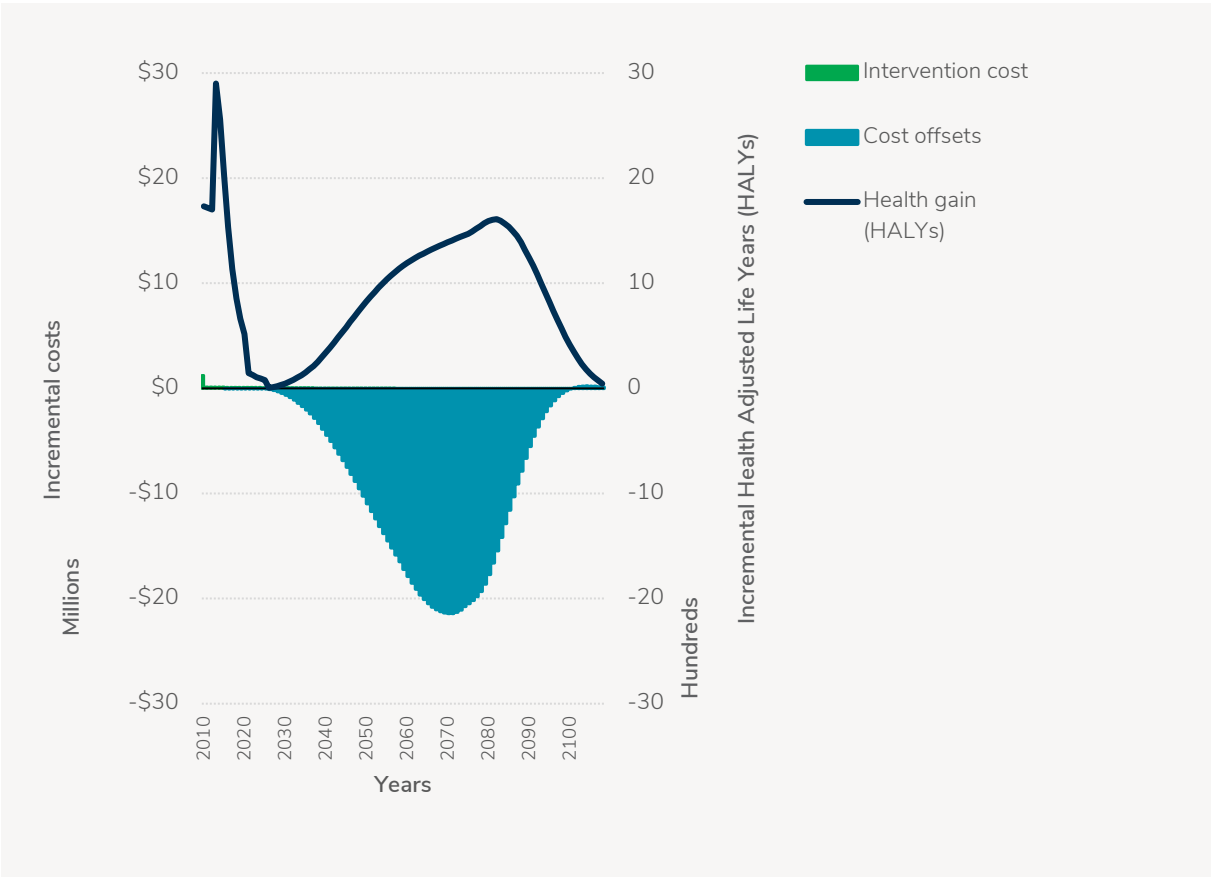


Figure 2 ***Costs, cost offsets and health gains over time (base case)***



Implementation considerations

Consideration	Details	Assessment
Strength of evidence	Low certainty of effect on BMI/body weight outcomes due to absence of relevant studies exploring real world implementation of the intervention.	Low
	Medium certainty of effect for short term dietary outcomes. The intervention is modelled using an effect estimate derived from meta-analysis of non-naturalistic experimental evidence. Extent of compensatory behaviours (over a full day) not well established.	Medium
Equity	Modelling results suggest increased health benefits and healthcare cost-savings in children with low versus high SEP.	Positive
Acceptability	**Government:** To date, political motivation to enact legislation in Australia has been low but may vary by political party and over time. International experience in countries such as Ireland and the United Kingdom suggests the potential for political acceptability.	Medium
	Industry: Acceptability from the food, media and advertising industries is likely to be low.	Low
	Public: Public support for government regulation of advertising of HFSS food and beverages to children is high[1,2].	High
Feasibility	This legislative intervention is feasible to implement in the Australian setting.	High
Sustainability	Given its legislative nature, the intervention is sustainable. The ACMA already has regulatory responsibilities and could oversee compliance monitoring.	High
Other considerations	**Positive side effects:** The intervention may have an impact on the food preferences and consumption behaviours of older children and adults. **Negative side effects:** The intervention may result in loss of revenue to TV networks (likely to be a short-term effect).	

Note: ACMA: Australian Communications and Media Authority; BMI: body mass index; HFSS: High in fat, sugar or salt; SEP: socioeconomic position; TV: television.

[1] Parents' Voice. Junk Food Marketing 2017 [cited 2017 10 November]. Available from: https://parentsvoice.org.au/our-work/junk-food-marketing/.

[2] Sainsbury E, Hendy C, Magnusson R, Colagiuri S. Public support for government regulatory interventions for overweight and obesity in Australia. BMC Public Health. 2018;18(1):513.