Package size cap on sugar-sweetened beverages

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The intervention

- Package size cap of 375ml on packaged single-serve sugar-sweetened beverages (SSBs) sold in Australia. The cap size was selected based on recommendations in the Australian Dietary Guidelines that specify that a serving of discretionary food, such as SSBs, should provide a maximum of 600kJ, which translates to approximately 375ml (1 can).
- The Australian government has identified changes in portion size as a key focus area as part of the Healthy Food Partnership – one of their flagship food and nutrition initiatives.

What we already know

- Package and portion size are known to influence the quantity of food an individual selects and consumes. When offered larger packages or portions of food or beverages, individuals are known to consume more and are unlikely to compensate by increasing their physical activity.
- Globally, initiatives targeting package and portion size have been identified as a promising approach to reduce obesity and obesity-related diseases.

Key elements of the modelled intervention

- The effectiveness of this intervention was modelled based on consumption data and assumptions related to how changing available single-serve package sizes would change consumption.
- Total consumption of SSBs by age and sex was estimated using the Australian Health Survey.
- Consumption from all package sizes of single-serve SSBs >375ml were reduced by the volume greater than 375ml. These were summed and applied uniformly across the population consumption data to determine the overall reduction in SSB consumption and corresponding mean daily energy intake reductions.
- Costs to government included the costs of passing the legislation (where relevant), and for administering and monitoring implementation. Costs to the food industry were derived based on previous analyses of expected costs of implementation of a food labelling intervention affecting packaged food in Australia.
- Scenario analyses tested variations in the level of substitution to other types of SSBs, and the extent to which manufacturers implemented the package size cap (100% for mandatory implementation, 20% of eligible products for voluntary implementation).

Key findings

- A package size cap on single-serve SSBs was estimated to result in mean reductions in population body weight of 0.15kg (if implemented on a mandatory basis) and 0.03kg (if implemented on a voluntary basis).
- The intervention was estimated to be dominant (i.e., cost-saving and health promoting) in all scenarios investigated. Mandatory implementation would result in 73,883 HALYs gained and healthcare cost savings of $751 million over the lifetime of the modelled population.

Conclusion

The intervention demonstrates significant potential for cost-effectiveness, with expected positive equity effects. However, it is likely to be opposed by industry stakeholders, and the specific changes in industry marketing and consumer behaviour in response to the intervention are largely untested.

Scenarios description and cost-effectiveness results

Table 1 *Description of selected scenarios*

	Base case Legislation banning the sale of packaged single-serve SSBs >375ml. No compensatory eating	Scenario 1 Assumed 10% of individuals substitute targeted SSBs for equivalent single-serve portions of sugar-free alternatives	Scenario 2 Voluntary industry pledge to cease supply of packed single-serve SSBs >375ml. No compensatory eating
Risk factor(s) addressed by intervention	BMI		
Population targeted	Australian population, aged 2-100 years		
Weighted average reduction in body weight (95% UI)	0.15kg (0.12 to 0.18)	0.65kg (0.54 to 0.79)	0.03kg (0.02 to 0.04)
Weighted average reduction in BMI (95% UI)	0.05kg/m^2 (0.04 to 0.06)	0.22kg/m^2 (0.20 to 0.24)	0.02kg/m^2 (0.01 to 0.03)
Effect decay	100% maintenance of effect		
Costs included	Cost of legislation, administration and monitoring (government); implementation (industry)		No costs to government of passing legislation, lower industry costs due to lower level of implementation
Type of model used	Population model with quality of life in children		

Notes: BMI: Body mass index; kg: kilogram; m: metre; SSBs: sugar sweetened beverages; UI: uncertainty interval

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

	Base case	Scenario 1	Scenario 2
Total HALYs gained	73,883 (57,038 to 96,264)	348,236 (267,567 to 455,788)	14,781 (11,260 to 19,170)
Total intervention costs	$210M ($148M to $273M)	$210M ($148M to $273M)	$45M ($31M to $58M)
Total healthcare cost savings	$751M ($556M to $991M)	$4B ($3B to $5B)	$151M ($112M to $201M)
Total net cost *	-$541M (-$793M to -$341M)	-$3B (-$5B to -$2.4B)	-$106M (-$160M to -$66M)
Mean ICER	Dominant (Dominant to Dominant)	Dominant (Dominant to Dominant)	Dominant (Dominant to Dominant)
Probability of being cost-effective #	100%	100%	100%
Overall result	**Dominant**	**Dominant**	**Dominant**

*Notes: B: billion; Dominant: the intervention is both cost-saving and improves health; HALY: health adjusted life year; ICER: incremental cost effectiveness ratio; M: million; $: 2010 Australian dollars; * Negative total net costs equate to cost savings. # The willingness-to-pay threshold for this analysis is $50,000 per HALY.*

Figure 1 ***Cost–effectiveness plane***

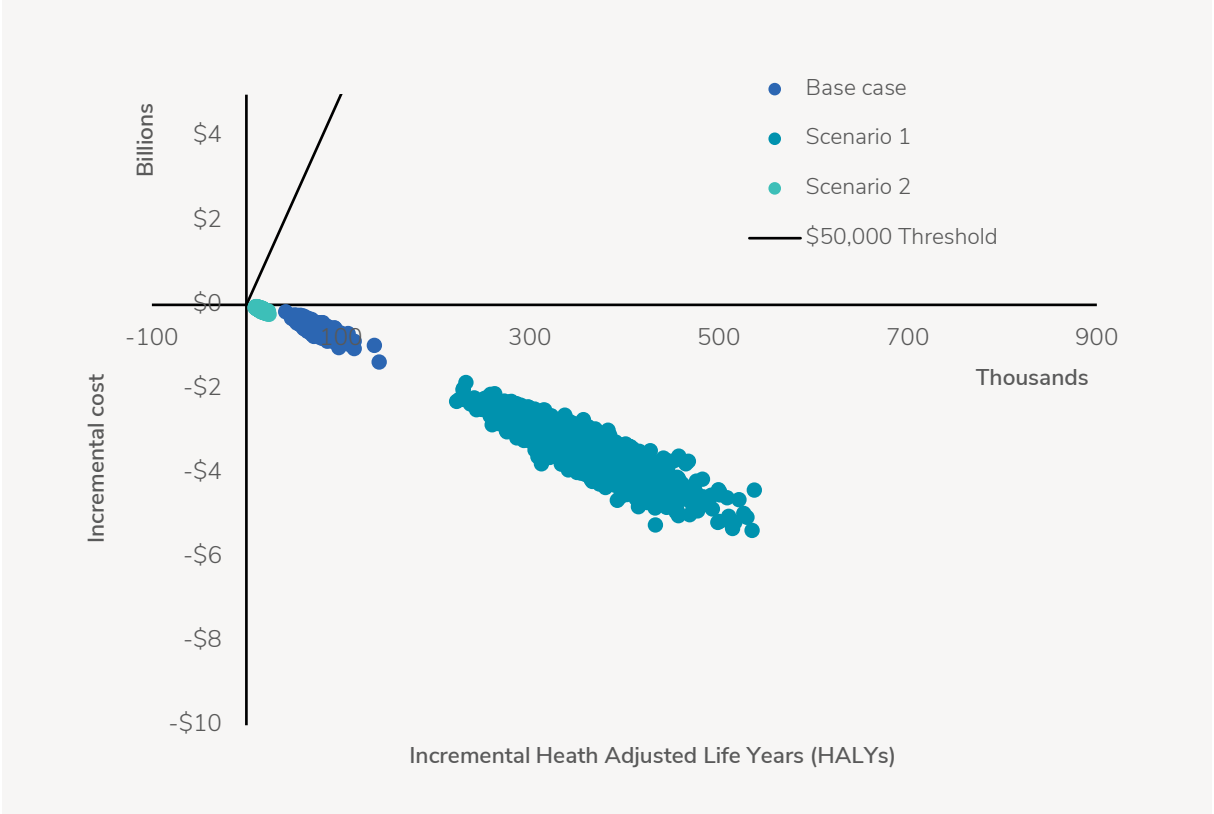
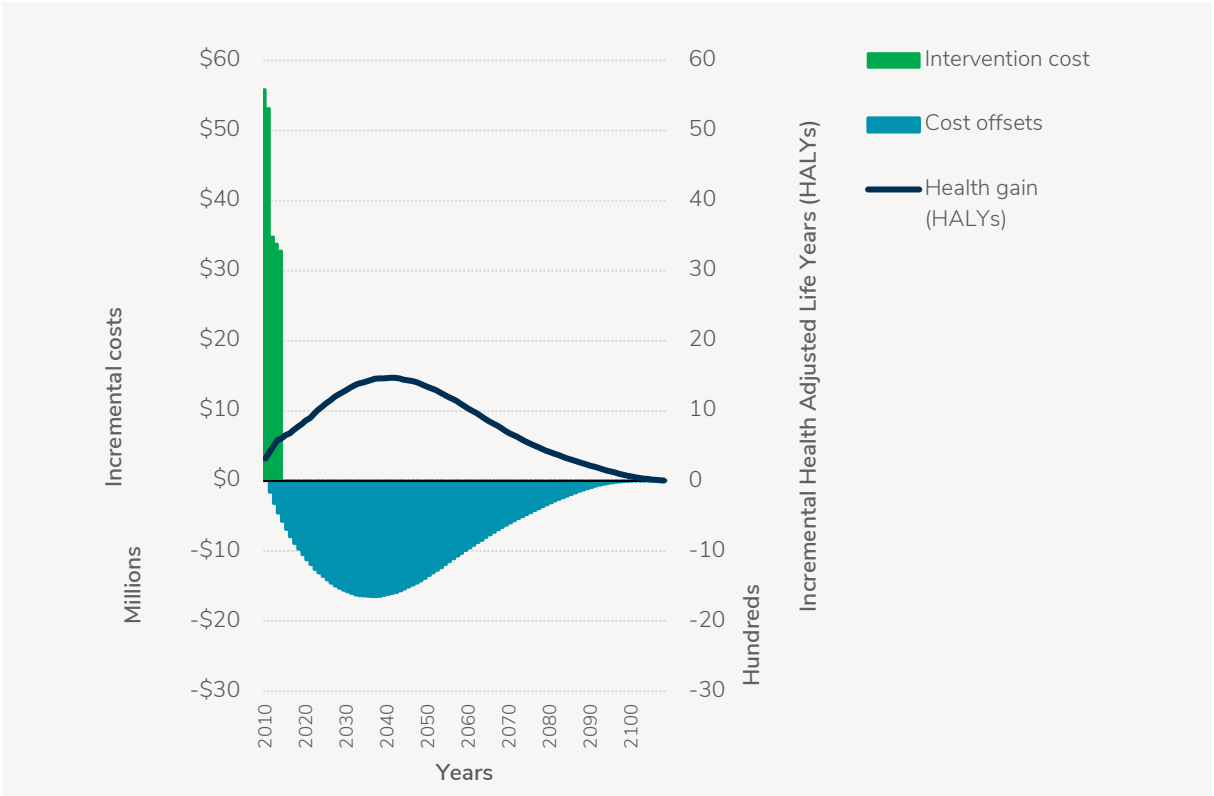


Figure 2 ***Costs, cost offsets and health gains over time (base case)***



Implementation considerations

Consideration	Details	Assessment
Strength of evidence	Low certainty of effect on BMI / body weight outcomes due to absence of relevant studies and lack of real world implementation.	Low
	Low certainty of effect on dietary outcomes due to absence of relevant studies and lack of real world implementation, particularly regarding compensatory behaviours in response to the intervention.	Low
Equity	Consumption of SSBs is known to be higher in lower socio-economic groups. Accordingly, this intervention is likely to have a greater health impact in lower socio-economic groups.	Positive
Acceptability	**Government:** The Australian government has identified portion size as a focus area for the Healthy Food Partnership. The government is likely to prefer voluntary implementation (Scenario 2).	Low
	Industry: Beverage manufacturers are likely to oppose package size caps on single-serve SSBs.	Low
	Public: There is no available evidence regarding the level of public support for this intervention. It could be expected that consumers of SSBs are likely to oppose package size caps on single-serve SSBs.	Low
Feasibility	Most SSBs are already sold in a variety of single-serve package sizes. Removing the largest package sizes (>375ml) is likely to be highly feasible.	Low
Sustainability	If this intervention was implemented on a mandatory basis, sustainability is likely to be high, although there would likely be ongoing pressure from the food industry to remove the regulations. If this intervention was implemented on a voluntary basis, relying on industry commitments to implement and maintain the package size cap, sustainability is likely to be lower and subject to competitive pressures on the industry.	Medium
Other considerations	This intervention has not been implemented previously and, therefore, the pricing and marketing response from industry and changes in consumer purchasing are largely unknown.	

Notes: BMI: Body mass index; SSBs: sugar-sweetened beverages