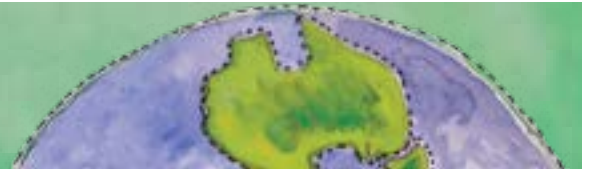


## 7.8 The size and causes of the Indigenous health gap



Indigenous Australians generally experience worse health than non-Indigenous Australians. While this health gap and its likely causes have been well documented, less progress has been made in measuring the effect of particular causes on the size of the gap. There are various statistical techniques that can be used to determine the relative contributions of various influences to the health gap, the results of which are discussed in this article. Before presenting the results, however, it is worthwhile reviewing how large the gap is, and the factors that have been put forward as the main causes.

### How large is the gap?

The health gap between Indigenous and non-Indigenous Australians is best illustrated by differences in life expectancy:

- For females, Indigenous life expectancy at birth in 2010–2012 was 73.7 years, compared with 83.1 years for non-Indigenous females, a gap of 9.5 years.
- The difference was slightly greater for males, with Indigenous life expectancy estimated to be 69.1 years compared with 79.7 years for non-Indigenous males, a gap of 10.6 years.

These differences in health start at birth and continue throughout life:

- Babies born to Indigenous mothers are more likely to be underweight than babies born to non-Indigenous mothers.
- Indigenous children die at more than twice the rate of non-Indigenous children. Between 2007 and 2011, 212 out of every 100,000 Indigenous children aged 0–4 died compared with 95 out of every 100,000 non-Indigenous children.

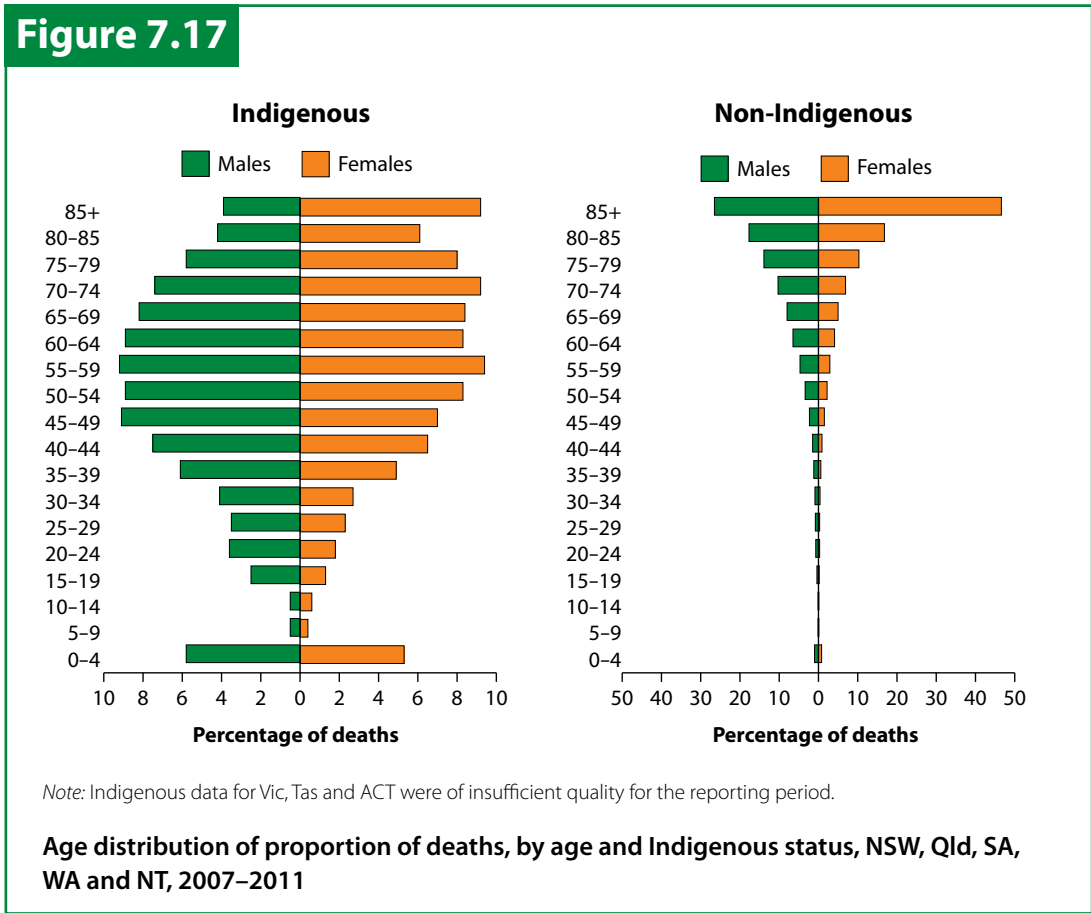
Indigenous adults of all ages also died at higher rates than non-Indigenous Australians:

- The difference was greatest in the 35–44 year age group, where Indigenous people died at almost 5 times the rate of non-Indigenous people.
- Among non-Indigenous Australians, 81% of deaths occur after the age of 65, while only 35% of Indigenous deaths occur after that age (Figure 7.17; see also Chapter 7 'Indigenous life expectancy and death rates').

### What causes the gap?

#### Chronic disease

Chronic diseases occur more often and at a much younger age among Indigenous Australians compared with non-Indigenous Australians (see Chapter 7 'How healthy are Indigenous Australians?' and Chapter 4 'Chronic diseases—Australia's biggest health challenge').



Some researchers have attributed about two-thirds of the Indigenous–non-Indigenous health gap to chronic diseases such as cardiovascular disease, diabetes, mental disorders and chronic lung disease (Vos et al. 2007a). The main causes of deaths among Indigenous Australians in the 2007–2011 period were:

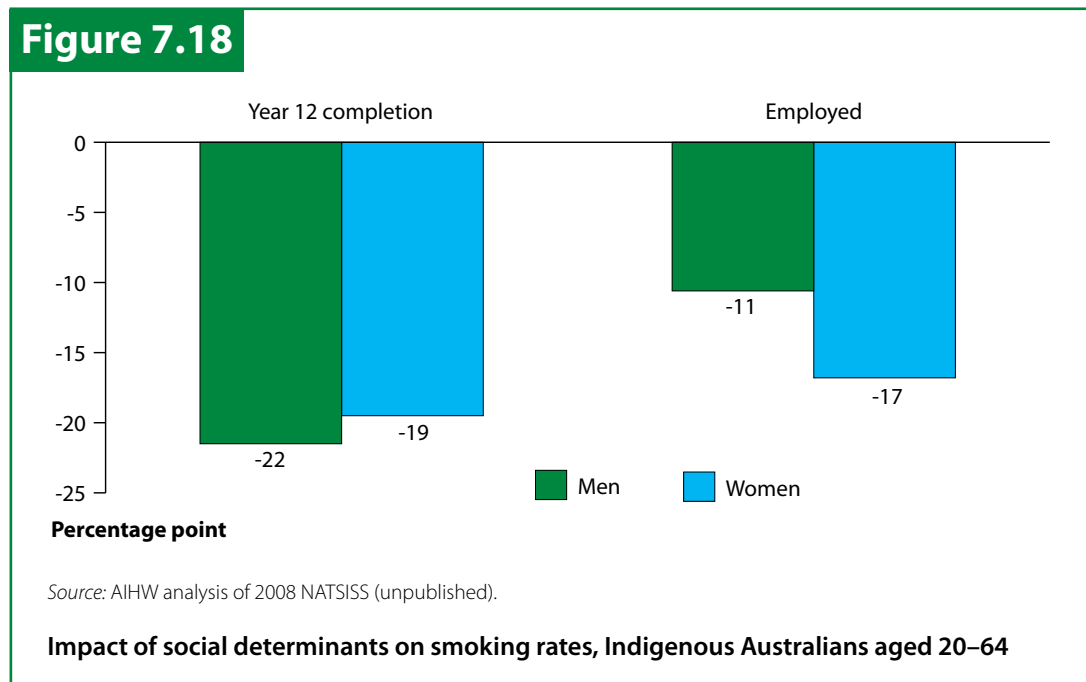
- circulatory disease (26%)
- cancer (19%)
- external causes (including suicide and transport accidents) (15%)
- endocrine, metabolic and nutritional disorders (including diabetes) (9%)
- respiratory diseases (8%).

## Behavioural risk factors and social determinants

Indigenous Australians have been disadvantaged across many areas of life which continue to affect their health today. Disadvantages such as poor education, unemployment, low income, discrimination and poor quality housing are often referred to as the 'social determinants of health'. Social determinants can affect health outcomes both directly and indirectly. For example, a direct effect might be where a person on a low income is not able to afford, and therefore benefit from, health services with high out-of-pocket costs. Indirectly, social factors may increase a person's likelihood of engaging in risky health behaviours such as smoking and/or excessive alcohol consumption (Thomas et al. 2008).

AIHW analysis of the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) and the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) showed that:

- people who had completed Year 12 were significantly less likely to smoke than those who had not completed Year 12 (22 percentage points difference for males and 19 for females)
- people who were employed were also less likely to smoke than those who weren't (11 percentage points difference for males and 17 for females) (Figure 7.18)
- Year 12 completion was associated with lower probability of risky alcohol consumption and sedentary lifestyles.



(See Chapter 7 'Social determinants of Indigenous health', Chapter 7 'Health behaviours of Indigenous Australians', and Chapter 7 'How healthy are Indigenous Australians?' for more information.)

## Access to health services

Poorer access to timely and effective health services is another factor which contributes to the health gap. Reasons commonly given by Indigenous Australians for not being able to access health care include waiting times being too long, care not available at the time requested, lack of services in the area, transport and distance issues, lack of affordable services, and services not culturally appropriate.

Social determinants can restrict an individual's ability to access health services. For example, inadequate formal education can limit peoples' knowledge of their own health needs and their ability to navigate through the health system. Cost is a commonly reported barrier to accessing health services by Indigenous Australians (AHMAC 2012), and low levels of income can discourage people from seeking medical care and paying for ongoing medical costs (Alexander et al. 2003). Analysis of the 2004–05 NATSIHS shows that Indigenous Australians in the lowest income quintiles were less likely than those in the highest income quintiles to visit a doctor or dentist in the last 2 weeks. A similar pattern was found for labour force status, education and housing tenure (AHMAC 2012).

Poorer access to, or use of, non-hospital health care services may underlie relatively high rates of potentially preventable hospitalisations for Indigenous Australians (hospitalisations that could have been prevented by access to appropriate non-hospital health services). During 2010–2012, Indigenous Australians were 3.5 times as likely to have a potentially preventable hospitalisation as non-Indigenous Australians (see Chapter 7 'Remoteness and the health of Indigenous Australians').

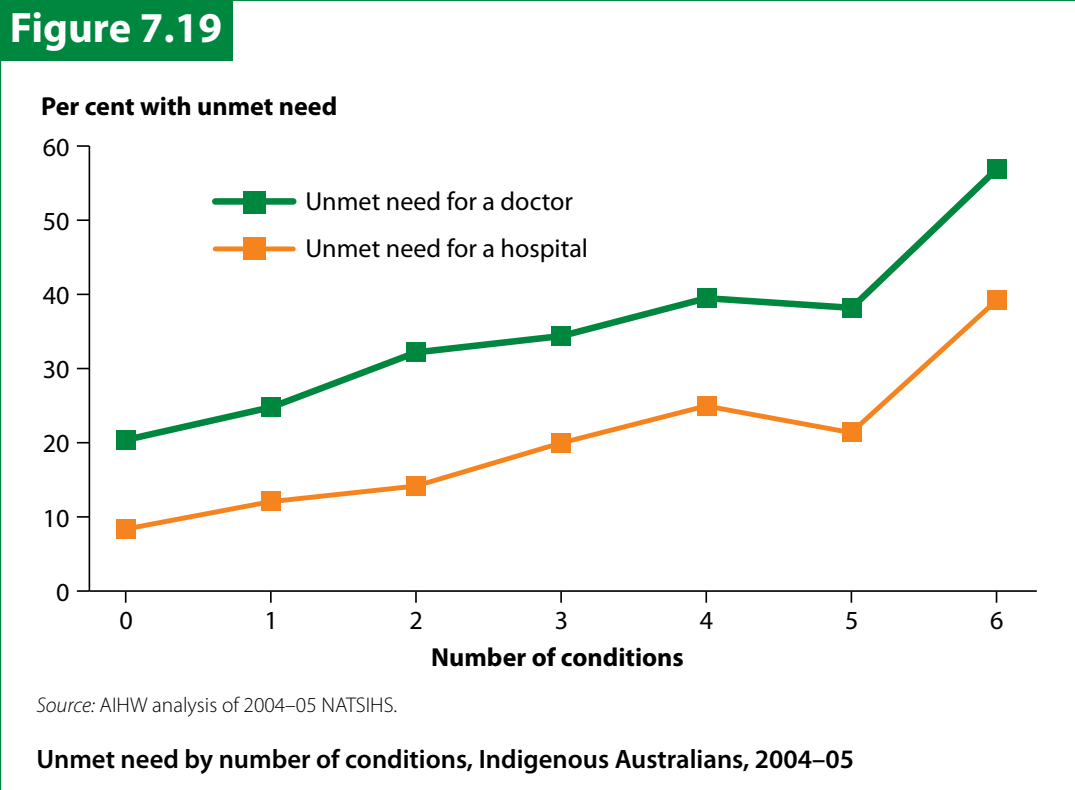
Indigenous Australians are also less likely to have a procedure recorded during a hospital episode than other Australians. In the 2 years to June 2012, only 60% of Indigenous hospitalisations were associated with a reported procedure (excluding dialysis), compared with 82% for other Australians. Analysis by principal diagnosis showed that differences in procedure rates between Indigenous and other Australians were greatest for diseases of the nervous, digestive, musculoskeletal, respiratory, and genitourinary systems (AHMAC 2012).

The 2004–05 NATSIHS included questions about unmet need (individuals who felt they needed to visit a health professional but didn't). Analysis of the data for Indigenous Australians showed that individuals with a greater number of health conditions had more unmet need than those with fewer health conditions (Figure 7.19). However, as this information was not available for non-Indigenous Australians, a health gap analysis could not be done.

## Estimating the relative contributions to the gap

### Previous analyses


Several Australian studies have attempted to measure the contribution of a range of factors to the gap. Booth and Carroll (2005) analysed the contribution of social determinants to the poorer health of Indigenous Australians, measured in terms of self-assessed health status. They concluded that between one-third and one-half of the health gap was due to social determinants. However, the contributions of health risk factors or access to health services to the health gap were not separately calculated.



DSI Consulting Pty Ltd and Benham (2009) also looked at social determinants only, and found that up to one-third of the difference in life expectancy could be attributed to differences in income, school education, employment status and overcrowded housing.

Zhao and others (2013) looked at both social determinants and health behaviours and found that socioeconomic disadvantage explained between 42% and 53% of the gap in life expectancy; however, their study was limited to the Northern Territory.

Studies of indigenous populations in other countries have found similar results. In New Zealand, the gap between Māori and non-Māori life expectancy in 2010–12 was 7.3 years (Statistics New Zealand 2013). One study (Blakely et al. 2006) found that socioeconomic factors accounted for around one-third of the mortality difference between Māori and non-Māori.



The most recent Indigenous Burden of Disease study for Australia (Vos et al. 2007b) found that 49% of the health gap could be explained by 11 behavioural risk factors:

- smoking (17%)
- obesity (16%)
- physical inactivity (12%)
- high blood cholesterol (7%)
- high blood pressure (6%)
- low fruit and vegetable intake (5%)
- alcohol (4%)
- illicit drugs (4%)
- intimate partner violence (3%)
- child sexual abuse (2%)
- unsafe sex.

Some overlap exists between the effects of these risk factors, which is why the sum of the individual risk factor estimates is not the same as the estimate for all the risk factors combined. This work is currently being updated by the AIHW with the first results expected to be published in early 2016.

Many studies have found a strong association between socioeconomic status and health, and longitudinal studies show that low socioeconomic status is a cause of poor health; however, there is still uncertainty as to the magnitude of this impact. This is particularly the case where income is used as a proxy for low socioeconomic status—studies that are able to better control for a larger number and variety of potential causal factors report less evidence of a significant causal relationship between income and health (Gunasekara et al. 2011).

### **AIHW analysis**

Recent AIHW work has aimed to build on the work of others to quantify the relative contributions of behavioural risk factors, access to health services, and social determinants to the health gap. Currently, the AIHW is using national data from the 2004–05 NATSIHS and National Health Survey (NHS). While nearly a decade old, these data remain the best available sources of information on both health determinants and health outcomes. Summary information from the work is presented here. The work will be updated once detailed results from the 2012–13 AATSIHS become available (expected in the second half of 2014).

## Measuring 'health'

For the purposes of this study, health was measured using a composite score combining scores for self-assessed health status, self-reported long-term conditions, and emotional wellbeing (see Box 7.2 for more detail). This composite measure reflects the World Health Organization's definition of health, which is 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO 1948).

### Box 7.2

#### Composite health measure

A self-assessed health score forms the base of the 'good health' composite measure. The score ranges between 5 and 1, corresponding to 'excellent', 'very good', 'good', 'fair' and 'poor'.

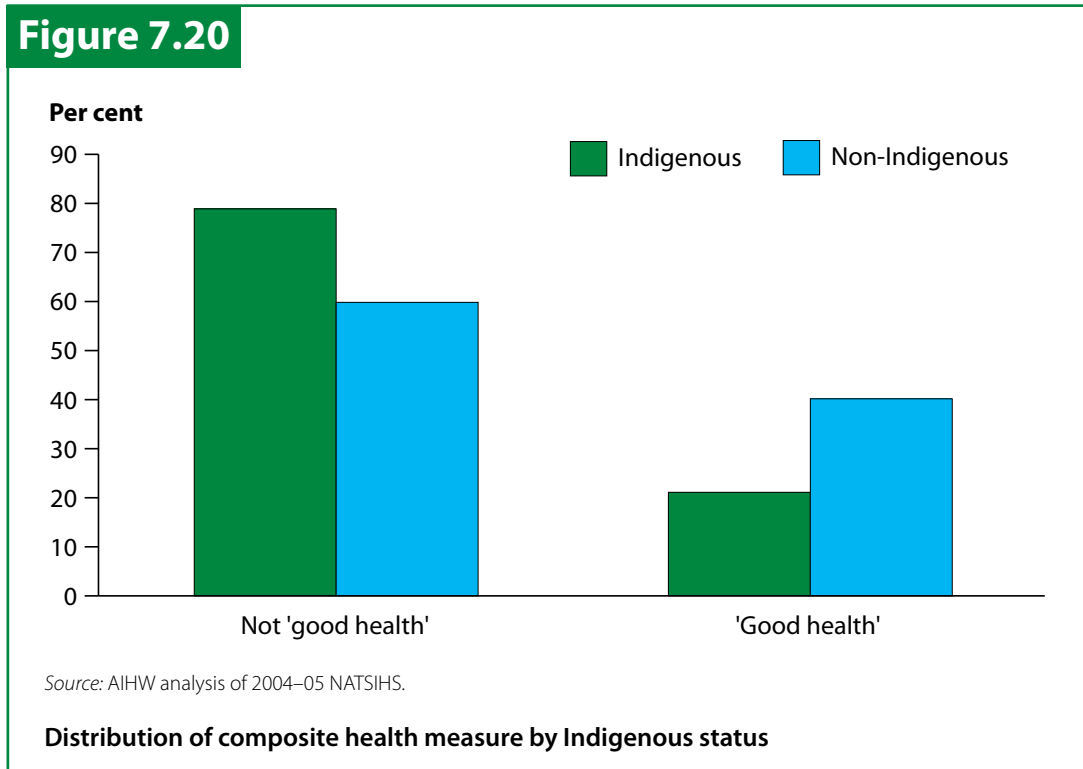
A morbidity score (developed for use with hospital data) is based on the influential and widely used Charlson Index, and includes 29 conditions of the circulatory, respiratory, nervous, endocrine, urinary and musculoskeletal systems, as well as cancer. All conditions are given a weight of 1 and subtracted from the health score.

Emotional distress is quantified as the sum of 5 individual Kessler-scores based on how often respondents had the following thoughts in the last 4 weeks: that everything is an effort; nervous; without hope; restless or jumpy; or so sad that nothing could cheer them up. There are 5 response options for each thought, reflecting how often each feeling was experienced over the 4 weeks, ranging from none of the time to all of the time. The resulting emotional distress score ranged from 0 to 20.

In order to combine the emotional distress score with self-assessed health and morbidity, it needed to be transformed to give similar weighting to both the physical and psychological dimensions of health and to allow individuals with lower levels of emotional distress to increase their health measure. A value of 2 is subtracted from the original 0–20 emotional distress score, and this figure is divided by 2. The resulting emotional distress score is subtracted from the health score.

'Good health' was defined as having a combined score of self-assessed health, morbidity and emotional distress of 3 or more.

Using this composite health measure, one-fifth (21%) of Indigenous Australians were estimated to be in 'good health', compared with two-fifths (40%) of non-Indigenous Australians (Figure 7.20). Conversely, about four-fifths of Indigenous Australians and three-fifths of non-Indigenous Australians were estimated to be in 'not good health'.



### What are the causes of the health gap?

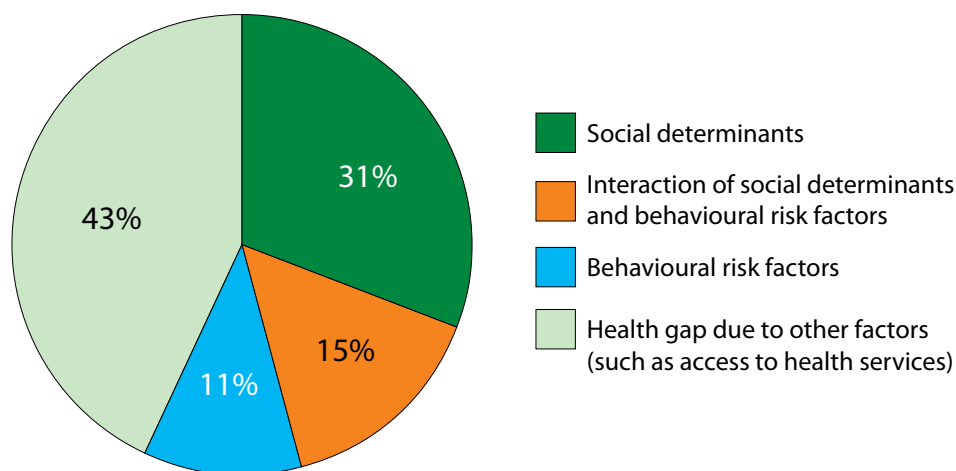
A statistical model was developed to separately estimate the impact of demographic factors, social determinants and behavioural risk factors on the health gap, or in this model, the difference in probability of good health, in percentage points.

The first step was to estimate the impact of key demographic variables on the size of the health gap. This step adjusted the baseline measure for population differences such as age, which might otherwise misrepresent the size of the health gap (as younger populations tend to be healthier). Sex, remoteness and marital status were also adjusted for. The overall result was a reduction in the baseline gap to 15.8 percentage points (the original gap being 19 percentage points, the difference in the proportion of non-Indigenous and Indigenous Australians experiencing 'good health'—40% and 21% respectively).

The core analysis suggested that social determinants explained a larger proportion of the health gap than did behavioural risk factors.

- Individually, social determinants were estimated to be responsible for nearly one-third (31%) of the health gap compared with 11% for behavioural risk factors.
- Interactions between social determinants and behaviours risk factors were estimated to explain an additional 15% of the health gap.
- Together, the factors explained over half (57%) of the gap (Figure 7.21).



**Figure 7.21**

Source: AIHW analysis of 2004–05 NATSIHS.

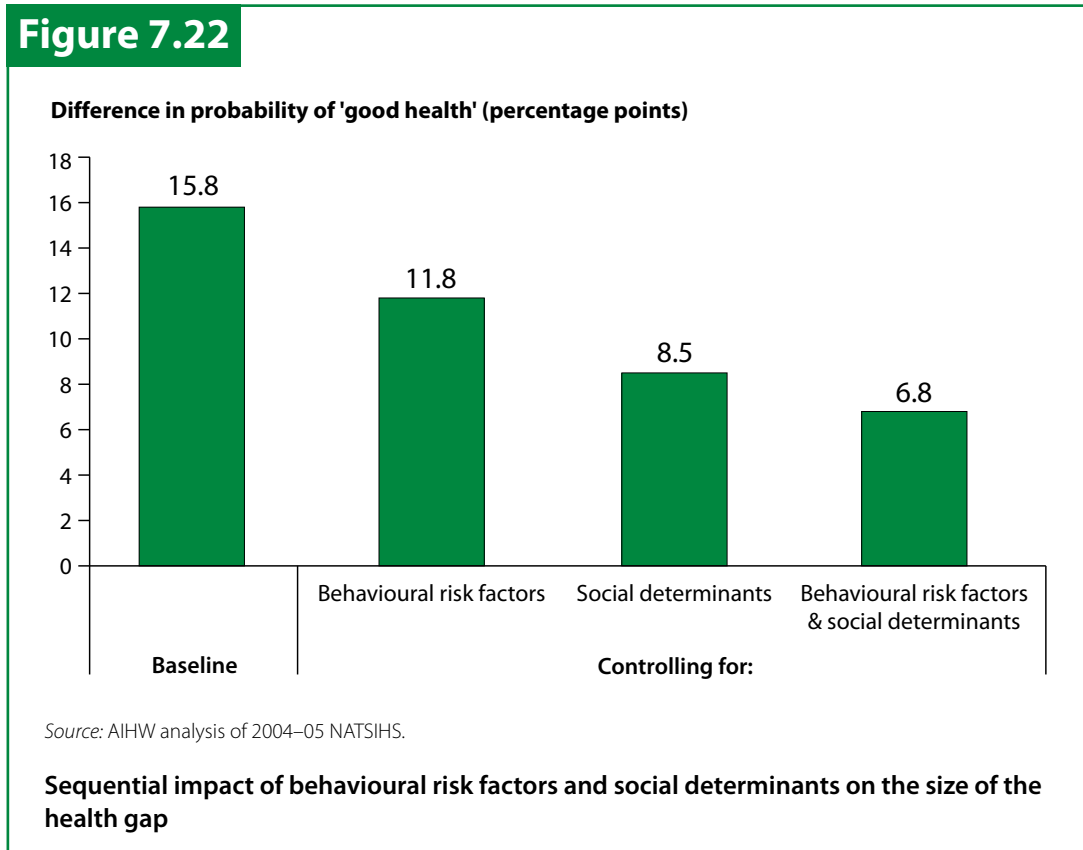
#### Proportion of the health gap explained

Detailed analysis was undertaken to look at the relative contributions of individual variables within the model. In terms of social determinants, household income, highest level of school, and employment status had the largest estimated impact on the health gap. However, there were significant associations between these individual variables. Smoking status, body mass index, and binge drinking were the most important behavioural risk factors contributing to the health gap.

Another way to look at the impact of social determinants and behavioural risk factors on the health gap is to look at reductions in the size of the health gap after controlling for these factors.

- The baseline health gap, after adjusting for age, sex, remoteness and marital status, was 15.8 percentage points.
- The health gap decreased to 11.8 percentage points when behavioural risk factors were controlled for.
- This decreased even further to 8.5 percentage points when social determinants were added.
- The health gap decreased to 6.8 percentage points after adding interactions between social determinants and behavioural risk factors (Figure 7.22).

Overall, the results highlight the degree of overlap and interaction between social determinants and behavioural risk factors in their impact on the health gap.



### What is missing from the picture?

It is likely that a lack of access to health services explains a significant proportion of the health gap. As discussed in this article and others in *Australia's health 2014*, many Indigenous Australians experience problems accessing timely and appropriate health services—due in part to a lack of accessible, affordable, or culturally appropriate services. The evidence suggests a complex relationship between health service access, social disadvantage, health behaviours, and health outcomes.

The AIHW is developing an area-based index of access to GPs relative to needs (see Chapter 7 'Remoteness and the health of Indigenous Australians'); however, providing a full picture on the level of access that Indigenous Australians have to health services remains notoriously difficult. Even where there are service-level data on frequency of visits, the extent of overutilisation or underutilisation is often unknown. Survey data can be more useful than service data in that they provide information on the wider population, rather than only those accessing services. (For more information, see Chapter 7 'Indigenous Australians' access to health services', and Chapter 8, which looks at the major types of health services available in Australia.)

### Where do I go for more information?

More information on the gap in health status between Indigenous and non-Indigenous Australians is available at [www.aihw.gov.au/indigenous-observatory](http://www.aihw.gov.au/indigenous-observatory).

### References

- ABS (Australian Bureau of Statistics) 2013. Life tables for Aboriginal and Torres Strait Islander Australians 2010–2012. ABS cat. no. 3302.0.55.003. Canberra: ABS.
- AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.
- AIHW (Australian Institute of Health and Welfare) 2011. Contribution of chronic disease to the gap in adult mortality between Aboriginal and Torres Strait Islander and other Australians. Cat. no. IHW 48. Canberra: AIHW.
- AIHW 2013. Aboriginal and Torres Strait Islander Health Performance Framework 2012: detailed analyses. Cat. no. IHW 94. Canberra: AIHW.
- Alexander GC, Casalino LP & Meltzer DO 2003. Patient-physician communication about out-of-pocket costs. *Journal of the American Medical Association* 290(7):953–8.
- Blakely T, Fawcett J, Hunt D, & Wilson N 2006. What is the contribution of smoking and socioeconomic position to ethnic inequalities in mortality in New Zealand? *Lancet* 368:44–52.
- Booth A & Carroll N 2005. The health status of Indigenous and non-Indigenous Australians. Centre for Economic Policy Research Discussion Paper no. 486. Canberra: Australian National University.
- Cade J, Upmeier H, Clavert C & Greenwood D 1999. Costs of a healthy diet: analysis from the UK women's cohort study. *Public Health Nutrition* 2(4):505–512.
- DSI Consulting Pty Ltd & Benham D 2009. An investigation of the effect of socio-economic factors on the Indigenous life expectancy gap. Canberra: DSI Consulting Pty Ltd.
- Gunasekara I, Carter K & Blakely T 2011. Change in income and change in self-rated health: systematic review of studies using repeated measures to control for confounding bias. *Social Science & Medicine* 72:193–201.
- Statistics New Zealand 2013. New Zealand period life tables: 2010–12. Wellington: Statistics New Zealand. Viewed 18 February 2014, <[http://www.stats.govt.nz/browse\\_for\\_stats/health/life\\_expectancy/NZLifeTables\\_HOTP10-12.aspx](http://www.stats.govt.nz/browse_for_stats/health/life_expectancy/NZLifeTables_HOTP10-12.aspx)>.
- Thomas DP, Briggs V, Anderson IPS & Cunningham J 2008. The social determinants of being an Indigenous non-smoker. *Australian and New Zealand Journal of Public Health* 32(2):110–16.
- Vos T, Barker B, Stanley L & Lopez AD 2007a. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples: 2003. Brisbane: School of Population Health, University of Queensland.
- Vos T, Barker B, Stanley L & Lopez AD 2007b. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples: policy brief. Brisbane: School of Population Health, University of Queensland.
- WHO (World Health Organization) 2003. Social determinants of health, the solid facts. 2nd edn. Geneva: WHO.
- Zhao Y, Wright J, Begg S & Guthridge S 2013. Decomposing Indigenous life expectancy gap by risk factor: a life table analysis. *Population Health Metrics* 11:1–9.