

6 October 2018

Mr Trent Zimmerman, MP  
Chair  
Standing Committee on Health, Aged Care and Sport  
Parliament House Canberra

Dear Mr Zimmerman,

## **Submission to Inquiry into Sleep Health Awareness in Australia:**

### **ECONOMIC COST OF INADEQUATE SLEEP AND SLEEP DISORDERS**

This letter contains a submission to the Inquiry into Sleep Health Awareness in Australia which is currently being undertaken by the national parliamentary Standing Committee on Health, Aged Care and Sport, under your chairmanship.

#### **Background**

This **submission specifically addresses** an important aspect of the first of the inquiry's terms of reference: the issue of the economic cost of inadequate sleep and sleep disorders to the Australian community. **My qualification for making this submission** is that, as chair or deputy chair of the Sleep Health Foundation ('the Foundation'), I have played a key role in initiating a series of analyses of these costs which have been undertaken by Deloitte Access Economics (previously Access Economics) over the last 12 years on commission from the Foundation and a start-up body that preceded the Foundation's establishment in 2010. Apart from the reports themselves, which are available on the Foundation website<sup>1,2,3</sup>, each has resulted in a publication (*of which I have been first author*) in a leading peer-reviewed medical/sleep journal and which has subsequently been extensively cited by other workers in the field, attesting to their veracity and value.<sup>4,5,6</sup>

#### **Costs of Inadequate Sleep in Australia**

The most recent of these reports ("Asleep on the job: costs of inadequate sleep in Australia"<sup>3</sup>) analysed the financial and non-financial costs of inadequate sleep in all its forms for the 2016-17 financial year. This provides a contemporary detailed analysis of costs, which may be summarised as follows:

- Based on recent data from Adams et al<sup>7</sup>, it is estimated that 39.8% of Australian adults regularly (several days a week or more) experience some form of inadequate sleep.
- This inadequate sleep can be partitioned into: (a) that causing *excessive daytime sleepiness because of an underlying clinical sleep disorder* (5.8% of Australian adults); (b) that causing *excessive daytime sleepiness from other sources of disturbed sleep* (13.3%); and (c) subjective *insufficient sleep* due to behaviours or other reasons that restrict sleep (20.7%).
- The costs associated with each of these categories varies, as they have different impacts on health and wakeful cognitive, psychomotor and emotional function and vigilance.
- These impacts adversely affect health, mood, wellbeing, productivity, and safety.
- The economic costs that arise from these impacts include: (1) financial costs associated with health care, informal care provided outside healthcare sector, productivity losses, non-medical work and vehicle accident costs, deadweight loss through inefficiencies relating to lost taxation revenue and welfare payments; and (2) the non-financial costs of loss of well-being.
- The analysis of these costs was undertaken using prevalence, financial and nonfinancial cost data derived from national surveys and databases, including from: the Australian Institute of Health and Welfare; the Bureau of Infrastructure, Transport and Regional Economics; the

Australian Bureau of Statistics; the Office of Best Practice Regulation, Department of Prime Minister and Cabinet; and the National Occupational Health and Safety Commission. **A detailed description of the analysis methodology is provided in the report and the peer-reviewed manuscript that was based on the report.**<sup>3,6</sup>

- The estimated overall cost of inadequate sleep in Australia in 2016–2017 was \$66.29 billion. The financial cost component was \$26.22 billion, comprised of as follows: direct health costs of \$230 million for sleep disorders and \$1.59 billion for associated conditions; productivity losses of \$17.87 billion (\$7.65 billion from reduced employment, \$0.9 billion from premature death, \$2.53 billion from absenteeism, and \$6.79 billion from presenteeism); nonmedical accident costs of \$3.64 billion; informal care costs of \$0.61 billion; and deadweight loss of \$2.28 billion. The nonfinancial cost of reduced well-being was \$40.07 billion. **A detailed breakdown of these estimated costs is provided in the report (in AUD\$) and the peer-reviewed manuscript (in \$US) that was based on the report.**<sup>3,6</sup> The following table summarizes them (in AUD\$):

**Table: Breakdown of Costs of Inadequate Sleep in 2016-17 by its Various Causes**

	<b>Costs of Various Causes of Inadequate Sleep Including Costs of Conditions Attributable to Them</b>			<b>TOTAL</b> (AUD\$ billions)
	<b>EDS - SD</b> (AUD\$ billions)	<b>Other EDS</b> (AUD\$ billions)	<b>Insufficient Sleep</b> (AUD\$ billions)	
<b>FINANCIAL COSTS (AUD\$ billions)</b>				
• Health	0.74	0.76	0.32	1.82
• Productivity				
○ <i>Reduced Employment</i>	1.86	3.94	1.85	
○ <i>Premature Death</i>	0.35	0.39	0.16	
○ <i>Absenteeism</i>	0.53	1.37	0.63	
○ <i>Presenteeism</i>	1.07	3.26	2.46	
Subtotal	3.81	8.96	5.10	17.87
• Informal Care Total	0.16	0.27	0.18	0.61
• Other (non-medical accident costs)				
• <i>Workplace Accidents</i>	0.08	0.23	0.12	
• <i>MVAs</i>	0.53	1.44	1.24	
Subtotal	0.61	1.67	1.36	3.64
• Deadweight Loss	0.56	1.10	0.62	2.28
<b>Total Financial Costs</b>	<b>5.88</b>	<b>12.76</b>	<b>7.58</b>	<b>26.22</b>
<b>NON-FINANCIAL COSTS (AUD\$ billions)</b>				
• Loss of Wellbeing	31.38	7.54	1.15	40.07
<b>TOTAL COSTS (AUD\$ billions)</b>				
• Financial + Non-Financial	37.26	20.30	8.73	66.29

## Conclusion

The financial and non-financial costs of inadequate sleep are substantial. The total financial costs of AUD\$26.22 billion represent 1.55% of Australian gross domestic product. The non-financial cost of AUD\$40.07 billion is 4.6% of the total Australian burden of disease costs for the year. These costs warrant substantial investment in preventive health measures to address the issue through education and regulation.

## References:

1. Access Economics. Wake up Australia. The value of Healthy Sleep 2004. Canberra: Access Economics, 2004.  
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2. Deloitte Access Economics. Re-awakening Australia. The Economic Cost of Sleep Disorders in Australia, 2010. Canberra: Deloitte Access Economics, 2011.  
<https://www.sleephealthfoundation.org.au/pdfs/news/Reawakening%20Australia.pdf> Accessed September 25, 2018.
3. Deloitte Access Economics. Asleep on the Job. Costs of Inadequate Sleep in Australia. Canberra: Deloitte Access Economics, 2017.

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4. Hillman DR, Scott-Murphy A, Antic R, Pezzullo L. The economic cost of sleep disorders. *Sleep* 2006; 29:299-305.
5. Hillman DR, Lack LC. Public health implications of sleep loss: the community burden. *Med J Aust*. 2013;199:S7-10.
6. Hillman D, Mitchell S, Streatfeild J, Burns C, Bruck D, Pezzullo L. The economic cost of inadequate sleep. *Sleep*. 2018 [Epub ahead of print].
7. Adams RJ, Appleton SL, Taylor AW, Gill TK, Lang C, McEvoy RD, Antic NA. Sleep health of Australian adults in 2016: results of the 2016 Sleep Health Foundation national survey. *Sleep Health*. 2017 Feb;3(1):35-42.

**Definitions:**

*Excessive daytime sleepiness* is formally defined using a validated instrument (the Epworth Sleepiness Scale) which quantifies the degree of daytime sleepiness according to the self-assessed chances of falling asleep while engaged in 8 different activities.

*Cognitive* relates to conscious intellectual activity, such as thinking, reasoning or remembering.

*Psychomotor* relates to movement or muscle activity initiated by mental activity, which incorporate coordination, manipulation, dexterity, strength and speed.

*Financial costs* are directly measurable economic costs.

*Non-financial costs* are notional costs related to loss of well-being which can be estimated on the basis of the value of statistical life years lost due to disability or death.

*Burden of disease* reflects the impact of a health problem as measured by the number of years lost due to disability or death.

*Presenteeism* is the act of being at work but, because of illness or other conditions, not fully functioning.

I would welcome any questions you or your committee may have regarding this report. *I append copies of the references referred to in it for your convenience.*

Yours sincerely,



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