Workplace intervention to reduce sedentary behaviour

Publication citation: Gao L, Flego A, Dunstan DW, Winkler EAH, Healy GN, Eakin GE, Willenberg L, Owen N, LaMontagne AD, Lal Am Wiesner GH, Hadgraft NT, Moodie ML. Economic evaluation of a randomized controlled trial of an intervention to reduce office workers' sitting time: the "Stand-Up Victoria" trial. *Scand J Work Environ Health* 2018; 44(5): 503-511

The intervention

- *Stand Up Victoria* was a multi-component workplace-delivered intervention designed to reduce workplace sitting time by a "Stand Up, Sit Less, Move More" policy.
- It comprised organisational, environmental and individual-level strategies (including consultation with managerial staff, a workplace information session, emails from worksite managers, installation of sit-stand workstations, and individual health coaching). A voluntary policy implemented nationally was modelled.

What we already know

- High levels of sitting are detrimentally associated with a range of health outcomes.
- Desk-based workers typically sit for approximately 75% of their workday, with much of this sitting time accrued in prolonged unbroken bouts.
- Interventions that adopt a multi-component approach have been shown to be most successful in reducing workplace sitting time.

Key elements of the modelled intervention

- A within-trial cost-efficacy analysis was performed using the efficacy and cost data from the randomised controlled trial of *Stand Up Victoria* in 14 worksites of a single organisation.
- A cost-effectiveness analysis was conducted to translate short-term benefits observed in the trial (i.e., increased physical activity in terms of standing time) into the long-term health benefits (i.e. health-related quality of life).
- The intervention was modelled for both the trial and national eligible populations (office-based workers) modelled with intervention effect lasting for five-years. The duration of effect was varied in scenario analyses.

Key findings

- When scaled up to the national level, the intervention would affect around 0.6 million workers, and would reduce sedentary behaviour. This would result in 7,492 HALYs gained.
- The intervention was associated with healthcare cost saving of $54 million and a resultant net cost of $344 per participant.
- The resultant incremental cost-effectiveness ratio was $28,703 per HALY gained, with both having 100% probability of being cost-effective.

Conclusion

The *Stand Up Victoria* intervention was shown as likely to be cost-effective when scaled up to the national workforce. However, the intervention relies on voluntary uptake, a relatively large level of investment from companies, and will likely need sustained funding and other resources to remain effective.

Scenarios description and cost-effectiveness results

Table 1 *Description of selected scenarios*

	Base case Voluntary policy; 20% per annum intervention decay	Scenario 1 Voluntary policy; 10% per annum intervention decay
Risk factor(s) addressed by intervention	PA	
Population targeted	Australian population 2010, aged 18-65 years	
Weighted average reduction in PA, MET mins/day (95% UI)	63.3 (35.7 to 90.9)	
Effect decay	20% decay per annum, no effects after 5 years	10% decay per annum, no effects after 10 years
Costs included	Recruitment, information sessions, sit-stand workstations, consultations, telephone check-ups, email tips plus costs of national delivery	
Type of model used	Population model with quality of life in children	

Notes: MET: metabolic equivalent task; mins: minutes; PA: physical activity; UI: uncertainty interval

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

	Base case	Scenario 1
Total HALYs gained	7,492 (6,555 to 8,428)	11,612 (10,301 to 12,986)
Total intervention costs	$269M	$269M
Total healthcare cost savings	$54M ($46M to $63M)	$84M ($72M to $96M)
Total net cost	$215M ($207M to $224M)	$185M ($173M to $197M)
Mean ICER ($/HALY gained)	28,703 (24,547 to 34,088)	15,954 (13,345 to 19,166)
Probability of being cost-effective #	100%	100%
Overall result	**Cost-effective**	**Cost-effective**

Notes: HALY: health adjusted life year; ICER: incremental cost effectiveness ratio; M: million; $: 2010 Australian dollars; # The willingness-to-pay threshold for this analysis is $50,000 per HALY.

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

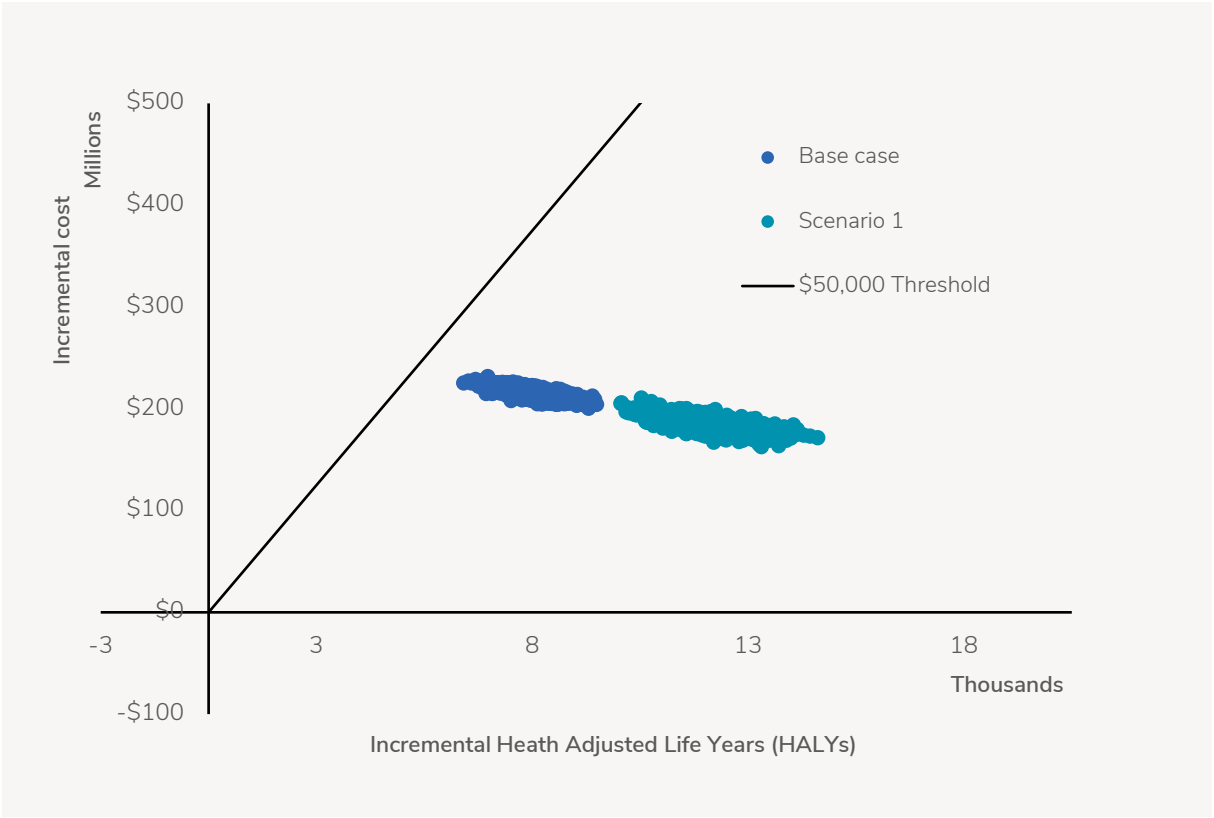
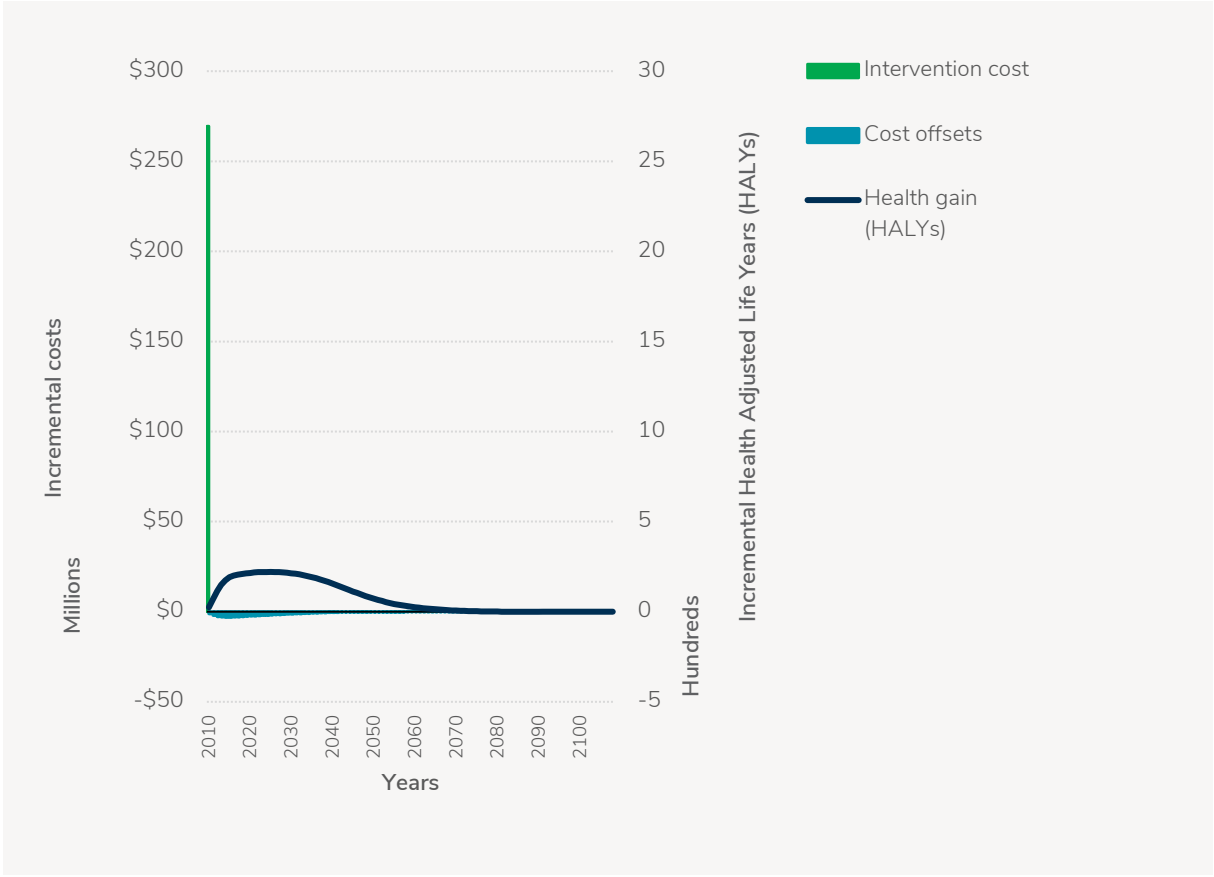


Figure 2 ***Costs, cost offsets and health gains over time***



Implementation considerations

Consideration	Details	Assessment
Strength of evidence	Low certainty of effect for BMI and body weight outcomes due to absence of relevant studies. No BMI impact was detected during the trial-based evaluation of *Stand Up Victoria*.	**Low**
	Medium certainty of effect for physical activity outcomes, with the effect estimate based on objectively measured data from a single RCT in the Australian context. The PA outcomes are consistent in direction with another RCT in the North American context.	**Medium**
Equity	The equity impact of this interventions is not known. The intervention will impact on all office-based workers for firms that take up the intervention.	**Neutral**
Acceptability	**Government:** The intervention aligns well with government policy to promote workplace occupational health and safety.	**High**
	Industry: Potential benefits that may accrue to industry include reductions in absenteeism and increased productivity. There is no evidence on likely acceptability to industry, and the relative affordability is likely to depend on the size of the organsation, amongst other factors.	**Medium**
	Public: The intervention offers the potential to promote the overall health of office-based workers. The intervention is likely to be supported by the public due to no additional out of pocket costs to the employee.	**High**
Feasibility	The intervention is likely to be feasible to implement, although it will require a relatively large investment from individual firms. The characterisitics of organisations that are likely to adopt the intervention are not well established. Economies of scale could be achieved through bulk orders or use of less expensive sit-stand workstations. Other potential savings could be explored (such as coaching via text message rather than the use of health coaches, substitution of videos for seminars etc).	**Medium**
Sustainability	The sustainability of effect depends on the ongoing organisational and cultural support provided for the intervention use. Once sit-stand workstations are installed in workplaces, the intervention effect would be potentially maintained.	**Low**
Other considerations	**Positive side effects:** The modelling only captured changes in BMI and physical activity. It did not capture changes to other cardiometabolic risk biomarkers that have showed promising potential health benefits (e.g., reductions in fasting glucose). **Negative side effects:** The intervention may be associated with some adverse events from the intervention (e.g., back injuries requiring medical attention).	

Note: BMI: body mass index; PA: physical activity; RCT: randomised controlled trial