

The health and economic benefits of reducing disease risk factors

VicHealth Briefing Note

DA Cadilhac, A Magnus, T Cumming, L Sheppard, D Pearce, R Carter



This briefing note is a summary of the report: *The health and economic benefits of reducing disease risk factors*.

VicHealth acknowledges those below who made contributions to the original report.

The Advisory Committee:

Todd Harper, Chief Executive Officer, VicHealth (Chair) Dr Jim Hyde, Director, Public Health, Department of Human Services Elen Liew, Economic and Financial Policy, Department of Treasury and Finance Nadja Diessel, Economic and Financial Policy, Department of Treasury and Finance Prof. Jeff Richardson, Faculty of Business and Economics, Monash University Kellie-Ann Jolly, Director, Active Communities and Healthy Eating, VicHealth

Other contributors:

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Six behavioural risk factors contribute approximately 16% to the burden of disease in Australia. Smoking, high risk alcohol use, physical inactivity, intimate partner violence, obesity and inadequate diet are major contributors to ill health in Australia. These are preventable behaviours with preventable costs to society.

Previous research has estimated the cost burden of these behaviours; i.e., *what the cost of these behaviours is assuming we could eradicate them*. However, complete eradication of these behaviours is unrealistic.

An alternative approach is to ask: *What would be the economic benefits if we reduced the prevalence of these behaviours to realistic targets?* Researchers from Deakin University and the National Stroke Research Institute (a subsidiary of Florey Neuroscience Institutes) asked the question: *What are the economic benefits of reducing the prevalence of risk behaviours to realistic targets drawn from international experience and policy recommendations?*

This new report, *The health and economic benefits of reducing disease risk factors*, answers this question. The report includes estimates of the 'health status', 'economic' and 'financial' benefits of reducing the prevalence of the six behavioural risk factors that contribute to chronic diseases affecting millions of Australians¹.

Importantly, the researchers map new territory by developing a model for estimating the benefits of home-based work (e.g., cooking, caring for children) and leisure. The findings show that increasing physical activity creates more household and leisure time productivity. Reductions in alcohol consumption have a significant influence on workforce productivity.

Overall, large financial benefits are possible if we achieve 'realistic' reductions in the prevalence of these risk factors. Over the lifetime of the 2008 Australian adult population, opportunity cost savings² were conservatively estimated to be \$2,334 million. The total cost savings are the sum of the health sector offsets and the combined workforce, household and leisure production effects³.

Frictional cost approach (FCA) ³	Average financial benefit (\$ millions)
<i>Financial outcomes</i>	
Production gains/(losses)	473
Recruitment/training costs	79
Leisure-based production	110
Home-based production	248
Total production	830
Health sector offsets	1,504
Total opportunity cost savings	\$2,334

Table 1. The total economic benefits are the sum of the health sector offsets and the combined workforce, household, and leisure production effects

The Study

Estimates of health impact, economic benefit and financial benefit were derived from a literature review on each risk factor, consultation with external and independent experts, direct use of databases from the Australian Bureau of Statistics (ABS) and use of attributable risk estimates and data from the 2003 Australian Burden of Disease (BoD) study. Two analytic methods were used to estimate cost savings for people in the workforce: the frictional cost approach (FCA) and the human capital approach (HCA). The FCA takes into account a range of costs associated with replacing short-term lost productivity, whereas the HCA is the lifetime replacement of human capital. These two approaches provide a comprehensive range for likely workforce cost savings.

Realistic Prevention Targets

The targets for reductions in behavioural risk factors provide the basis for realistic economic outcomes. The targets agreed for this study are listed below.

Risk factor	Method	Attributable		Change	
		Australia	Comparator	Ideal	Progressive
Intimate partner violence (prevalence %)	Arcadian ideal ⁴	27	Denmark: 22	↓5	↓2.5
High risk alcohol consumption (litres/capita/year)	Arcadian ideal	9.8	Norway: 6.4	↓3.4	↓1.7
Tobacco smoking (prevalence %)	Arcadian ideal	23	California: 15	↓8	↓4
Physical inactivity (prevalence %)	Evidence based consensus	70	60	↓10	↓5
Inadequate fruit and vegetable consumption (grams/day/person)	Evidence based consensus	503	675	↑172	↑86
High body mass index (prevalence %)	Evidence based consensus	27	24	↓3	↓1.5

Table 2. Targets for reductions in behavioural risk factors

The analysis was limited to the **prevention of new cases** of disease attributable to the six risk factors over the lifetime of the 2008 population. **These estimates are conservative** because recurrent events that may occur in people who already have a chronic disease were not counted (for example, people can have more than one heart attack or stroke). Furthermore, additional benefits are expected to accumulate in each subsequent year. However, these benefits will diminish as targets are achieved since fewer people will have the risk factors in the population over time. No attempt to estimate such benefits in future years beyond 2008 was made.

Main Findings

The financial benefits of achieving realistic prevention goals for each risk factor are summarised in Table 3. Because these risk factors contribute to many of the same diseases, benefits must be corrected for joint effects to avoid overestimating benefits.

	Uncorrected individual risk factors (\$ millions)						Combined risk factors
	Intimate partner violence	High-risk alcohol consumption	Inadequate fruit and vegetable consumption	Physical inactivity	Tobacco smoking	High BMI	Corrected for joint effects ⁵
Total production (FCA)	333	435	21	162	415	82	830
Health sector offsets	38	789	71	96	491	90	1,504
Total opportunity cost savings (FCA)	371	1,225	92	258	906	173	2,334

Table 3. Estimates of financial benefits based on the Frictional Cost Approach (FCA) for each risk factor

Health Benefits

The health benefits of reaching achieved targets for each risk factor are shown in Table 4. Substantial benefits can be gained in deaths avoided, DALYs⁶ reduced and illness avoided.

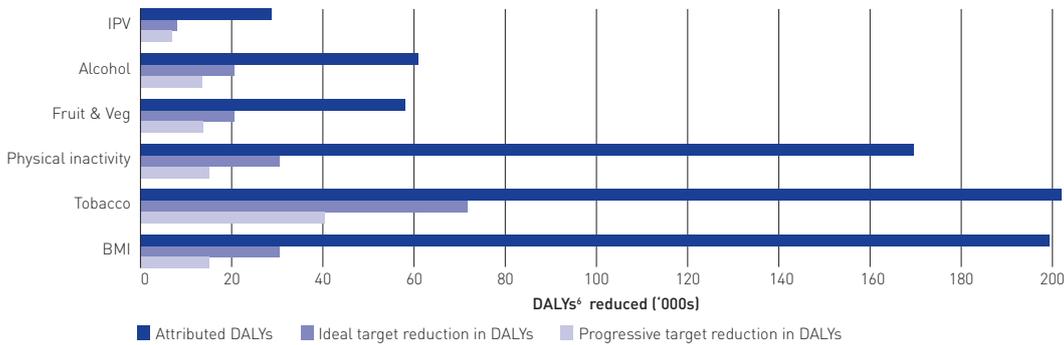
Health benefits from reaching ideal prevention targets						
Health impact	Intimate partner violence	High-risk alcohol consumption	Inadequate fruit and vegetable consumption	Physical inactivity	Tobacco smoking	High BMI
Attributable deaths avoided	74	380	1,600	2,000	5,000	5,000
DALYs reduced	5,000	21,000	18,900	25,000	71,000	25,000
Related illnesses avoided	6,000	98,000	2,500	6,000	158,000	9,000

Table 4. Estimates of health benefits from reaching ideal prevention targets for each risk factor

Health Benefits (continued)

This chart illustrates the estimated disability adjusted life years (DALYs) from meeting progressive and realistic prevention targets, and the total attributable DALYs associated with each behavioural risk factor.

While the greatest overall attributed DALYs are attributed to physical activity, tobacco and high body mass index (BMI), substantial impacts are achievable with improvements across the range of behavioural risk factors.

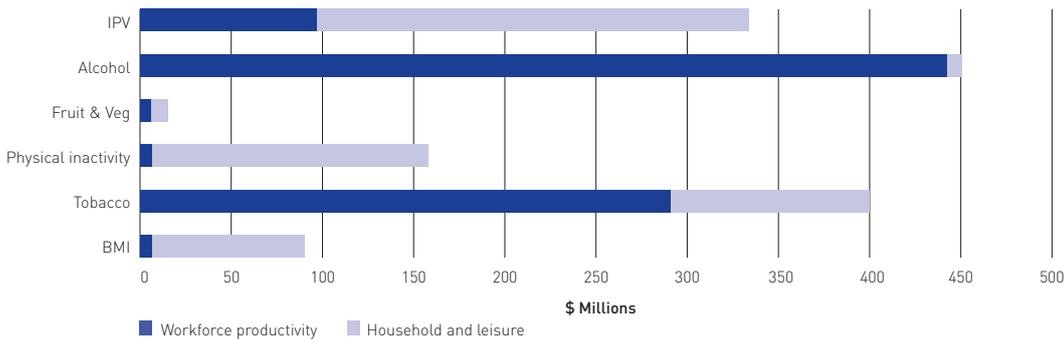


Cost Savings – Workforce Productivity & Household and Leisure

The following chart illustrates the absolute contributions of savings in workforce productivity and household and leisure-time productivity.

Economic benefits from achieving prevention goals in alcohol and tobacco are located predominantly in workforce productivity.

The economic benefits from achieving prevention goals in intimate partner violence, physical activity and BMI are located predominantly in household and leisure production.

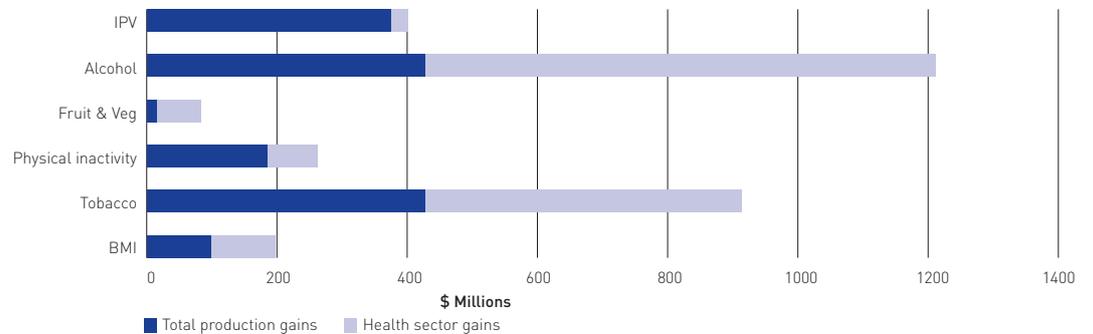


Cost Savings – Relative Contribution of Production and Health Sector Offsets

The following chart illustrates the absolute contributions of total production gains and health sector offsets for each behavioural risk factor.

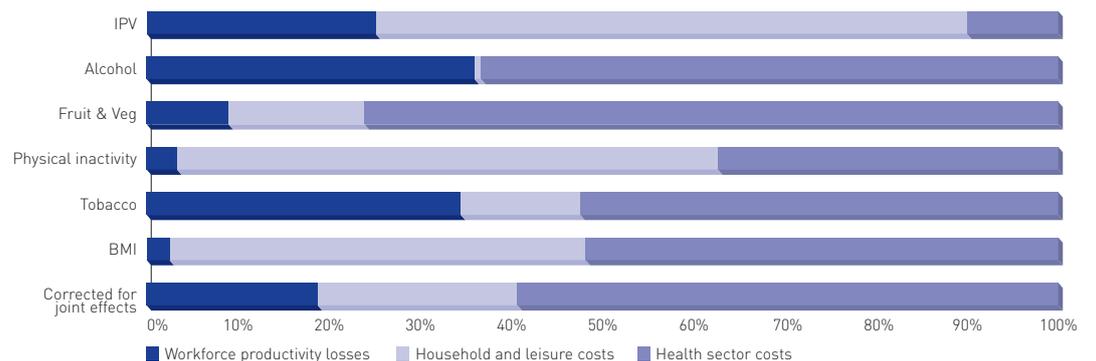
Proportionately, total production gains are most evident with reductions in intimate partner violence and physical inactivity.

Health sector gains are most apparent with reductions in high risk alcohol and tobacco use.



Cost Saving Distributions

The following chart illustrates the cost savings distributions across each behavioural risk factor. Cost savings are distributed differently for each risk factor. This illustrates the wide range of financial benefits across different economic activity sectors, reinforcing the finding that achieving realistic targets in the prevention of behavioural risk factors has implications beyond health and is a core outcome for the whole of government.



Summary

This report adds to the growing body of evidence that backs the need for greater investment in health promotion. It provides a wealth of information that can help us to make informed decisions about the value of health promotion when developing policies, funding programs and infrastructure, and initiating research. As the report highlights, we are all beneficiaries when it comes to reducing the prevalence of these six behavioural risk factors.

¹ Opportunity cost savings are not estimates of immediately realisable financial savings, but can be considered estimates of resources reflecting current practice that could be available for other purposes. That is, across society, if we do not have to use resources (for example, hospital beds) to treat chronic diseases which have been prevented by health promotion initiatives, then these resources can be directed for other important purposes.

² Hereafter, 'potential opportunity cost savings' are referred to simply as 'cost savings'.

³ FCA is a method for valuing workforce productivity whereby it is assumed that individuals will be replaced after a specified period and thus productivity losses to society will be less than if all future income lost from an individual who leaves the workforce due to death and disability were counted (known as the human capital approach). In this research a base friction period of 3 months, which was varied to 6 months in the sensitivity analysis, was used.

⁴ In 1990, Armstrong established feasible reductions in age-standardised mortality rates by comparing genetically similar countries. The lowest mortality rate between countries was declared the *Arcadian normal*, which then provided evidence of a feasible mortality rate that could be achieved. Armstrong's concept was considered applicable for the current study to provide an estimate for feasible *risk factor* reduction targets. However, not all of the risk factors could be reliably assessed using Arcadian-based prevalence targets.

⁵ Recognising that each behavioural risk factor may cause more than one disease and that these risk factors cause many of the same diseases, adjustments were made to estimate the likely combined effect of reductions in multiple risk factors using mathematical methods published by the World Health Organization and the authors of the 2003 Australian BoD study. This '*correction for joint effects*' was undertaken to avoid overestimating potential benefits from reducing the prevalence of multiple risk factors concurrently.

⁶ Disability Adjusted Life Years



Victorian Health Promotion Foundation
PO Box 154 Carlton South 3053 Australia
T. +61 3 9667 1333 F. +61 3 9667 1375
vichealth@vichealth.vic.gov.au
www.vichealth.vic.gov.au

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