

A Marsden Jacob report

Active impacts

The economic impacts of active recreation in Victoria

Prepared for

Sport and Recreation Victoria

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ACTIVE RECREATION IN VICTORIA

12 headline numbers: Victoria in 2017

725
million

Number of times
Victorians aged 15+
years participated in
active recreation

612
million

Hours of active
recreation undertaken
by Victorians aged 15+

3.071
billion

Estimated active
recreation METS by
Victorians aged 15+

81%

Estimated % of physical
recreation time spent
on active recreation by
Victorians aged 15+

74%

Estimated % of physical
recreation METS from
active recreation by
Victorians aged 15+

37%

Proportion of total
physical activity hours
spent walking -
Victorians' most
popular physical
activity

\$8.3
billion

Estimated total
spending on active
recreation

51,000

Full-time equivalent
jobs attributable to
active recreation

\$5.2
billion

Estimated gross value
add attributable to
active recreation

\$245
million

Lifetime avoided
healthcare costs from
making physically
inactive Victorians
active

\$3.1
billion

Lifetime workplace
productivity impact
from making physically
inactive Victorians
active

2.85
million

Number of Victorians
not doing enough
physical activity

Summary

Many Victorians get significant value from doing active recreation. We know that active recreation and sport generate a multitude of benefits that contribute to better health, wellbeing, social and economic outcomes in Victoria, both for Victorians and for people who visit Victoria.

What has not been known until now is the economic value of the benefits that active recreation generates in Victoria. Nor have we known how those economic benefits are distributed across the state, or how benefits are broadly distributed between individuals, businesses and government. We have also not known how additional investment in active recreation can create health, wellbeing, social and economic returns on investment that more than offset the investment costs.

Sport and Recreation Victoria, in the Department of Health and Human Services (DHHS), commissioned Marsden Jacob Associates to establish the economic value of active recreation to Victoria. Our analysis quantifies the contribution of active recreation to the Victorian economy as direct and indirect revenue and employment from retail sales, tourism and event and activity participation, as well as the value of health, wellbeing and social benefits.

Our work also includes an analysis of potential return on investment and an assessment of the impact of movements in the levels of active recreation participation.

Active recreation in Victoria is extremely diverse. It can be undertaken alone or with others, and ranges from walking, yoga and barefoot bowls to trail running, cycling, parkour and abseiling. As distinct from competition sport, active recreation is engaged in for relaxation, health and wellbeing or enjoyment. The primary activity requires physical exertion, and the primary focus is on human activity.

Headline findings

This report shows that active recreation is a larger part of Victorians' physical activity than organised sport. It also shows that active recreation accounts for more physical activity sessions, time and energy expenditure than sport by a significant margin.

Active recreation is a significant contributor to the Victorian economy, and a larger part of the economy than most of us realise. Around \$8.3 billion is spent each year on active recreation in Victoria. That expenditure makes a \$8.1 billion value-added contribution to the state's economy and supports around 51,000 direct and indirect full-time equivalent jobs.

Based on work by Deakin Health Economics commissioned for this project, we estimate that making every Victorian adult physically active would deliver healthcare system benefits worth \$245 million. It would also deliver workplace production benefits potentially worth \$3.1 billion over the lifetime of this population, based on estimates of production lost due to people leaving work because of death or disability. And it would provide home-based labour production benefits worth around \$125 million.

The beneficiaries of these health and wellbeing benefits are the individual participants (who benefit from better health), the businesses that employ them (which benefit from reduced absenteeism and presenteeism¹) and government (which benefits from future savings in healthcare expenditure on physically inactive Victorians and from tax transfers from higher individual incomes).

Active recreation also provides in the order of \$3.8 billion in other recreation benefits for Victorians each year. For reasons we discuss in this report, these estimates more likely underestimate than overestimate the benefits of active recreation in Victoria.

In terms of the economy, every one per cent increase in the number of Victorians who are sufficiently active will result in the creation of around 1,300 full time equivalent jobs and generate, on average, an additional \$160 million in gross value added economic benefit per year.

In this report, we evaluate the return on investment to Victoria from shifting the adult population to being physically active by increasing participation in active recreation. We then convert those estimates into 'per person' measures that can be used to evaluate the order of magnitude of the benefit of programs that increase active recreation (or sport) among the 'insufficiently physically active' 2016 Victorian adult population so that they become and then remain physically active. Our evaluation shows the following:

- For every 10,000 insufficiently active people who become active and stay active, Victoria will avoid around 265 DALYs², 65 incidences of disease and around 15 deaths from five major non-communicable diseases directly attributable to insufficient physical activity.
- Healthcare cost savings for each person who becomes physically active are in the order of \$100 on average over their lifetime, measured in 2016 dollars. As we note above, this healthcare estimate more likely underestimates than overestimates the true healthcare cost to Victoria for a number of reasons.
- The workforce production benefit per person who becomes physically active is in the \$200 to \$1,250 range over their lifetime, on average, depending on the measurement approach used.

Combining the avoided health and workforce production benefit estimates suggests that permanently shifting one Victorian from the 2016 population aged 15+ years doing insufficient physical activity to being physically active will deliver present value benefits in the range of \$300 to \$1,350 over the individual's lifetime, on average, using a 7% real discount rate. This estimate is conservative because it excludes recreation, leisure and home-based production activities to avoid double counting.

¹ Presenteeism is lost productivity that occurs when employees come to work but do not function at their full capacity because of illness or other factors.

² Disability-adjusted life years (DALYs) are a measure of overall disease burden, expressed as the number of years of healthy life lost due to ill-health, disability or early death.

Headline estimates of the economic value of Victorian active recreation

| | |
|---|----------------------|
| Participation (incidences of active recreation activity) by Victorians aged 15+ each year | 726 million |
| Hours of physical activity by Victorians aged 15+ each year | 612 million |
| Metabolic expenditure of task (MET) hours | 3,071 million |
| Active recreation annual expenditures—all sources (\$ 2014) | \$8.3 billion |
| – Tourism-related expenditure | \$3.8 billion |
| – All other expenditure | \$4.5 billion |
| Gross value added in 2017 | \$8.1 billion |
| – Direct | \$5.2 billion |
| – Indirect | \$2.9 billion |
| Full-time equivalent jobs in 2017 | 51,000 |
| – Direct | 39,400 |
| – Indirect | 11,600 |
| Recreation value (consumer surplus per year, \$ 2017) | \$3.8 billion |
| Lifetime impact of becoming physically active in Victorian 15+ population | |
| Avoided healthcare costs (\$ 2016, one-off) | \$245 million |
| Workforce labour production benefits (one-off, human capital approach, \$ 2016) | \$3.1 billion |
| Home-based labour production benefits (one-off) | \$125 million |

Next steps

This report shows that Victoria’s active recreation sector is an important part of the Victorian economy, and is likely to make far more of a contribution to Victorians’ wellbeing and communities than many of us realise.

Many of the estimates in this report are approximations based on the best available data. Our main aim has been to present order of magnitude estimates of the economic and welfare contribution of Victoria’s active recreation sector to our community, based that evidence.

Further work is needed to narrow and strengthen the estimates in this report, and to develop a consensus approach for evaluating the contribution of Victoria’s active recreation sector in the future. This view is consistent with the recommendation we made in our recent work for Outdoors Victoria (MJA, 2016). In particular, we should do four things:

- **Close data and knowledge gaps:** Several key knowledge gaps have been identified in this work, and they need to be closed. We need to understand how different levels of physical activity affect health and production outcomes. At the moment, using the best available models, we are limited to being able to attribute the health and production outcomes of shifting from insufficient physical activity (physical inactivity) and physical activity, as defined by meeting the standards set out in *Australia’s physical activity and sedentary behaviour guidelines* (DoH 2014). This relatively coarse level of understanding limits the scope for clear evidence-based policy designed to shift Victorians from being physically inactive (as defined in the guidelines) to being active at a range of levels.

Given that there are around 2.5 million Victorians aged 15+ years not doing enough physical activity, that group may be enough for policy to focus on initially. However, over time, more nuanced and disaggregated policy may be called for, and an evidence base will be needed to back that policy. A second key data gap is the lack of evidence on the economic and welfare implications of active recreation in the under-15 age category.

- **Develop a standard approach for estimating the economic and welfare contribution of Victoria's sport and active recreation sectors.** Sport and active recreation are natural and complementary activities. Our work found that sport and active recreation sectors and subsectors that are evaluating their economic contribution in Victoria are often using different approaches. Those approaches are not always consistent or transparent. We think that the Victorian physical activity sector would benefit from using a uniform approach to estimate the economic and welfare contributions of active recreation subsectors. That approach should preferably be developed using the Victorian Department of Treasury and Finance's guidelines and support, which would ensure that the approach is 'gold standard'.
- **Develop industry-standard economic and welfare performance measures.** The Victorian sport and active recreation sectors would benefit from having a uniform set of economic and welfare contribution measures for evaluating industry performance over time. Those measures could also be developed using Victorian Department of Treasury and Finance guidelines and support.

- **Further research and sector development.** The potentially significant size of the Victorian active recreation sector's economic and welfare contributions means that the sector warrants further attention. This report starts to build an evidence-based case for additional research into how the sector can be developed to make an even greater contribution to Victoria's economy and the health, wellbeing and productivity of Victorians in the future.

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Introduction

Around 3.4 million Victorians are not doing enough physical activity.

Australian Government guidelines recommend that adults be physically active on most days of the week and accumulate between 150 minutes and 300 minutes of moderate-intensity physical activity over the week (Commonwealth of Australia, 2011). Adults who do not achieve this level of physical activity are considered to be physically inactive.

In Victoria in 2011 (the most recent year for which survey results are available), around 50% of the adult population reported physical activity levels below the recommended minimum, and 80% of 5–17-year-olds did not meet the Australian guideline of 60 minutes of physical exercise every day (VicHealth, 2016).

Assuming that those participation rates are about the same today, this implies that in 2017 around 3.4 million Victorians are not doing enough physical activity.

There is clear evidence that physical activity is important for physical and mental health and provides a range of other social and community benefits. Much of the international, Australian and Victorian evidence showing those benefits has been summarised in the recent VicHealth report, *Physical activity and sedentary behaviour: evidence summary* (VicHealth, 2016).

We know that physical activity reduces the risk of cardiovascular disease, ischaemic stroke, diabetes mellitus, colon cancer, osteoporosis, fall-related injury, obesity, high cholesterol and hypertension, and mental health problems such as depression (Ding et al., 2016).

We also know that among the elderly physical activity promotes muscle strength and aerobic capacity and reduces fracture risks (Cadilhac et al., 2009). Children who are physically active have lower risk of obesity and better overall fitness, bone health and cognitive performance, and are more likely to be physically active adolescents and adults (VicHealth, 2016).

Evidence shows that there appears to be a relatively short time lag between increasing physical activity and observing the benefits (Cadilhac et al., 2009). Conversely, long periods of sedentary behaviour in between exercise can negate the benefits of physical activity (Medibank Private & KMPG-Econtech, 2008).

Active recreation is a significant part of many Victorians' physical activity. The active recreation sector is extremely diverse. Active recreation (as distinct from sport) comprises physical activities engaged in for the purpose of relaxation, health and wellbeing or enjoyment, in which the primary activity requires physical exertion and the focus is on human physical activity (Commonwealth of Australia, 2011). It can be done alone or with others, and ranges from walking, yoga and barefoot bowls to non-competition trail running, cycling, parkour and abseiling.

Measured by the number of people participating or by total hours of participation, active recreation is a much larger sector than sport. It contributes more than sport towards Victorians achieving the national guidelines for physical activity each year.

Changes in leisure time, participation preferences and the composition of Victoria's population mean that fewer than one in three people aged 15 or over participate in organised sport. Those changes also mean that, in the future, active recreation will be an increasingly important way to engage segments of the population not involved in organised sport, particularly where opportunities to participate come with lower barriers to entry, such as lower cost, more flexible time commitment or lower skill requirements.

Historically, active recreation has received less government policy focus and investment than sport, despite its significance to Victorians and Victorian economic activity, health and wellbeing.

In part, this may be attributed to the informal and unorganised nature of active recreation compared to sport, and the different infrastructure and organisational investments that are the result. It also stems partly from Victoria lacking an overarching and consistent picture of the state's active recreation sector—covering participation by activity and the economics of active recreation industries—on which to frame evidence-based policy and investments.

This report begins to develop an overarching and consistent picture of Victoria's active recreation sector. It establishes an important evidence base to underpin Sport and Recreation Victoria's core advocacy, leadership, coordination, communication and research work, including business case development for active recreation programs and investments. The report:

- provides a coherent overarching evaluation framework and evidence base of relevant existing data that demonstrates the economic impacts and value of Victoria's active recreation sector
- makes useable and credible economic estimates for active recreation in Victoria, based on sound economic principles, using the best available data, and tested and refined with the stakeholders listed in the 'Acknowledgments' section
- discusses other benefits and impacts of active recreation in Victoria in those cases for which credible quantification of economic values is not possible
- assesses the return on investment from investing in active recreation in Victoria by increasing adults' participation
- identifies possible next steps to improve our understanding of the economic value of active recreation in the state.

The appendices outline how the estimates in this report have been derived. Our approach uses best estimates from available data and focuses on ensuring that there is no double counting of benefits and impacts. The estimates have been developed using accepted approaches for estimating economic and welfare impacts of industry activity, including approaches supported by the Victorian Department of Treasury and Finance's *Economic evaluation for business cases technical guidelines* (2013).

The evaluation in this report complements earlier assessments of the economic value of Victorian recreation and draws on findings from the recent report commissioned by Outdoors Victoria and DHHS into Victoria's nature-based outdoor economy (MJA, 2016). The report also builds on earlier work by Deakin Health Economics, Deakin University, that evaluated the health status, economic and financial burden associated with physical inactivity in the Australian population (Cadilhac et al., 2009).

While many of the results in this report are aligned with those earlier studies, differences among the studies in approaches to valuing recreation and health and wellbeing outcomes mean that the results are not directly comparable.

Evaluation framework

Active recreation

Active recreation includes physical activity engaged in for the purpose of relaxation, health and wellbeing or enjoyment, in which the primary focus is on human activity. A key criterion is that it does not include organised competitive sport or active travel.

This definition is consistent with the definition used by the Australian Government in its 2011 National Sport and Active Recreation Policy Framework.

To operationalise this definition of active recreation, we used the Australian Sport Commission's Participation in Exercise, Recreation and Sport Survey (ERASS) data series classification, and merged that classification with classifications in the VicHealth population survey analysis and in our earlier analysis of outdoor tourism.

The ERASS surveys distinguish between organised and unorganised physical activities. For this analysis, we included those activities that are unorganised as a proxy for active recreation. We see this as a key but reasonable assumption. Table 1 shows the activities included in our evaluation and the allocation made to sport versus active recreation.

Many of the activities in Table 1 may be organised through clubs. For this analysis, we assumed that club activities are not competition sport. Where activities straddle the line between sport and active recreation, we apportioned participation for those activities between active recreation and organised competition sport. The apportionment is also shown in Table 1. The appendices to this report outline in more detail our logic for apportioning between activities.

As we show below, walking, running, cycling, golf and swimming account for most physical activity and recreation activities in Victoria. Accurate apportionment of these activities between sport and active recreation reduces the risk of material misclassification.

Table 1: Physical activities and splits between active recreation and sport

| Major activities | Population 15 and over ('000) | Proportion of adult population doing activity at least once | Number of exercise sessions | | Total estimated session time per year | |
|---------------------------------|-------------------------------|---|--|--|---------------------------------------|--------------------|
| | | | Number of sessions—whole population ('000) | Proportion of sessions assigned as active recreation | Active recreation ('000 hours) | Sport ('000 hours) |
| Total | 4,838 | 81.1% | 836,895 | 87% | 612,236 | 161,524 |
| Walking | 1,979 | 41% | 367,568 | 100% | 285,383 | 0 |
| Gymnasium workouts | 714 | 15% | 83,108 | 100% | 67,188 | 0 |
| Swimming | 600 | 12% | 32,443 | 82% | 15,088 | 4,927 |
| Cycling | 515 | 11% | 45,121 | 85% | 27,592 | 9,551 |
| Golf | 350 | 7% | 16,420 | 75% | 38,236 | 12,745 |
| Aerobics/exercising/other | 329 | 7% | 38,968 | 100% | 21,862 | 0 |
| Tennis (outdoor) | 289 | 6% | 13,055 | 70% | 15,082 | 6,464 |
| Walking—bush | 247 | 5% | 11,909 | 100% | 14,777 | 0 |
| Running (for example, marathon) | 228 | 5% | 24,434 | 77% | 12,149 | 3,708 |
| Jogging | 203 | 4% | 20,272 | 100% | 10,545 | 0 |
| Yoga | 177 | 4% | 12,333 | 100% | 10,195 | 0 |
| Basketball (indoor and outdoor) | 165 | 3% | 11,007 | 19% | 1,738 | 7,170 |
| Football—Australian rules | 163 | 3% | 11,514 | 12% | 879 | 11,444 |
| Cricket (outdoor) | 140 | 3% | 7,285 | 14% | 1,196 | 11,226 |
| Weight training for fitness | 120 | 2% | 14,159 | 100% | 9,593 | 0 |
| Lawn bowls | 116 | 2% | 10,404 | 2% | 481 | 28,355 |
| Football—soccer (outdoor) | 113 | 2% | 6,926 | 27% | 2,652 | 6,216 |
| Dancing—other | 103 | 2% | 7,388 | 100% | 13,762 | 0 |
| Exercise bike | 71 | 1% | 9,964 | 100% | 3,907 | 0 |
| Treadmill | 65 | 1% | 9,435 | 100% | 4,623 | 0 |
| All other | 677 | 14% | 83,180 | 47% | 55,308 | 59,718 |

Regional Victoria analysis

We used Victoria's Department of Health and Human Services Areas as the basis for our regional evaluation.

Table 2 lists DHHS areas, which are based on the department's aggregation of local government areas.

We used Victorian DHHS areas as the basis for regional analysis in this report because they provide a reasonable level of geographic coverage that matches data availability for Victoria. Data availability and quality deteriorate in datasets that aggregate activity at smaller geographic scales (such as at the local government area scale).

Table 2: Department of Health and Human Services areas (2016)

| DHHS area | Population ('000) | Area (km ²) |
|-------------------------|-------------------|-------------------------|
| Victoria total | 6,178 | 227,495 |
| Barwon | 293.311 | 6,247 |
| Bayside Peninsula | 931.309 | 976 |
| Brimbank Melton | 347.49 | 123 |
| Central Highlands | 192.562 | 14,672 |
| Goulburn | 160.336 | 16,513 |
| Hume Moreland | 379.921 | 555 |
| Inner Eastern Melbourne | 663.206 | 319 |
| Inner Gippsland | 185.59 | 8,190 |
| Loddon | 236.257 | 19,026 |
| Mallee | 92.261 | 39,934 |
| North Eastern Melbourne | 648.256 | 1,058 |
| Outer Eastern Melbourne | 430.956 | 2,644 |
| Outer Gippsland | 88.891 | 31,758 |
| Ovens Murray | 125.428 | 23,345 |
| Southern Melbourne | 572.098 | 1,822 |
| Western District | 150.648 | 56,838 |
| Western Melbourne | 679.842 | 718 |

Economic framework

Active recreation in Victoria contributes to our economy directly and indirectly. Active recreation also affects our wellbeing, health and happiness, which has implications for all of us and our economy.

We designed our evaluation framework to estimate the economic contribution of active recreation to Victoria, and also its welfare contribution. Figure 1 summarises the approach we used to map out the separate contribution pathways.

Economic contribution

The economic contribution pathway estimates how Victoria's active recreation sector contributes to the Victorian economy through market transactions and output. The significance of a sector is usually defined by its relative share of market transactions and output compared to other industries.

This part of our analysis used a bottom-up approach to estimate the economic contribution of active recreation. We did this by identifying the types of expenditures associated with active recreation from available surveys and industry data.

Figure 1 and Table 3 show the economic contribution categories that we estimated, including product sales, trips and travel-related spending and expenditure on infrastructure that supports active recreation in Victoria.

Appendix C discusses in more detail how we came up with estimates for expenditures and lists the data sources used. The data we used for the estimates included expenditure and participation data. We organised that data into general expenditure categories to calculate the economic contribution.

Our economic contribution calculations were done using Regional Development Victoria's purpose-built Input–Output (IO) model for recreation activities. The model uses data at the local government area level on economic and industry relationships to simulate revenue flows to existing businesses (direct contributions), flow-on effects to related industries from which purchases are made (indirect contributions), and effects from expenditures made through household income and salaries (induced contributions).

The IO modelling approach has been used in this evaluation due to model availability and project budget constraints. IO models have a number of limitations which mean they are more likely to overstate than understate economic impacts within an economy. These limitations are discussed in Appendix C.

We report three key gross measures of economic contribution. Each of the measures provides a different measure of gross economic contribution. Importantly, the measures cannot be added together. Also, because they are gross measures, they do not account for the fact that, if expenditure did not occur on active recreation in Victoria, it would be likely to occur somewhere else in the Victorian economy to pay for other goods and services.

The three measures are stand-alone measures of economic contribution:

- **Expenditure** is the value of the initial (direct) stimulus that is relevant to each industry. It is expenditure by governments, businesses and individuals involved in active recreation.

- **Gross value added (GVA)** is a subset of gross economic output. GVA includes local business profits and wages paid, and therefore represents economic returns on local capital and labour resources. It measures the true contribution of active recreation to a regional economy, because it backs out leakage out of regional economy. In this report, we report total GVA (direct plus indirect GVA) impacts.
- **Employment** is the number of full-time equivalent (FTE) jobs generated and/or supported in the creation of local gross economic output and GVA. In this report, we report total FTE (direct plus indirect FTE) impacts.

Welfare contribution

The economic benefits of active recreation to Victoria extend well beyond gross and net economic contributions that are measured through transactions in markets.

Active recreation activity generates wellbeing benefits for individuals and communities. We call such benefits 'welfare benefits'. Those benefits can include better physical and mental health from physical activity, from spending time with friends, or from the value of environmental services provided by active recreation areas to non-recreators. They can also include the individual and community benefits of volunteerism.

Welfare benefit contributions are significant in their own right but often go unmeasured or, where they are measured, are sometimes viewed with scepticism because the benefit values are not measured by market transactions.

Appendix C outlines the approaches we used to estimate the welfare benefit values included in this study.

We report three key measures of welfare benefit contribution. Each of the three benefit estimates provides a different measure of economic welfare contribution. Importantly, for reasons we discuss below, the welfare contribution values cannot be added together. The three measures are as follows:

- **Benefits related to avoided healthcare costs** are measured as the net (adjusted for injury) avoided costs to the Victorian healthcare system attributable to active recreation.
- **Production and productivity impacts** quantify how physical (in)activity changes labour productivity at work and at home. Positive changes in labour productivity contribute to economic output.
- **Recreation benefits** accrue in addition to the prices people pay for active recreation activities; that is, people obtain benefits above those payments. The difference between what consumers are willing to pay for active recreation and what they actually pay is a welfare benefit.

For this project, we worked with Deakin Health Economics to evaluate the health status and economic and financial burden associated with physical inactivity in the 2016 Victorian adult population. This work extended and updated earlier work completed by Deakin Health Economics and its colleagues in 2009 to evaluate the health and economic benefits of reducing a range of controllable disease risk factors in the Victorian adult population (Cadilhac et al., 2009).

Table 3: Economic benefit values in scope

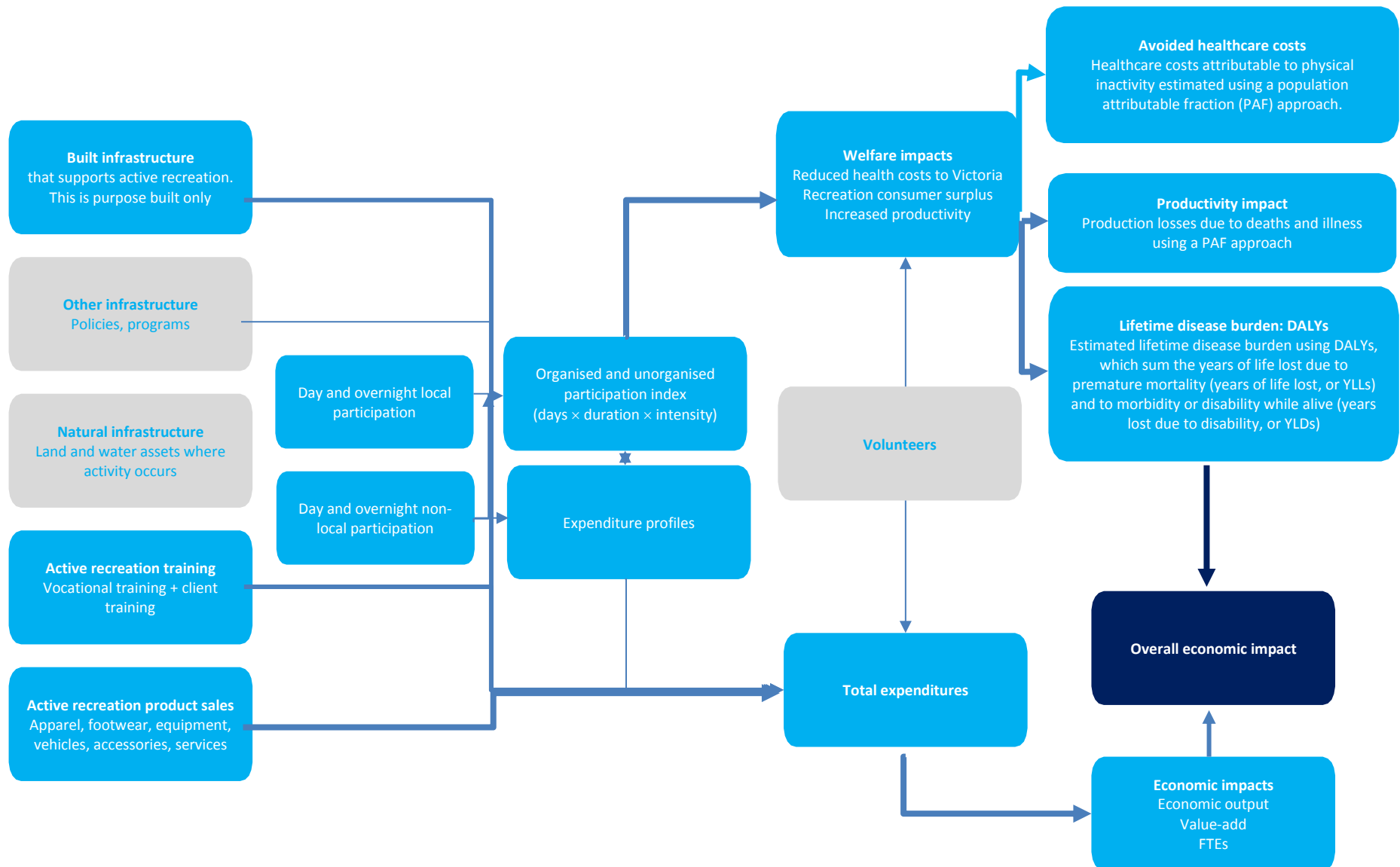
| Economic benefit value | Scope | Relevant measures |
|------------------------|---|---|
| Economic contribution | Services and goods, non-tourism. Expenditure by Victorians (i.e. money spent during active recreation by Victorians, plus money spent by Victorians on retail, wholesale, education and manufactured goods supporting the activities). | Expenditure, direct and indirect GVA and FTEs |
| | Services and goods, tourism. Active recreation expenditure by non-Victorians (i.e. money spent during active recreation by non-locals, plus money spent on retail, wholesale, education and manufactured goods supporting those activities). | |
| | Economic impact of active recreation infrastructure (capital and maintenance). | |
| Welfare contribution | Individual welfare (aggregates as community welfare): | Avoided cost |
| | ■ Avoided healthcare costs | |
| | ■ Production and productivity from lower absenteeism at work and at home | Production benefit |
| | ■ Recreation value (consumer surplus) | Consumer surplus |
| | ■ Community and social cohesion and education impacts | Not valued |

Information sources

Table 4: Key data sources

| Data sources | Comment |
|--|---|
| Australian Bureau of Statistics (ABS), <i>Household Expenditure Survey, Australia, 2009–10</i> , cat. no. 6530.0 | Data on household expenditure, including state and metropolitan. |
| Exercise, Recreation and Sport Survey (ERASS) 2007–10 | Survey data on participation, session frequency and duration of exercise, categorised into 168 activities. |
| ABS, <i>Participation in sport and physical recreation, Australia, 2009–14</i> , cat. no. 4177.0 | Data provides total effort (duration, frequency) in active recreation. |
| Tourism Research Australia National Visitor Survey, 2009–16 | Provides activities by stopover for domestic trips, day and overnight. International activities at the Australia / total trip level only. Includes only visitors aged over 15 years. |
| ABS, <i>Value of sport, Australia, 2013</i> , cat. no. 4156.0.55.002 | Includes expenditure per household per week (2009–10) on selected sport and physical recreation products: bicycles, boating and accessories (\$2.30 per week); camping equipment (\$0.70); fishing equipment (\$0.55); golf equipment (\$0.45). |
| IBISWorld Australian Market industry reports | Industry sector data for bicycle retailing and repair, sports and recreation facilities, marine equipment retailing, hiking and outdoor equipment stores. |
| Sector-specific studies | Data and findings from studies for specific Victorian active recreation activities. The studies use a range of approaches to measure economic impacts and welfare values. |
| Deakin Health Economics | Measured economic benefits of reducing physical inactivity in Victoria. |

Figure 1: Economic and welfare contributions of active recreation to Victoria



Headline estimates

We estimate that Victorians and visitors aged 15+ did around 612 million hours of active recreation in Victoria in 2017, or around 156 hours on average by each physically active adult. At least \$8 billion is spent each year on active recreation and equipment, including \$3.8 billion on active recreation tourism.

Making all Victorian adults physically active would deliver lifetime healthcare system and production benefits to Victoria potentially worth more than \$3.35 billion.

Headline estimates from our active recreation economic evaluation are summarised in Table 5. Our estimates underscore the significance of the active recreation sector to Victoria's economy and the wellbeing of Victorians. We unpack the headline estimates in more detail in the following sections.

Because some of these estimates overlap, the values are not additive. Also, because the headline estimates are based on constructed data for activities where actual data is not available, the values in Table 5 are order of magnitude estimates based on the best available data.

Our analysis shows that active recreation is the physical activity most preferred by Victorians, measured by overall participation, participation hours and metabolic expenditure. Victoria's 4.8 million residents aged 15+ (adults) enjoy around 612 million hours of active recreation activities each year, compared to 162 million hours in organised sport (Table 1 and

Table 6). The total metabolic equivalent of task (MET)³ from this active recreation is in the order of 3,071 million MET hours, compared to 1,098 million MET hours for sport.

We estimate that total expenditure related to active recreation currently generates in the order of \$8.3 billion in sales within Victoria each year. Around \$3.8 billion of that expenditure comes from active recreation tourism. Those sales generate substantial wages, profits and rents for Victoria of around \$5.2 billion (as a GVA direct contribution) and another \$2.9 billion in supply-chain activity to generate active recreation goods and services (an indirect GVA contribution).

Approximately 51,000 FTE positions are supported in Victoria as a result of active recreation activity expenditure. This estimate includes full-time and part-time positions and does not distinguish between them or identify the number of hours worked in each type of position.

³ Metabolic equivalent of task (MET) is a physiological measure expressing the energy cost (or calories) of physical activities. One MET is equivalent to the energy expended by a person while seated at rest. While a person is exercising, the MET is the energy expended compared to that expended at rest, so MET values indicate the intensity of the activity. A person engaging in an activity with a MET value of 5 is expending five times the energy (the number of calories) that they would expend at rest.

In addition to its direct and indirect economic contribution, active recreation in Victoria is estimated to generate significant health and wellbeing values for Victorians. We estimate that the recreation benefits of active recreation were worth \$3.8 billion in Victoria in 2017. Eliminating insufficient physical activity from the 2016 Victorian adult population would deliver healthcare system benefits worth \$245 million and workforce production benefits worth \$3.1 billion to Victoria over the population's lifetime.

Table 5: Headline estimates of the economic value of Victorian active recreation

| | |
|---|----------------------|
| Participation (incidences of active recreation activity) by Victorians aged 15+ each year | 725 million |
| Hours of physical activity by Victorians aged 15+ each year | 612 million |
| Metabolic equivalent of task (MET) hours | 3,071 million |
| Active recreation annual expenditures—all sources (\$ 2014) | \$8.3 billion |
| – Tourism-related expenditure | \$3.8 billion |
| – All other expenditure | \$4.5 billion |
| Gross value added in 2017 | \$8.1 billion |
| – Direct | \$5.2 billion |
| – Indirect | \$2.9 billion |
| FTE positions in 2017 | 51,000 |
| – Direct | 39,400 |
| – Indirect | 11,600 |
| Recreation value (consumer surplus per year, \$ 2017) | \$3.8 billion |
| Lifetime impact of becoming physically active in Victorian 15+ population | |
| Avoided healthcare costs (one-off, \$ 2016) | \$245 million |
| Workforce labour production benefits (one-off, human capital approach, \$ 2016) | \$3.1 billion |
| Home-based labour production benefits (one-off) | \$125 million |

Active recreation participation

Our estimates show that active recreation is Victorians' most preferred type of physical activity, measured as overall participation, participation hours and total metabolic expenditure.

Our estimates of active recreation participation, participation hours and metabolic expenditure are summarised in

Table 6, based on ERASS data for Victoria from 2007 to 2010, which is the latest available data for that survey. The key assumption made here is that those ERASS activities that respondents classified as being unorganised are proxies for active recreation, as opposed to organised competition sport.

We found that active recreation activities are Victorians' most preferred type of physical activity, based on several key measures:

- We estimate that there are around 837 million physical activity (sport and active recreation) sessions each year in Victoria. Around 87% of those activities are classified as active recreation activities.

- We estimate that Victorian adults do around 773 million hours of physical activity each year. Around 79% of those hours are active recreation hours.
- We estimate that the different levels of intensity of physical activity result in metabolic expenditure of around 4.2 billion MET hours each year by the Victorian adult population. Around 3.1 billion of total MET expenditure occurs through active recreation.

The most popular physical activity in Victoria is walking. Around 41% of the adult Victorian population walks at least once for physical activity each year. Walking for active recreation accounts for around 37% of total physical activity hours each year and for 24% of total estimated MET hours.

We know that rates of physical activity and sedentary behaviours are not evenly distributed across the Australian and Victorian population. Higher socioeconomic status, living in metropolitan areas, being non-Indigenous, living in neighbourhoods with high walkability and lower crime are all correlated to higher levels of physical activity (VicHealth, 2016). We also know that the physical activity of Victorians and Australians generally declines with age, and that females of all ages generally have lower physical activity rates than males (VicHealth, 2016).

Tables 7 and Table 8 show that many of these social, regional, economic and demographic factors are correlates with active recreation participation, frequency and metabolic expenditure.

Table 6: How Victorians exercise each year

| | | Active recreation | | | | | | | |
|-----------------------------------|--|------------------------------------|---------------------------------|-----------------------|-------------------------------------|---|--|---|---|
| | Proportion of adult Victorians who exercised at least once | Total activity sessions (millions) | Total activity hours (millions) | Total METs (millions) | Proportion of all activity sessions | Proportion of activity sessions classified as active recreation | Estimated number of active recreation exercise sessions (millions) | Estimated number of active recreation exercise hours (millions) | Estimated active recreation METs (millions) |
| Population (15+ years) | 4.8 million | | | | | | | | |
| Did not exercise in the past year | 19% | | | | | | | | |
| Total | 81% | 837 | 774 | 4,169 | | 87% | 726 | 612 | 3,071 |
| Walking—other | 41% | 368 | 285 | 999 | 44% | 100% | 368 | 285 | 999 |
| Gymnasium workouts | 15% | 83 | 67 | 370 | 10% | 100% | 83 | 67 | 370 |
| Swimming | 12% | 32 | 20 | 166 | 4% | 82% | 27 | 15 | 125 |
| Cycling | 11% | 45 | 37 | 322 | 5% | 85% | 39 | 28 | 207 |
| Golf | 7% | 16 | 51 | 245 | 2% | 75% | 12 | 38 | 184 |
| Aerobics/exercising/other | 7% | 39 | 22 | 120 | 5% | 100% | 39 | 22 | 120 |
| Tennis (outdoor) | 6% | 13 | 22 | 157 | 2% | 70% | 9 | 15 | 110 |
| Walking—bush | 5% | 12 | 15 | 78 | 1% | 100% | 12 | 15 | 78 |
| Running (for example, marathon) | 5% | 24 | 16 | 209 | 3% | 77% | 19 | 12 | 156 |
| Jogging | 4% | 20 | 11 | 74 | 2% | 100% | 20 | 11 | 74 |
| Yoga | 4% | 12 | 10 | 51 | 1% | 100% | 12 | 10 | 51 |
| Basketball (indoor and outdoor) | 3% | 11 | 9 | 69 | 1% | 19% | 2 | 2 | 11 |
| Football—Australian rules | 3% | 12 | 12 | 99 | 1% | 12% | 1 | 1 | 7 |
| Cricket (outdoor), vigoro | 3% | 7 | 12 | 60 | 1% | 14% | 1 | 1 | 6 |
| Weight training for fitness—other | 2% | 14 | 10 | 48 | 2% | 100% | 14 | 10 | 48 |
| Lawn bowls | 2% | 10 | 29 | 95 | 1% | 2% | 0 | 0 | 2 |
| Football—soccer (outdoor) | 2% | 7 | 9 | 81 | 1% | 27% | 2 | 3 | 19 |
| Dancing—other | 2% | 7 | 14 | 107 | 1% | 100% | 7 | 14 | 107 |
| Exercise bike | 1% | 10 | 4 | 27 | 1% | 100% | 10 | 4 | 27 |
| Treadmill | 1% | 9 | 5 | 42 | 1% | 100% | 9 | 5 | 42 |
| All rest | 14% | 83 | 115 | 751 | 10% | 27 | 39 | 55 | 329 |

Table 7: How physical and active recreation participation changes by age and gender (per year, whole of Victoria)

| Age | Population 15 and over ('000) | Proportion of Victorians who participated in physical activity at least once | Proportion of Victorians who are physically inactive | Total physical activity sessions per year (millions) | Total physical activity hours per year (millions) | Total METs per year (millions) | Average physical activity hours per capita | Average physical activity MET hours per capita | Proportion of activity sessions classified as active recreation | Estimated number of active recreation exercise hours (millions) | Estimated active recreation MET hours (millions) | Average active recreation hours per capita | Average active recreation METs per capita |
|----------------|-------------------------------|--|--|--|---|--------------------------------|--|--|---|---|--|--|---|
| Total | 4838.2 | 81% | 50% | 837 | 774 | 4,169 | 160 | 862 | 87% | 662 | 2,654 | 127 | 577 |
| Females | 2,628 | 81% | 51% | 484 | 386 | 2,085 | 147 | 794 | 87% | 421 | 1,520 | 118 | 118 |
| 15 to 17 | 105 | 91% | 51% | 22 | 19 | 143 | 182 | 1,356 | 54% | 12 | 58 | 91 | 91 |
| 18 to 19 | 78 | 88% | 51% | 15 | 13 | 91 | 173 | 1,179 | 69% | 10 | 57 | 127 | 127 |
| 20 to 24 | 228 | 84% | 51% | 40 | 31 | 189 | 134 | 830 | 88% | 35 | 153 | 116 | 116 |
| 25 to 29 | 250 | 84% | 51% | 43 | 31 | 179 | 123 | 717 | 88% | 38 | 142 | 106 | 106 |
| 30 to 34 | 249 | 83% | 51% | 47 | 37 | 205 | 150 | 824 | 88% | 41 | 163 | 131 | 131 |
| 35 to 39 | 218 | 84% | 51% | 39 | 31 | 167 | 143 | 763 | 90% | 35 | 132 | 124 | 124 |
| 40 to 44 | 208 | 84% | 51% | 37 | 25 | 141 | 121 | 680 | 90% | 33 | 109 | 103 | 103 |
| 45 to 49 | 217 | 83% | 51% | 41 | 32 | 167 | 146 | 771 | 92% | 38 | 123 | 121 | 121 |
| 50 to 54 | 198 | 82% | 51% | 39 | 30 | 155 | 153 | 782 | 91% | 35 | 121 | 130 | 130 |
| 55 to 59 | 191 | 81% | 51% | 39 | 32 | 158 | 169 | 825 | 92% | 36 | 117 | 136 | 136 |
| 60 to 64 | 171 | 79% | 51% | 32 | 27 | 132 | 159 | 775 | 90% | 29 | 97 | 128 | 128 |
| 65 to 69 | 152 | 80% | 51% | 30 | 25 | 120 | 166 | 788 | 87% | 26 | 81 | 123 | 123 |
| 70 to 98 | 362 | 69% | 51% | 60 | 52 | 237 | 143 | 654 | 86% | 52 | 166 | 107 | 107 |
| Males | 2,529 | 83% | 49% | 423 | 439 | 2,599 | 174 | 1,028 | 76% | 320 | 1,495 | 108 | 591 |
| 15 to 17 | 110 | 95% | 49% | 26 | 33 | 238 | 298 | 2,164 | 42% | 11 | 96 | 125 | 873 |
| 18 to 19 | 81 | 92% | 49% | 15 | 19 | 126 | 233 | 1,554 | 55% | 8 | 58 | 119 | 710 |
| 20 to 24 | 237 | 88% | 49% | 43 | 51 | 348 | 215 | 1,465 | 64% | 28 | 176 | 119 | 742 |
| 25 to 29 | 249 | 86% | 49% | 38 | 37 | 246 | 150 | 988 | 72% | 27 | 144 | 96 | 577 |
| 30 to 34 | 244 | 86% | 49% | 37 | 36 | 246 | 148 | 1,010 | 74% | 27 | 133 | 95 | 545 |
| 35 to 39 | 218 | 87% | 49% | 34 | 32 | 201 | 145 | 919 | 80% | 28 | 131 | 103 | 598 |
| 40 to 44 | 205 | 86% | 49% | 33 | 30 | 185 | 145 | 899 | 83% | 28 | 123 | 104 | 597 |
| 45 to 49 | 206 | 81% | 49% | 31 | 27 | 159 | 134 | 775 | 83% | 26 | 103 | 93 | 501 |
| 50 to 54 | 190 | 82% | 49% | 32 | 31 | 178 | 164 | 936 | 82% | 26 | 113 | 115 | 594 |
| 55 to 59 | 183 | 79% | 49% | 31 | 30 | 150 | 163 | 821 | 85% | 26 | 99 | 113 | 544 |
| 60 to 64 | 161 | 77% | 49% | 26 | 27 | 129 | 166 | 799 | 86% | 23 | 83 | 111 | 518 |
| 65 to 69 | 144 | 77% | 49% | 26 | 29 | 137 | 204 | 956 | 84% | 22 | 85 | 128 | 588 |
| 70 to 98 | 301 | 70% | 49% | 51 | 57 | 256 | 190 | 852 | 81% | 41 | 152 | 109 | 504 |

Table 8: How physical and active recreation participation changes (per year, by region)

| Region | Population 15 and over (’000) | Proportion of Victorians who participated in physical activity at least once | Proportion of Victorians who are physically inactive | Total physical activity sessions per year (millions) | Total physical activity hours per year (millions) | Total MET hours per year (millions) | Average physical activity hours per capita | Average physical activity METs per capita | Proportion of activity sessions classified as active recreation | Estimated number of active recreation exercise hours (millions) | Estimated active recreation MET hours (millions) | Average active recreation hours per capita | Average active recreation METs per capita |
|----------------------|--|--|---|---|--|--|--|---|--|---|--|--|---|
| Victoria total | 4,838 | 81% | 50% | 837 | 772 | 4,169 | 160 | 862 | 87% | 582 | 2,654 | 127 | 577 |
| Barwon | 234.3 | 83% | 44% | 43 | 42 | 224 | 178 | 958 | 86% | 33 | 169 | 140 | 719 |
| Bayside Peninsula | 735.7 | 84% | 44% | 143 | 132 | 684 | 180 | 930 | 88% | 106 | 544 | 144 | 740 |
| Brimbank Melton | 260.6 | 72% | 61% | 37 | 32 | 176 | 121 | 675 | 87% | 26 | 140 | 100 | 538 |
| Central Highlands | 153.2 | 81% | 48% | 27 | 23 | 120 | 153 | 786 | 85% | 18 | 87 | 117 | 571 |
| Goulburn | 127.8 | 79% | 53% | 20 | 20 | 103 | 160 | 803 | 85% | 15 | 73 | 116 | 573 |
| Hume Moreland | 289.9 | 78% | 56% | 49 | 42 | 221 | 145 | 763 | 89% | 35 | 180 | 122 | 622 |
| Inner East Melbourne | 524.5 | 84% | 50% | 92 | 85 | 448 | 161 | 854 | 86% | 66 | 331 | 125 | 630 |
| Inner Gippsland | 150.3 | 80% | 44% | 26 | 24 | 122 | 161 | 812 | 83% | 18 | 85 | 117 | 562 |
| Loddon | 189.6 | 80% | 47% | 30 | 26 | 128 | 136 | 674 | 87% | 20 | 95 | 105 | 502 |
| Mallee | 74.4 | 76% | 47% | 11 | 10 | 52 | 138 | 699 | 86% | 8 | 39 | 108 | 522 |
| North East Melbourne | 504.6 | 82% | 55% | 89 | 83 | 437 | 165 | 867 | 89% | 69 | 349 | 137 | 692 |
| Outer East Melbourne | 337.9 | 83% | 47% | 57 | 51 | 267 | 151 | 790 | 86% | 39 | 193 | 115 | 572 |
| Outer Gippsland | 73.2 | 82% | 44% | 13 | 13 | 63 | 182 | 866 | 85% | 10 | 47 | 132 | 644 |
| Ovens Murray | 101.7 | 82% | 44% | 18 | 17 | 85 | 168 | 838 | 86% | 14 | 66 | 136 | 649 |
| Southern Melbourne | 428.5 | 75% | 61% | 65 | 63 | 325 | 147 | 758 | 87% | 50 | 249 | 116 | 581 |
| Western District | 122.7 | 79% | 45% | 19 | 19 | 90 | 155 | 731 | 85% | 15 | 68 | 119 | 555 |
| Western Melbourne | 529.2 | 82% | 48% | 94 | 89 | 466 | 168 | 880 | 87% | 74 | 372 | 139 | 704 |

Economic contribution

We estimate that Victorian residents and visitors to Victoria spend around \$8.3 billion in the active recreation sector. By far the largest proportion of that spending is in the form of consumer spending. Some \$7.9 billion is spent each year on active recreation and equipment, including around \$3.8 billion in inter-regional tourism and travel-related expenditure.

Consumer spending

Victoria's active recreation sector is driven by the spending of Victorians and non-Victorians. This spending takes two main forms: the purchase of gear and equipment (including apparel, footwear, equipment and vehicles), and dollars spent in Victoria on trips, travel and activities (including for food and drink, transportation, fees, activities, accommodation and other services).

Our evaluation estimates that readily identifiable equipment and trip- and travel-related expenditure by Victorians and non-Victorians totals around \$7.9 billion a year, based on available data and current active recreation participation rates (Table 9).

Tourism represents a smaller but still significant contribution to activity.⁴ Much of it is intrastate tourism, which reflects the local preferences of Victorians in spending their money. Interstate tourism expenditure involving active recreation contributes some \$1.0 billion each year to the Victorian economy. General expenditure by Victorians on active recreation activities, including on vehicles and equipment, totals some \$4.1 billion. Of this, we estimate that about \$1.1 billion each year is on equipment purchased primarily for active recreation.

Table 9: Equipment and recreation expenditure consumer spending (direct and indirect)

| | Expenditure (\$ billion) | GVA (\$ billion) | FTE positions |
|---------------------|-----------------------------|---------------------|------------------|
| Total | \$7.9 | \$7.8 | 47,900 |
| Tourism intrastate | \$2.9 | \$2.8 | 17,400 |
| Tourism interstate | \$1.0 | \$0.9 | 5,700 |
| General expenditure | \$4.1 | \$4.0 | 24,800 |

Infrastructure

Victoria's active recreation sector is supported by extensive public and private infrastructure. The infrastructure includes outdoor activity provider infrastructure, such as camps and activity grounds, 'grey' infrastructure, such as bicycle and walking trails, and green infrastructure, which is the natural environment where the active recreation activities occur.

⁴ Tourism is defined as domestic day and overnight visits. Day visitors are those people who travel for a round-trip distance of at least 50 kilometres and who do not spend a night away from home as part of their travel. Same-day travel as part of overnight travel is excluded. Overnight visitors are those who travel more than 50 kilometres and spend one or more nights away from home. These definitions are consistent with the definitions used by Tourism Research Australia (TRA). We have not included international visitors in this evaluation because to be able to attribute international tourism to active recreation, active recreation needs to be the primary purpose of the visit; in addition, it is challenging to identify active recreation at the regional level in TRA data for international visitors.

In addition, local government spends significant resources in developing and maintaining recreation centres, many of which include pools.

Public and private infrastructure supports Victoria's economy and adds to our state's natural and built asset base. It also generates demand for maintenance and other services and resulting economic activity.

Based on Treasury budget and Parks Victoria annual report data, we estimate that the Victorian Government alone spent some \$320 million on specific active recreation infrastructure and on supporting public outdoor areas in 2016–17. Those investments contributed to an estimated \$300 million in GVA and some 2,800 FTE positions in Victoria. This is a partial reflection of the economic contribution of active recreation infrastructure in the state.

Economic contribution, by region

Our economic contribution analysis of the Victorian DHHS areas found that active recreation makes significant contributions to many of the state's regional economies. Tables 11 and 12 show active recreation participation hours, GVA and FTE contributions by DHHS area.

These estimates were developed using regional primary data where it was available (for example, surveys of participation and expenditure completed by an industry group). Where primary data was not available for regions, we used Australian Bureau of Statistics (ABS) and Tourism Research Australia (TRA) activity data and distributed activities by region, largely based on within-region population data. Appendix C discusses this disaggregation approach in more detail.

Table 10: Regional active recreation activity gross value-added (direct and indirect, \$ billion)

| Sector | Local tourism | Interstate tourism | Other consumer spending | All spending GVA |
|-------------------------|---------------|--------------------|-------------------------|------------------|
| Victoria total | 2.9 | 1.0 | 4.1 | 7.9 |
| Barwon | 0.5 | 0.1 | 0.3 | 0.9 |
| Bayside Peninsula | 0.3 | 0.1 | 0.4 | 0.7 |
| Brimbank Melton | 0.0 | 0.0 | 0.1 | 0.1 |
| Central Highlands | 0.1 | 0.0 | 0.1 | 0.3 |
| Goulburn | 0.1 | 0.1 | 0.3 | 0.4 |
| Hume Moreland | 0.0 | 0.0 | 0.0 | 0.1 |
| Inner Eastern Melbourne | 0.1 | 0.1 | 0.2 | 0.3 |
| Inner Gippsland | 0.6 | 0.1 | 0.6 | 1.3 |
| Loddon | 0.1 | 0.0 | 0.2 | 0.3 |
| Mallee | 0.1 | 0.0 | 0.2 | 0.3 |
| North Eastern Melbourne | 0.1 | 0.0 | 0.2 | 0.3 |
| Outer Eastern Melbourne | 0.0 | 0.0 | 0.1 | 0.2 |
| Outer Gippsland | 0.2 | 0.0 | 0.2 | 0.5 |
| Ovens Murray | 0.4 | 0.1 | 0.8 | 1.3 |
| Southern Melbourne | 0.0 | 0.0 | 0.1 | 0.2 |
| Western District | 0.3 | 0.1 | 0.2 | 0.5 |
| Western Melbourne | 0.0 | 0.0 | 0.2 | 0.3 |

Table 11: Regional active recreation FTE contribution (direct and indirect)

| DHHS area | FTE positions |
|-------------------------|---------------|
| Victoria total | 51,000 |
| Barwon | 5,800 |
| Bayside Peninsula | 4,600 |
| Brimbank Melton | 1,000 |
| Central Highlands | 1,600 |
| Goulburn | 2,800 |
| Hume Moreland | 700 |
| Inner Eastern Melbourne | 1,900 |
| Inner Gippsland | 7,900 |
| Loddon | 1,600 |
| Mallee | 1,800 |
| North Eastern Melbourne | 1,800 |
| Outer Eastern Melbourne | 1,200 |
| Outer Gippsland | 2,900 |
| Ovens Murray | 9,300 |
| Southern Melbourne | 1,400 |
| Western District | 2,900 |
| Western Melbourne | 1,700 |

Table 12: Participant days and ratio per resident population, by DHHS area

| DHHS area | Population ('000) | Participation days (millions) ^a | Participation rate (exercised in previous year) | Days per active person |
|-------------------------|-------------------|--|---|------------------------|
| Total | 4,838 | 76.5 | | |
| Barwon | 234.3 | 4.1 | 83% | 21.2 |
| Bayside Peninsula | 735.7 | 13.3 | 84% | 21.4 |
| Brimbank Melton | 260.6 | 3.3 | 72% | 17.2 |
| Central Highlands | 153.2 | 2.2 | 81% | 18.1 |
| Goulburn | 127.8 | 1.9 | 79% | 18.5 |
| Hume Moreland | 289.9 | 4.4 | 78% | 19.5 |
| Inner Eastern Melbourne | 524.5 | 8.2 | 84% | 18.5 |
| Inner Gippsland | 150.3 | 2.2 | 80% | 18.3 |
| Loddon | 189.6 | 2.5 | 80% | 16.3 |
| Mallee | 74.4 | 1.0 | 76% | 17.6 |
| North Eastern Melbourne | 504.6 | 8.6 | 82% | 20.9 |
| Outer Eastern Melbourne | 337.9 | 4.9 | 83% | 17.3 |
| Outer Gippsland | 73.2 | 1.2 | 82% | 20.1 |
| Ovens Murray | 101.7 | 1.7 | 82% | 20.7 |
| Southern Melbourne | 428.5 | 6.2 | 75% | 19.4 |
| Western District | 122.7 | 1.8 | 79% | 18.9 |
| Western Melbourne | 529.2 | 9.2 | 82% | 21.3 |

^a Participation days are calculated as (participation hours ÷ 8). Participation hours are recorded only for the three main activities for each person. Where activities are significant on an annual basis but seasonal (such as sports), reported hours will be low in the off-season.

Education and training

The personal training, education and professional fitness sectors are a significant and growing element of active recreation. Data for the professional fitness sector is being developed, but it is difficult to estimate the size of this industry using available data. Industry analysis (BRA, 2013) suggests that across Australia consumer expenditure on active recreation is in the order of \$1.31 billion. On a per capita basis, this would suggest expenditure of around \$330 million in Victoria.

For Victoria, ABS household expenditure data indicates that health and fitness charges and lessons constitute some \$600 million of expenditure, of which at least \$250 million is potentially attributable to active recreation.

Welfare contribution

We estimate that eliminating physical inactivity in Victoria's 2016 15+ year population would deliver healthcare system and production benefits to Victoria worth between \$1.2 billion and \$3.35 billion over the population's lifetime.

Active recreation delivers health and wellbeing benefits. This conclusion is clearly supported by a large and robust international evidence base of outcome-based studies.⁵

Collectively, the studies show that physical activity (including active recreation) is directly associated with improved cardiovascular health, less obesity, lower blood pressure, and less stress-related illness and mental ill-health. For outdoor active recreation, the health benefits of nature-based activity reflect the type, duration, intensity and frequency of activity, as well as the person doing the outdoor activity.

⁵ See VicHealth (2016) (2016) for a summary of the contemporary literature.

As part of our economic evaluation of active recreation in Victoria, we engaged Deakin Health Economics to evaluate the health status and the economic and financial burden associated with physical inactivity in the 2016 Victorian adult population. Here, physical inactivity is defined as a lack of physical activity, based on *Australia's physical activity and sedentary behaviour guidelines* (DoH, 2014). We use the terms 'insufficient physical activity' and 'physical inactivity' interchangeably in this report.

Assuming that there are effective interventions that can shift the current insufficiently active Victorian adult population to meet physical activity requirements, Deakin Health Economics estimated the potential cost savings to the Victorian healthcare system per person who moves from being insufficiently physically active to active, measuring those benefits over the population's lifetime. It also estimated the workforce labour productivity impact of those shifts over the population's lifetime.

Health and wellbeing

The evaluation of healthcare cost savings used a risk factor impact (RFI) model previously developed by Deakin Health Economics (Cadilhac et al., 2011) based on Australian Institute of Health and Welfare expenditure data. The model was adapted, improved and updated with current data inputs.

Appendix C discusses how Deakin Health Economics' estimates were derived from the RFI. For reasons we discuss below, the RFI model is more likely to underestimate the true cost of physical inactivity to the Victorian economy than to overestimate it, and as a result the true health system cost of physical activity in Victoria could be larger than the estimates given here.

Table 13 summarises key outputs from the Deakin Health Economics RFI model:

- There are around 2.5 million Victorians aged 15+ who are physically inactive (that is, they do not meet the standards in *Australia's physical activity and sedentary behaviour guidelines*).
- If those 2.5 million Victorians remain insufficiently active, over their lifetime this will result in a disease burden attributable to physical inactivity of around 65,000 disability-adjusted life years (DALYs).⁶ Their physical inactivity will also lead to around 16,000 cases of cancer, cardiovascular disease, diabetes or fall-related injury. Insufficient physical activity would also result in around 4,000 deaths in the population that would be directly attributable to the population being physically inactive.
- In addition to its direct health impacts, insufficient physical activity in the Victorian 15+ population has direct impacts on labour and home productivity. Over the lifetime of the Victorian working-age population, around 132,000 working days would be lost in the Victorian economy due to disease related to physical inactivity in the 2016 adult population. While this statistic may appear low, that is because most of the health loss associated with insufficient physical activity occurs in people over the age of 65 years and therefore mainly out of the workforce. Because of ill-health, over the lifetime of all adults, an estimated 850,000 days would be lost that would have been used for household production activities, along with 1.6 million days of lost leisure due to illness related to physical inactivity.

⁶ DALYs are a measure of overall disease burden, expressed as the number of years of healthy life lost due to ill-health, disability or early death.

- Eliminating physical inactivity entirely from the Victorian 2016 15+ year population would conservatively save the Victorian healthcare system around \$250 million over the lifetime of the insufficiently active population. The healthcare savings would come from avoided health sector expenditure for the Victorian population that was attributable to all cases of disease and each case of disease related to physical inactivity, assuming that the health sector expenditure in any single year approximates the lifetime cost of a new case of physical inactivity related disease.
- In terms of the economy, every one per cent increase in the number of Victorians who are sufficiently active will result in the creation of around 1,300 full time equivalent jobs and generate, on average, an additional \$160 million in gross value added economic benefit per year.

Table 13: The lifetime health burden of physical inactivity on Victoria's 15+ population in 2016 and the lifetime health benefit of becoming physically active

| | Value |
|--|---------------|
| Victorian population 15+ years in 2016 | 4,600,000 |
| Proportion of population that is physically inactive | 52% |
| Victorian population that is physically inactive | 2,480,000 |
| Lifetime health impacts of physical inactivity | |
| Total DALYS | 65,000 |
| Total incident cases of disease | 16,000 |
| Total deaths | 4,000 |
| Work absenteeism (days) | 132,000 |
| Days out of home-based production role | 850,000 |
| Leisure (days) | 1,600,000 |
| Lifetime health impacts of becoming physically active | |
| Total health sector cost savings | \$245 million |

Productivity and production

Similarly to the way active recreation reduces healthcare costs in Victoria, it also contributes to higher productivity and production by lowering absenteeism and presenteeism at work and at home.

The Deakin Health Economics RFI model estimates the cost to the economy of workforce production losses directly for absenteeism only, using two approaches: the friction cost approach (FCA) and the human capital approach (HCA). We present both FCA and HCA estimates in this section, since there is still debate in the literature about the preferred approach.

The FCA provides conservative estimates and recognises that employed people are often replaced within a short 'friction' period (such as within 3 or 6 months) when they are ill or depart the workplace permanently. The FCA used in this evaluation values the production loss as the total of gross state product (GSP) per hour lost due to absenteeism.⁷ In 2016, the average GSP per hour worked in Victoria was \$311.40. For this evaluation, this average value was applied to all age groups.

The HCA estimates the value of a human life as being the sum of future GSP per worker lost due to leaving the workforce prematurely because of death or disability. As such, it generates larger estimates of production gains by the prevention of a premature death or case of disease.

⁷ Gross state product is the total market value of goods and services produced within Victoria, after deducting the cost of goods and services used up in the process of production but before deducting depreciation. The ABS calculates GSP by summing factor incomes (that is, compensation of employees, gross operating surplus and gross mixed income), plus taxes, less subsidies on production and imports (ABS, 2015). GSP per hour worked is a key indicator of labour productivity.

The RFI model also estimates the production benefits of unpaid household production (such as cooking or caring for children) and leisure. It values all the household production hours per day at the weighted average hourly rate of domestic services and child care (formal and informal) replacement wages. In the RFI model, leisure time hours were valued using the opportunity cost method by using one-third of the average hourly Victorian wage for males and females separately.

Based on RFI model outputs, Table 14 shows that Victoria's 2.5 million physically inactive 15+ population will create a significant economic burden on workforce, household and leisure time productivity over its lifetime because of its insufficient physical activity:

- The total opportunity cost saving from production gains (working, household activities and leisure) that could potentially be achieved if physical inactivity were eliminated from the 2016 Victorian 15+ population would be in the order of \$3.39 billion (using the HCA) or \$800 million (using the FCA).
- The potential household gain from everyone in the 2016 15+ Victorian population being physically active is in the order of \$125 million over the life of the population. In addition, an estimated potential net leisure gain of around \$150 million at the current prevalence of physical inactivity in Victoria could be realised by eliminating DALYs, incidences of disease and deaths attributable to physical inactivity.

Table 14: The lifetime production burden of physical inactivity on Victoria's 15+ population in 2016 and the lifetime production benefit of becoming physically active

| | \$ million ^a |
|--------------------------|-------------------------|
| Production costs—HCA | 3,118 |
| Production costs—FCA | 528 |
| Leisure-based production | 148 |
| Home-based production | 123 |

a Using a 7% discount rate.

While the above estimates are sizeable in their own right, they are likely to understate the avoided healthcare and production impacts of insufficient physical activity for one or more of the following reasons:

- The productivity estimates do not include the economic cost of presenteeism.
- The avoided healthcare and production estimates are based on five major non-communicable diseases out of the 22 diseases and conditions documented to be associated with physical inactivity, based on moderate to strong evidence.
- It is uncertain how disease prevalence, population attributable fractions, healthcare costs, employment and GSP will change over time for the 2016 population. This uncertainty would multiply if the analyses were to be extended to future generations. Further, there is a lack of agreement on an appropriate discount rate to generate the net present value of future costs, especially for future generations.
- The avoided healthcare costs are the operating expenditure of the Victorian healthcare system only; they do not include expenditures for the whole healthcare system or future avoided capital augmentation that would be required as the population and incidence of disease, DALYs and deaths attributable to physical inactivity increase.
- The evaluation is limited to Victorians aged 15 years and over.

Recreation benefit values

People obtain benefits from active recreation over and above how much they pay to do those activities. Economists call the difference between the maximum amount that consumers are willing to pay for active recreation activities and what they actually have to pay the ‘consumer surplus’. Consumer surplus is a direct measure of welfare contribution.

For example, if the maximum amount a Victorian is willing to pay for active recreation is \$90 per day (including all trip and equipment expenditure) and the amount they have to pay is only \$50, then that person gets a consumer surplus of \$40. Even though this \$40 consumer surplus does not get exchanged through any marketplace transaction, it is a benefit that should be counted in economic analysis, and is also central to the individual’s decision to do the active recreation in the first place.

We estimate that the value of active recreation (the consumer surplus) to Victorians is in the order of \$3.8 billion each year. This estimate is based on the number of active recreation participation days in Victoria each year (Table 12) and estimates from Australian and international literature on the consumer surplus value of active recreation.

Appendix C discusses our estimation approach in more detail. Note that, because of the way the recreation benefit is calculated, it cannot be added together with the leisure-based production estimates generated with the RFI model.

Unquantified impacts

Social cohesion and education

We know that active recreation can help to develop positive relationships among community members and that this can increase mental and personal wellbeing, as well as feelings of community connection (VicHealth, 2016). Many, but not all, of the benefits of social cohesion are reflected in the welfare contribution values discussed in the previous section (for example, through improved health and wellbeing, lower absenteeism and presenteeism rates, and the recreation consumer surplus). To avoid the risk of double counting, we did not attempt to parcel out a separate welfare contribution for those impacts.

There are likely to be benefits from active recreation that extend beyond the health, wellbeing and labour productivity benefits we estimated in the previous section:

- Meta-analyses show that outdoor education programs can improve self-concept and teamwork among primary and secondary school students. Importantly, these positive impacts often appear to persist over time (Neill, 2008). For primary and secondary school students, the main benefits relate to the development of life effectiveness skills (QORF, 2012), which could translate over time into better workplace performance.
- Outdoor therapy and activities have been linked to reduced delinquency among at-risk adolescents (Bowen & Neilla, 2013, 2015).
- The ABS 2006 General Social Survey found that people aged 18 and over who participated in sport or physical recreation were more likely than others to be volunteers in some capacity (QORF, 2012).

- There is some evidence that outdoor activities contribute towards developing greater environmental awareness and stewardship. What such attitude changes mean over the longer term for the environment and sustainability have not yet been examined through longitudinal research (Dickson et al., 2008).

Return on investment

Evidence-based policy and investment decisions need to be informed by an understanding of the economic benefit of the investment—in short, ‘What is the return on investment?’ In this section, we convert estimates from the Deakin Health Economics RFI model into per person estimates.

‘Per unit’ measures can be used to evaluate the order of magnitude of the benefit of programs that increase active recreation (or sport) in the 2016 Victorian 15+ year population so that people become and then remain physically active.

Our evaluation (Table 15) shows the following:

- For every 10,000 people who become physically active and stay active, Victoria will avoid around 265 DALYs, 65 incidences of disease and around 15 deaths from five major non-communicable diseases directly attributable to physical inactivity.
- Based on available estimates and the RFI model, healthcare cost savings for each person who becomes physically active are in the order of \$100 on average over their lifetime, measured in 2016 dollars. As we note above, this healthcare estimate more likely underestimates than overestimates the true healthcare cost to Victoria for a number of reasons.
- Using the HCA, the workplace production benefit per person who becomes physically active is around \$1,255 over their lifetime, on average. Using the FCA, it is \$200.

- Combining the avoided healthcare and HCA or FCA estimates suggests that permanently shifting one Victorian from the 2016 population aged 15+ from being physically inactive to being physically active will deliver present value benefits in the \$300–1,350 range over the individual’s lifetime, on average, using a 7% real discount rate. This estimate is conservative because it excludes recreation, leisure and home-based production activities to avoid double counting.

Table 15: Per capita healthcare and production benefits of achieving the national guidelines for physical activity in Victoria's 15+ physically inactive population in 2016

| | |
|--|-----------------|
| Victorian population 15 years + in 2016 | 4,600,000 |
| Proportion of population that is physically inactive | 52% |
| Victorian population that is physically inactive | 2,480,000 |
| Total DALYS in 2016 | 65,000 |
| Total incident cases of disease in 2016 | 16,000 |
| Total deaths in 2016 | 4,000 |
| DALYs averted per 10,000 people becoming physically active in 2016 | 263 |
| Incident cases of disease prevented per 10,000 people becoming physically active in 2016 | 64 |
| Deaths prevented per 10,000 people becoming physically active in 2016 | 16 |
| Total health sector cost savings | \$245 million |
| Healthcare cost savings per person who becomes physically active | \$100 |
| Total workplace production benefit—HCA | \$3,118 million |
| Total workplace production benefit—FCA | \$528 million |
| Workplace production benefit per person who becomes physically active—HCA | \$1,255 |
| Workplace production benefit per person who becomes physically active—FCA | \$200 |
| Health cost saving per person—HCA | \$1,355 |
| Health cost saving per person—FCA | \$300 |

Note: Using a 7% discount rate.

Next steps

This report shows that Victoria's active recreation sector is an important part of the Victorian economy, and that it probably makes far more of a contribution to Victorians' wellbeing and communities than many of us realise.

Many of the estimates in this report are approximations based on the best available data. Our main aim has been to present order of magnitude estimates of the economic and welfare contribution of Victoria's active recreation sector to our community, based on the best available evidence.

Further work is needed to narrow and strengthen the estimates in this report and to develop a consensus approach for evaluating the contribution of Victoria's active recreation sector in the future. This view is consistent with the recommendation we made in our recent work for Outdoors Victoria (MJA, 2016). In particular, we need to do four things:

- **Close data and knowledge gaps:** Several important knowledge gaps have been identified in this work. We need to understand how different levels of physical activity affect health and production outcomes. At the moment, we are limited to being able to attribute the health and production outcomes of shifting between physical inactivity and physical activity. This relatively coarse level of understanding limits the scope for clear evidence-based policy to encourage Victorians to make that shift.

Given that there are around 2.5 million inactive Victorians aged 15+, that group may be enough for policy to focus on initially. However, over time, more nuanced and disaggregated policy may be called for, and an evidence base is needed to back such policy. A second key data gap is in evidence on the economic and welfare implications of active recreation in the under 15-year age category.

- **Develop a standard approach for estimating the economic and welfare contribution of Victoria's sport and active recreation sectors:** Sport and active recreation are natural and complementary activities. Our work found that the sport and active recreation sectors and subsectors that are evaluating their economic contribution in Victoria are often using different approaches. Those approaches are not always consistent and transparent. We think that the Victorian physical activity sector would benefit from using a uniform approach to estimate the economic and welfare contributions of active recreation subsectors. This approach should preferably be developed using the Victorian Department of Treasury and Finance's guidelines and support, which would ensure that the approach is 'gold standard'.
- **Develop industry-standard economic and welfare performance measures:** The Victorian sport and active recreation sectors would benefit from having a uniform set of economic and welfare contribution measures to use in evaluating industry performance over time. Again, these measures could be developed using Department of Treasury and Finance guidelines and support.
- **Further research and sector development:** The potentially significant size of the active recreation sector's economic and welfare contributions in Victoria means that the sector warrants further attention. This report starts to build an evidence-based case for additional research into how the sector can be developed to make an even greater contribution to Victoria's economy and the health, wellbeing and productivity of its population in the future.

Appendix A: Glossary of terms

This glossary adopts many of the definitions provided in Briceno & Schundler (2015), VicHealth (2016) and Commonwealth of Australia (2011).

Active recreation activities are those engaged in for the purpose of relaxation, health and wellbeing or enjoyment, in which the primary activity requires physical exertion and the primary focus is on human activity. It excludes competition sport and active travel.

Active travel is non-motorised transport between destinations, such as by walking, cycling, scooting or skateboarding.

Disability-adjusted life years (DALYs) are a measure of overall disease burden, expressed as the number of years of healthy life lost due to ill-health, disability or early death.

Direct contribution is the direct sales or margins of sales associated with initial expenditure. Some expenditures are assumed to translate into purchases made outside the state.

Domestic day-trip visitors are those people who travel for a round-trip distance of at least 50 kilometres and who do not spend a night away from home as part of their travel. Same-day travel as part of overnight travel is excluded.

Domestic overnight visitors are people aged 15 years or over who undertake an overnight trip of one night or more and at least 50 kilometres away from home.

Economic activity refers to different types of economic exchanges as they circulate through a region's economy. In this study, the direct, indirect and induced contributions represent total economic activity (such as sales, production and consumption of goods and services, employment and tax payments) associated with active recreation. Gross state product (GSP) is a common measure of Victorian economic activity.

Economic benefit is the wellbeing a consumer gains as a result of their consumption of a specific good or service, expressed in monetary terms. This is also known as consumer surplus. It is the difference between the maximum amount a person is willing to pay to get a good or service and what they actually have to pay.

Economic impact is the net change in Victorian economic activity that is generated by an industry sector (in this case, the active recreation sector).

Economic leakage is money that leaves a regional economy when an expenditure is made by a consumer. Leakages generally happen because some of the expenditures for goods and services used in the regional economy (for example, petrol) is made or acquired from outside the local economy. The person selling the good in the regional economy has to send money outside that economy to pay for it or to buy inputs.

Economic multiplier in this report is the ratio between initial expenditures and total economic contribution (also called the Keynesian multiplier). It shows how initial expenditures generate additional economic activity as the initial money is re-spent by other businesses and workers. For example, a hotel is paid \$150 to house an active recreation participant for the night. The hotel owner keeps \$15 as profit, employees are paid \$85, and \$50 is spent importing goods from outside Victoria. The employees spend \$85 on food. Most of the food is imported from outside Victoria, so only \$10 of the expenditure goes to wages and profit for the grocery store. The hotel owner sends her \$15 to her daughter in Western Australia, which creates no further economic activity in Victoria (this is called economic leakage). Based on these transactions, there has been \$110 (\$15 profit + \$85 wages + \$10 to the grocery store) of economic activity in Victoria from the initial \$150. If no further activity occurs, the economic contribution multiplier is 0.73 (110 divided by 150).

Employment is the number of full-time equivalent (FTE) jobs generated and/or supported in the creation of local gross economic output and gross value added.

Expenditure this is the value of the initial (direct) stimulus that is relevant to each industry. It is expenditure by governments, businesses and individuals involved in active recreation.

Gross economic output is a measure of the total production or expenditure in a local economy that is either directly or indirectly related to active recreation expenditure. It estimates how active recreation expenditure shifts through the Victorian economy to supply goods, services, jobs, incomes and taxation revenue.

Gross value added (GVA) is a subset of gross economic output, as imported goods and services used to service incremental expenditures are excluded. GVA includes local business profits and wages paid, and therefore represents economic returns on local capital and labour resources. It measures the true contribution of active recreation to the Victorian economy, because it backs out leakage out of the economy.

Indirect contributions are sales to the businesses where expenditures are made (for example, for intermediate inputs bought in the supply chain). For example, petrol stations purchasing petrol refined in Victoria produce a flow-on contribution to other parts of the Victorian economy.

Induced contributions are sales of goods and services purchased by employees of directly and indirectly affected businesses. A ski-field employee who buys milk from Gippsland using income they earned in the active recreation sector is creating an induced contribution for the Victorian economy.

Interstate visitor nights are nights spent by visitors in states or territories in which they do not normally reside.

Metabolic equivalent of task (MET) is a physiological measure expressing the energy cost (or calories) of physical activities. One MET is the energy expended by an individual while seated at rest. While the person is exercising, the MET is the energy expended compared to that spent at rest, so MET values indicate the intensity of the activity. An activity with a MET value of 5 means that the person is expending five times the energy (or number of calories) that they would when at rest.

Participant days are single visits to an active recreation location or one-time engagements by one individual in a recreational activity.

Physical activity is any bodily movement produced by skeletal muscles that results in MET expenditure. It occurs in four main domains: leisure/recreation; transport; occupational/school; and household. Physical activity includes 'exercise' (planned, structured and repetitive activity with a fitness goal), sport (organised, club and social), unstructured/incidental physical activity (such as gardening), active play and walking (for recreation and transport).

Physical inactivity is a lack of physical activity, based on *Australia's physical activity and sedentary behaviour guidelines* (Appendix B)

The **Regional Development Victoria input–output model** is a purpose-built economic model that allows the user to estimate total economic activity generated by tourism and infrastructure expenditures in a Victorian regional economy.

Sport is human activity involving physical exertion and skill as the primary focus of the activity. It has elements of competition in which rules and patterns of behaviour governing the activity are set formally by organisations, and is generally recognised as a sport.

Visitors are active recreation participants who travel more than 50 kilometres from their homes to visit one of Victoria’s active recreation activity locations.

Appendix B: National guidelines for physical activity and sedentary behaviour

| Age group | Physical activity | Guidelines |
|-----------------------------------|---|--|
| Early childhood 0–5 years | 3 hours of light- to vigorous-intensity activity every day | No screen-time for children under 2 years of age Less than 1 hour of screen-time per day for children aged between two and five No more than 1 hour of being sedentary or inactive at a time, except when sleeping, for all children aged birth to 5 years |
| Children and youth 5–17 years | At least 1 hour of physical activity every day Bone and muscle strengthening activities at least 3 days each week | Minimise sedentary time every day Less than 2 hours of screen-based entertainment per day Break up long periods of sitting as often as possible |
| Adults 18 years and over | Between 2½ and 5 hours of moderate intensity physical activity, or between 1¼ and 2½ hours of vigorous intensity physical activity, each week Activity on most, and preferably all, days Muscle strengthening activities at least 2 days each week | Minimise prolonged sitting Break up long periods of sitting as often as possible |
| Older adults 65 years and over | At least 30 minutes of moderate intensity physical activity on most, preferably all, days Activity each day, in as many ways as possible, doing a range of physical activities Incorporate activities that promote fitness, strength, balance and flexibility | |

Source: DoH (2014).

Appendix C: Economic evaluation approach

We used a bottom-up approach to estimate the economic contribution of the Victorian active recreation sector in this report. In broad terms, the bottom-up approach sums the individual expenditure contributions of the subsectors that are included in the Victorian active recreation sector analysis. The key advantage of this approach is that it overcomes the difficulty that arises from the lack of industry-wide data.

However, consistent with previous work that has looked at the economic contribution of outdoor recreation in Australia (QORF, 2012), the key challenges with the approach are as follows:

- There are existing studies for only a small number of all active recreation types.
- Different methodologies need to be used to estimate economic contributions.
- Different time periods apply to the estimates.
- Different economic measures were reported.

Key data sources are summarised in Table 16. Our approaches to estimating participation, economic contribution and welfare contribution are outlined below.

Active recreation participation in Victoria

We estimated active recreation participation as the number of days Victorians spent doing activities in the previous year (and associated results) using one of two sources:

- participation surveys specific to active recreation, where they were available
- the Australian Sport Commission's Participation in Exercise, Recreation and Sport Survey (ERASS).⁸

Participation surveys

Where dedicated surveys are available for specific activities (such as skiing in the Victorian high country and walking, swimming, running and cycling activities in parks operated by Parks Victoria), we generally used those participation numbers. These reports also usually include estimates of how long people spend per day on active recreation.

In some cases, activity-specific surveys do not cover all of Victoria (for example, surveys of fishing in Gippsland). We used such survey data where it is available to estimate for other regions in Victoria, using the approach discussed further below.

⁸ <http://www.ausport.gov.au/information/casro/ERASS>.

Participation in Exercise, Recreation and Sport Survey

The ERASS was a joint initiative of the Australian Sports Commission and state and territory departments of sport and recreation. It was conducted on an annual basis between 2001 and 2010.

The ERASS collected information on the frequency, duration, nature and type of activities participated in by people aged 15 years or over for exercise, recreation or sport during the 12 months prior to interview. Participation means active 'playing' participation, and does not include coaching, refereeing, being a spectator or activities related to work, household chores, gardening duties or active transport.

We agreed with DHHS to use the ERASS survey data in preference to available ABS Participation in Sport and Physical Recreation Survey data for 2013–15. The ERASS surveys distinguish between organised and unorganised physical activities. For the purposes of this analysis, we included those activities that are unorganised as a proxy for active recreation. We see this as a key but reasonable assumption.

The ERASS surveys were used to:

- classify physical activities as sport or active recreation
- estimate activity frequency and duration for sport and active recreation

derive relationships between the type of participation in physical activity for exercise, recreation and sport and social, economic, and demographic factors. Table 1 in the body of this report shows the activities included in our evaluation, and the proportion of each allocated to the sport and active recreation categories.

Many of the activities in Table 1 may be organised through clubs. For the purposes of this analysis, we assumed that club activities are not competition sport. Where activities straddle the line between sport and active recreation, we apportioned participation in those activities between active recreation and competitive sport. The apportionment is also shown in Table 1.

We estimated participation based on the average participation reported in the quarterly ERASS reports for the years from 2007 to 2010. This approach assumes that there have not been any significant changes in participation since that time and that active recreation participation rates and durations have not changed significantly since then. Taking a longer time period than one year also allows for the dilution of any one-off effects that would have a greater effect on a single year's or quarter's results.

The participation rate in this data is the number of people aged 15 or over who participated in each activity, multiplied by the number of occasions that they participated and by the duration.

Total expenditure on active recreation in Victoria last year

These figures represent the value of spending from identified sources in the past year. The key sources for this analysis were as follows.

Trip-based expenditure using Tourism

Research Australia estimates of the number of people aged 15 or over who visited each region in Victoria

This survey captures expenditure by domestic day visitors, who are people who travel for a round-trip distance of at least 50 kilometres and who do not spend a night away from home as part of their travel. It also captures overnight domestic day visitors, who are visitors who travel at least 50 kilometres and stay overnight.

The survey also lists the activities engaged in by each person during their visit. Separately, TRA estimates average expenditure by day-trippers and overnight stayers in each region for domestic and international visitors.

Where we used TRA data to estimate trip-based active recreation expenditure, we combined activities to provide an estimate of tourism expenditure in each region and then allocated that total expenditure to different activities according to their relative frequency of participation, which was defined using the approach for estimating active recreation participation rates discussed above. Trip expenditures were allocated to activities in proportion to the relative number of activities undertaken in each region and relative to other activities undertaken during the trip. This assumes similar trip-related expenses for most activity categories.

Specific expenditure surveys

Where dedicated surveys are available for specific active recreation activities (such as skiing in the high country), we generally used the trip and equipment expenditure figures from those studies and grossed them up. Those reports also usually include expenditure estimates for day and overnight activities.

We estimated snow-based trip and equipment expenditure using the Alpine Resorts Co-ordinating Council's *Victorian alpine resorts: end of season report, winter 2014* (2015), which is based on the analysis of value added from snow activities in the Victorian Alps. We used the weighted input–output multiplier for tourist spending in the region to convert the value added estimates in the report back to an expenditure figure. This replaced the derived figure for tourist expenditure assigned to snow activities. As this figure is a derived figure, the other activities of the alpine total were adjusted so that the overall spend by tourists was not changed for the region.

For walking, cycling, running and swimming, we used visitor survey data obtained from Parks Victoria. This data tracks visitor activities for all metropolitan and national parks operated by Parks Victoria. We used data from a second Parks Victoria survey that tracks the type of visit (local, day trip from home, part of a holiday) by percentage for 28 Victorian parks managed by Parks Victoria to apportion trip types and activities for urban, peri-urban and regional parks.

Equipment investment and other consumer expenditure

The ABS provides estimates of household expenditure on specific equipment used in recreational activities in *Value of sport, Australia, 2013* (cat. no. 4156.0.55.002). Goods in the catalogue include bicycles, boats, aircraft, fishing equipment, camping equipment and other types of equipment. Detailed expenditure data per household is available at the Australian level for 2009–10. Detailed expenditure data per household in Victoria is available for 2003–04.

The ratio of Victorian to Australian expenditure per household in 2003–04 was used to adjust the Australian figure for 2009–10. This was then grossed up for the number of Victorian households in 2015–16 and inflation.

For active recreation clothing, Australian expenditure on hiking and recreation equipment was derived from IBISWorld's analysis of that market. That analysis identified 42% of total expenditure on equipment as being on clothing and footwear (and therefore not double counting for camping, fishing and so on). Overall, Victoria represented some 27% of sales of equipment. These two ratios were applied to generate an estimate of active recreation clothing and footwear expenditure for Victoria.

Other household expenditure was extracted from the Household Expenditure Survey. This included only those items not covered by the above groups and included gym and similar memberships, hire costs for casual sport (green fees, bowling hire), sporting attire and sports equipment. These were scaled in proportion to the number of hours of active recreation to total recreation activity and then scaled down to reflect purchases in proportion to the number of people who had not participated in any physical recreation.

Infrastructure investment

There is limited information on private investment in active recreational facilities and infrastructure. We used primary data where it is available.

Alpine investment in Victoria was reported for 2005 in *The economic significance of the Australian alpine resorts: summary report*, which was prepared for the Alpine Resorts Co-ordinating Council. This was inflated to 2014–15 prices.

Public sector expenditure comprised two elements: consumption and investment expenditure. The former comprised the ongoing costs for Parks Victoria (from annual reports), which were allocated on the basis of the number of visitors to national parks, state parks or waterways as a proportion of all visitors.

Health and production benefits

For this project, we worked with Deakin Health Economics to evaluate the health status and economic and financial burden associated with physical inactivity in the 2016 Victorian adult population. This work extended and updated earlier work that Deakin Health Economics and its colleagues completed in 2009 to evaluate the health and economic benefits of reducing a range of controllable disease risk factors in the Victorian adult population (Cadilhac et al., 2009).

The evaluation of healthcare cost savings used the risk factor impact (RFI) model previously developed by Deakin Health Economics (Cadilhac et al., 2011). The model was adapted, improved and updated with current data inputs.

The objective was to estimate the health status and economic and financial burden attributable to physical inactivity and the potential benefits that could be realised if physical inactivity were to be eliminated as a risk factor in the 2016 Victorian adult population. Physical inactivity is defined as a lack of physical activity, based on *Australia's physical activity and sedentary behaviour guidelines* (Appendix B).

The health status benefits were measured as changes in the future incidence of disease, deaths and DALYs that could be attributable to physical inactivity.

The economic benefits were measured as future changes in paid workforce participation rates, prevented absenteeism and early retirements from the workforce, and increased days of household and leisure activities that could be associated with improvements in health status.

The financial benefits were defined as the dollar value (net present value) of the estimated economic benefits listed above, together with the future expenditure savings to the health sector arising from the reduced incidence of diseases. These benefits represent opportunity cost savings rather than immediately realisable cash savings. The opportunity cost savings were estimated in 2016 Australian dollars and reflect the potential cost savings for the 2016 Victorian adult population over the rest of their lives; they do not include cost savings to other future population cohorts.

A separate report detailing the methods and results of the Deakin Health Economics analysis has been provided to DHHS.

Recreation benefits

Whereas the health benefit reflects the intensity and duration of the exercise component of an activity, the recreation benefit reflects the overall time spent on the activity. For the purposes of this analysis, a conservative estimate was used to reflect the recreation benefit.

A recreation value of \$50 per day equivalent was used, reflecting the consistent outcome of a range of analyses.

Economic contribution calculations

We used Regional Development Victoria's regional economic impact model to estimate the regional economic contribution of active recreation in Victoria. The model provides measures of effects from spending on infrastructure, products and trips and spending related to active recreation travel. In general, there are direct effects and indirect effects. In looking at the gross or net impact of active recreation on the Victorian economy, we needed to look at both direct and indirect effects.

The estimates generated by the regional economic impact model are underpinned by an input–output model developed by SGS Economics from national input–output figures from the ABS. The ABS figures show the flow of goods and services between all the parts of the Australian economy. The figures developed for each local government area disaggregate those total figures across regions using known regional subtotals and forcing the relationship across all regions to match the Australian total.

The key data sources used in this analysis are listed in Table 16.

While this approach is considered reasonable, the limitations of using input–output models should be noted (SGS Economics, 2014):

- **The input-output approach assumes that relationships between industries are static.** Productivity improvements are not factored in, and historical relationships are assumed to hold, so businesses are not able to adjust to changes in prices to change the way they produce things.
- **The input-output approach uses total production estimates.** Consequently, the relationships are average. However, if we think about where increases in spending might occur, the spender would be expected to look for the best value option (or a marginal option). Using an average approach does not allow for using any underutilised capacity at the industry level or for the better use of existing machinery as production expands from its existing base.
- **All of the expenditure is assumed to be in new economic activities in each municipality.** Crowding out or industry substitution effects are assumed to be negligible. This means that there is sufficient slack in the local economy to service these stimuli without transferring significant resources from other uses.

The end result of these modelling assumptions is that I-O generally overstates the gross and net-economic impact of industry sectors.

An alternative is to use computable general equilibrium (CGE) models to evaluate economic impacts. A CGE incorporates both the underlying relationships within the economy from I-O and the interactions that occur over time. It will adjust relative costs and explicitly model constraints. CGE does not solve all problems associated with I-O but it does address many of the issues outlined above. For these reasons, State Governments and Treasury organisations generally prefer economic contribution analyses performed using CGE, particularly when evaluating 'large' investments and policy shocks.

Table 16: Key data sources—full list

| Information | Data sources | Comments |
|--|---|---|
| Participation and trends in active recreation activity in Victoria (non-tourism and tourism) | ABS, <i>Participation in sport and physical recreation, Australia, 2009–14</i> , cat. no. 4177.0 | This data provides total effort (duration, frequency) in active recreation activities used in this report. The data is limited to people 15 years old or over. |
| | Participation in Exercise, Recreation and Sport Survey (ERASS) 2007–10 | Survey data on exercise, recreation and sport participation, session frequency and duration of exercise. Categorised across 168 activities. Survey data is quarterly. |
| | Parks Victoria annual visitor surveys | This dataset provides first and all mentioned activities for metropolitan and national parks operated by Parks Victoria. To avoid double counting, we used only the walking, running, cycling and swimming figures from the dataset. |
| Expenditure on active recreation products and employment in active recreation activities | ABS, <i>Value of sport, Australia, 2013</i> , cat. no. 4156.0.55.002 | Includes expenditure per household per week (2009–10) on selected sport and physical recreation products: bicycles, boating and accessories (\$2.30 per week); camping equipment (\$0.70); fishing equipment (\$0.55); golf equipment (\$0.45). Employment 2011: diving instructor (open water), fishing guide, boat builder and repairer, bungee jump master, greenkeeper, hunting guide, etc. Aggregate data only, based on 14,000 respondents. |
| | IBISWorld Australian Market industry reports: bicycle retailing and repair, sports and recreation facilities, marine equipment retailing, hiking and outdoor equipment stores | This source was used to estimate active recreation equipment expenditure where not covered by the ABS <i>Value of sport, Australia</i> estimates. |

| Information | Data sources | Comments |
|--|---|---|
| Expenditure, welfare values and trends in active recreation activity in Victoria (non-tourism) (list not exhaustive) | <p>Marsden Jacob Associates (2015), <i>Economic value of Victoria's outdoors</i>.</p> <p>Marsden Jacob Associates (MJA) (2015), <i>Economic impact and welfare values of Victorian regional and rural trails</i>.</p> <p>Marsden Jacob Associates (2012), <i>Economic evaluation of recreational boating in Victoria</i>.</p> <p>Marsden Jacob Associates (2014), <i>Economic contribution of recreation at Victorian parks</i>.</p> <p>RMCG (2014), <i>Estimating the economic impact of hunting in Victoria in 2013</i>.</p> <p>Alpine Resorts Strategic Marketing Plan 2014–2018 (summer and winter visitation statistics and expenditure)</p> <p>Outdoors Victoria (2008), <i>Australian outdoor adventure activity benefits catalogue</i>.</p> <p>(2008), <i>The cost of physical inactivity: what is the lack of participation in physical activity costing Australia?</i></p> <p>J. Thompson Coon, K. Boddy, K. Stein, R. Whear, J. Barton, M. H. Depledge (2011), 'Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A systematic review', <i>Environmental Science & Technology</i>, 45(5):1761–1772.</p> | <p>These studies use a range of approaches to measure economic impacts and welfare values.</p> <p>Most studies include estimates of gear, accessories and travel-related expenses</p> <p>Several studies include welfare estimates (health and wellbeing), including the studies completed by Marsden Jacob Associates.</p> |

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Acronyms and abbreviations

| | |
|-------|--|
| ABS | Australian Bureau of Statistics |
| DALYs | disability-adjusted life years |
| DHHS | Department of Health and Human Services |
| ERASS | Participation in Exercise, Recreation and Sport Survey |
| FCA | friction cost approach |
| FTE | full-time equivalent |
| GSP | gross state product |
| GVA | gross value-added |
| HCA | human capital approach |
| MET | metabolic equivalent of task |
| MJA | Marsden Jacob Associates |
| PAF | population attributable fraction |
| RFI | risk factor impact |
| TRA | Tourism Research Australia |
| YLDs | years lost due to disability |
| YLLs | years of life lost |

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