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Curtin University

# AN AUSTRALIAN FOOTBALL STREET



THE COMMUNITY BENEFITS OF INDIGENOUS  
PARTICIPATION IN AUSTRALIAN RULES FOOTBALL

BCEC RESEARCH REPORT NO. 5/17

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# FOREWORD

Playing and participating in sport is about far more than physical fitness. Sport has long been associated with stronger mental health, shared purpose and a sense of belonging. It can provide structure to people's lives, and plays an important role in bringing communities together. Further still, it's a level playing field, so to speak, for those who don't excel in traditional academic or creative areas and an opportunity for these athletes to shine and take centre stage.

Australian Rules Football is celebrated as our national game, and its success draws much from the contributions of Indigenous players and communities, all the way from grass-roots football in remote communities through to the many Indigenous champions that adorn the sport's rich history.

This BCEC *Feature* report highlights the individual wellbeing and community benefits of Indigenous Australians' participation in Australian Rules Football. *After the Siren* identifies the factors that can impact the likelihood of an Indigenous person playing the sport, with housing status and family composition having noticeable impacts. The report finds links between AFL participation and improved physical health and mental wellbeing, and stronger social connectedness.

In reading this report, I hope you will join me in celebrating the positive impact this sport can have on the lives of Indigenous Australians, and reflecting on the adversity and challenges our First Peoples must overcome in order to excel in this truly elite sport.

The findings delivered in this report support the case for widening Indigenous participation in AFL through the promotion of grass-roots football, particularly in remote Western Australia and through the newly evolving women's league.

I'd like to thank the many stakeholders from the Indigenous, government, policy and sporting communities who helped shape the ideas behind our research.



**Professor Alan Duncan**  
Director, Bankwest Curtin Economics Centre  
Curtin Business School, Curtin University

1ST

EXECUTIVE  
SUMMARY

EXECUTIVE  
SUMMARY



## EXECUTIVE SUMMARY

From the leafy Melbourne suburbs that were host to the earliest Australian Rules matches, those founders could surely never have imagined how the game would be embraced by the First Australians, played and watched with passion in the harshest and most remote reaches of the continent's deserts; to provide a bridge across cultural dissonance and a powerful stage for the nation's conscience to be confronted with the racism endured by Aboriginal and Torres Strait Islander Australians.

*After the Siren* aims to build on that narrative of Indigenous peoples' participation in football at a grass-roots level, and the associated individual and community level outcomes. It is based on analyses of data from the 2014-2015 National Aboriginal and Torres Strait Islander Social Survey, supplemented by interviews with a number of stakeholders in West Australian communities.

The findings in this report reveal the numerous benefits that participation in sport, and AFL in particular, bring to Indigenous Australians. Direct health benefits are apparent in both children and adults involved in AFL, with better mental and physical health outcomes compared to those who are not involved in sport.

Of significance is both the high rates of young Indigenous men participating in AFL – reaching up to 65% in remote areas, and the positive impact this has on mental health, even after controlling for an extensive range of factors. This is an important finding in light of the high suicide rates of young Indigenous men and suggests that AFL has an important role to play as both a protective and preventive factor for Indigenous mental health.

What is also clear from the report findings is that AFL is an inclusive sport that offers wide accessibility irrespective of socio-economic background. While children living in disadvantaged backgrounds were less likely to participate in other organised sport, this was less apparent for AFL. In fact, for children growing up without a car in the household, the probability of choosing AFL as a sport is 15 percentage points higher.

The report also highlights the broader role AFL can play in a community, by being the conduit through which community programs targeted at health and safety can be delivered, and the means through which communities can be brought together. The importance of these wider benefits cannot be understated and there is a real opportunity to continue to harness and build on this valuable community asset.

Like all sports, problems do exist and the findings in this report offer an entry point through which we can begin to address these. Barriers to participation are evident for certain sub-groups, including children from single parent families and children that encountered a family crisis. We identify an urgent need for greater investment in structured AFL and other sports programs in remote communities, delivered in partnership between the various levels of government and service providers. There is enormous potential to widen the benefits of participation in AFL to Indigenous Australians through such programs and through the exciting emergence of the AFL Women's League.

## KEY FINDINGS

### SPORT, FOOTBALL AND INDIGENOUS WELLBEING

- Participation in sport can promote positive feelings of control, self-esteem, self-efficacy and positive social interaction.
- Previous studies have found a positive causal relationship between participation in sport and wellbeing.
- Children aged 5 to 17 are encouraged to spend 1 hour a day doing physical activity.
- Aboriginal and Torres Strait Islander Australians have a lower life expectancy of around 10 years.
- 21.4% of Aboriginal and Torres Strait Islander Australians lived in remote or very remote areas compared to only 1.7% of other Australians.
- The importance of sport to the lives of Indigenous Australians has been widely acknowledged, particularly in the context of remote communities.
- In 2011, the House of Representatives Standing Committee into high Indigenous juvenile criminal involvement found that: "The engagement of Indigenous youth in sport and recreation can promote positive social and health wellbeing and can help to minimise the potential for offending behaviour for Indigenous youth."

### THE ROLE OF SPORT IN INDIGENOUS PARTICIPATION IN SPORT

- The origins of AFL were born in 1857, as a way to keep cricketers fit during the winter months.
- Albert 'Pompey' Austen is the first known Indigenous player in the VFL, debuting for Geelong in 1872.

### THE NATIONAL ABORIGINAL AND TORRES STRAIT ISLANDER SOCIAL SURVEY

- 46.6% of Aboriginal and Torres Strait Islander children reported playing sport in the past 12 months.
- AFL is the second-most popular team sport among Aboriginal and Torres Strait Islanders with almost 45,000 Indigenous players.
- Participation in AFL is slightly higher among children (8.2%) than among adults (7.3%).
- 1 in 4 Indigenous men in Western Australia play AFL, second only to the Northern Territory at 31.2%.
- Around 65,500 Indigenous Australians participated in sport, other than as a player.

## WHO WANTS TO PLAY FOOTY?

- Almost 50% of young Indigenous men aged 15 to 19, living in the AFL States, participate in AFL.
- Participation in AFL increases as one moves away from the major cities – reaching more than 65% for young men aged between 15 to 29 living in remote areas of Australia.

## CHILD PARTICIPATION IN FOOTY – WHAT ARE THE PREDICTORS?

- 47% of Indigenous children aged 4 to 14 in the AFL States participated in organised sport.
- Children of families who own their home are around 20 percentage points more likely to have participated in sport.
- Children living in more advantaged neighbourhoods are more likely to participate in organised sport, however these effects are less apparent in the case of participation in AFL.
- AFL is a sport that offers wide accessibility irrespective of a child's socio-economic background.
- Having no car in the household is estimated to increase the probability of choosing AFL as a sport by 15 percentage points.
- Among boys participating in sport, boys from sole-parent families are substantially less likely to play football.

- Children that encountered a family crisis and had to stay overnight somewhere else were substantially less likely to participate in AFL than other sports – by a factor of 20 percentage points.

## DRIVERS OF ADULT PARTICIPATION IN FOOTY

- In the AFL States, 34% of Indigenous adults participated in organised sport in the past 12 months.
- 1 in 4 Indigenous men in the AFL States had played AFL in the last 12 months.
- Indigenous people who smoke daily are 7 percentage points less likely to participate in sport.
- Adults with a university qualification are 9 percentage points more likely to participate in sport than those who completed Year 10.
- People who speak an Indigenous language at home are around 11 percentage points less likely to participate in organised sport.
- Being married with children increases the likelihood of men playing AFL relative to other sports by 13 percentage points, compared to being single without children, suggesting AFL is something of a 'family game'.

- Indigenous women that had experienced discrimination in the past 12 months were around 3 percentage points more likely to have also played organised sport, 5 percentage points in the case of men with respect to both general sports and playing AFL.
- Boys living in remote areas playing AFL had a 20% lower truancy incidence.

#### FOR ADULTS...

- Men who experienced unfair treatment in the past year were substantially more likely (12 percentage points) to have played AFL than other organised sports, raising the spectre of that racial discrimination being football related.
- Among Indigenous men, 27% participated in some code of football.
- Those playing AFL were twice as likely as those playing no sport to rate their health as excellent.
- Indigenous people living in remote Australia and those living on their homelands display higher levels of mental health.
- Mental health is estimated to be higher among Indigenous men and women who participate in organised sport, after controlling for an extensive range of other factors.

### THE BENEFITS OF PARTICIPATION IN AFL FOR INDIGENOUS AUSTRALIANS

#### FOR CHILDREN...

- Nationally, 51% of Indigenous parents indicated their child's health was excellent, and a further 30% indicated their child was in very good health.
- The estimated effect for having played a code of football is highly significant and twice the magnitude of the estimate for participation in other sports.
- 56% of children who participated in football were assessed as being in excellent health compared to 48% of those who had not participated in any organised sport.
- Indigenous adults who played football in the previous 12 months reported higher life satisfaction than people who did not participate in sport.
- Parents expressed health concerns for 22.9% of children playing AFL, compared to 26.7% for non-sporting participants.
- Indigenous adults who play football report more frequent social contact and are more likely feel they have support outside their immediate household.
- Children who played football were 6 percentage points less likely to be assessed as having learning difficulties due to health issues.

- Indigenous players are now over-represented on the team lists of the 18 clubs in the AFL.
- 37% of male Indigenous AFL players reported experiencing discrimination or racism, compared to 33% for non-participants.
- The AFL Women's League is likely to stimulate greater involvement of young girls and women in sport and to produce many female Indigenous role-models.
- WA has already seen the emergence of such role models, with a very strong over-representation of WA Indigenous women in the inaugural competition.

### COMMUNITY FOOTBALL IN THE WEST

- In 2016, the West Australian Football Commission recorded 302,662 AFL participants, from juniors through to seniors.
- Almost 10,000 Indigenous West Australians participate in AFL.
- Stakeholders revealed a deep satisfaction around the way football clubs act as a hub to bring together not only Indigenous families from local areas, but also refugee and migrant groups living in the local community.
- AFL has frequently been used as a vehicle to deliver broader community wellbeing programs including those targeted at health and safety.
- "Government agencies should draw more often on things that evolve out of the community, such as football, rather than imposing externally formulated programs upon them."
- "You can't get a better conduit for community development. Footy carnivals get everyone together."
- The WAFC has reported almost a doubling in the number of female football teams in WA from 84 to 157.
- The positive social and community level impacts are likely to commence with today's young girls, but the longer-term health and those harder-to-measure benefits in the form of positive self-esteem and identity for Indigenous girls and women, will flow over the years to come.
- The evidence provides a very strong social-benefit case for greater investment in structured AFL competitions in remote communities.

# 2NDI | BACKGROUND GROUND



# INTRODUCTION

In 1980, the curator of the Melbourne Cricket Club museum happened across a set of fragile papers stowed away in a trunk in one of the club's storerooms. Dated May 1859, those papers contained handwritten rules for the game of Australian Rules Football. They are believed to be the earliest ever written set of rules for any code of football in the world. In framing this set of rules, the seven men who were signatory to those notes were reportedly strongly influenced by various football codes played in the public schools of England, and motivated by a desire to develop a sport that would keep players of the gentlemanly game of cricket fit during cold Melbourne winters, giving Victoria's cricket team an edge over their New South Wales rivals (Grow 1998a: 7-9)<sup>1</sup>. From the leafy Melbourne suburbs that were host to the earliest Australian Rules matches, those founders could surely never have imagined how the game would be embraced by the First Australians, played and watched with passion in the harshest and most remote reaches of the continent's deserts; to provide a bridge across cultural dissonance and a powerful stage for the nation's conscience to be confronted with the racism endured by Aboriginal and Torres Strait Islander Australians.

Australian Rules Football is now celebrated as our national game. Indigenous players and communities have contributed much to the sport's popularity and success, and the sport has produced high-profile Indigenous champions respected for their actions both on and off the field. This report looks at Indigenous Australians' participation in contemporary Australian Rules Football, and the individual and social benefits derived from that participation.

The topic is of particular relevance in the WA context. Like a number of other states and the Northern Territory, Australian Rules Football is the most popular team sport among Western Australia's Indigenous population, and WA has the highest number of Indigenous people playing Australian Rules Football. Moreover, in the regional and remote towns in which Indigenous Western Australians disproportionately reside, sporting clubs and organisations are central pillars of the local social and cultural fabric.

While the success of Indigenous footballers and other Indigenous elite athletes is often celebrated, such as the pioneering WA Indigenous footballers Graham 'Polly'

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<sup>1</sup> The papers were signed by Tom Wills, William Hammersley, J. Sewell, J. B. Thompson, Alex Bruce, T. Butterworth and Thomas Smith. Historical research generally attributes to Tom Wills the leading role in developing the game. There are contested theories that the game was partly based on a form of football played by the Indigenous *Djab-wurrung* peoples using a stuffed possum hide as a ball (Grow 1998: 13). While it is believed Tom Wills spent time with *Djab-wurrung* people as a boy, even speaking their language and is likely to have played their games, the extent to which his formulation of the rules was influenced, if at all, by his exposure to the Indigenous game is unclear (Grow 1998, Gorman et al. 2015).

Farmer, the Krakouer Brothers, Maurice Rioli and Nicky Winmar, Gorman et al. (2015: 1958) point to many other stories equally worthy of telling. They are the stories of the local communities, clubs, leagues, associations, carnivals and festivals through which Indigenous football comes alive across the country.

*After the Siren* aims to build on that narrative of Indigenous peoples' participation in football at a grass-roots level, and the associated individual and community level outcomes. It is based on empirical analyses of data from the 2014-2015 National Aboriginal and Torres Strait Islander Social Survey (NATSISS), supplemented by a review of relevant literature, and a focus on Western Australia through qualitative information collected from key stakeholder interviews.

There are well known benefits from participation in sport. These include the direct physical health benefits associated with exercise, as well as gains in mental health and wellbeing derived from contributions to self-esteem and social and community connectedness. For both Indigenous and non-Indigenous Australians such benefits can be substantial. However, in light of the marginalisation facing many Aboriginal and Torres Strait Islanders in this country in other socio-economic domains, and the affinity Indigenous Australians have for football and other sports, there is good reason to focus on the potential benefits of Indigenous Australians' participation in sport. Sport, perhaps, provides a rare arena in which 'success' and achievement as defined by mainstream Australia need not compromise other Aboriginal and Torres Strait Islander aspirations.

Specifically, the research questions explored include:

- What role does Australian Rules Football play in the lives of Aboriginal and Torres Strait Islander Australians, particularly in the context of regional and remote towns?
- What factors shape Indigenous Australians' participation in Australian Rules Football?
- What are the health, social and community benefits associated with participation in football?
- What barriers or negative experiences do Indigenous Australians face in participating in Australian Rules Football?
- What potential is there to further leverage the positive impacts of football for the Indigenous population in regional and remote WA and through the new AFL Women's League?

## A NOTE ON TERMINOLOGY

The Australian Football League – or AFL – is the name of the elite national competition and its administrative structure. However, AFL has also become the common term for the game of Australian Rules Football itself. We adopt this terminology so that throughout the report we use the term AFL to refer to the game of Australian Rules Football. This is distinct from 'The AFL' which relates to the national competition and governing organisation; and use rugby to refer to the football codes of rugby league and rugby union. Unless otherwise stated, all figures relate to the Aboriginal and Torres Strait Islander population.

This introduction and the following sections canvassing existing literature make up the Background chapter of the report. The second and third chapters contain empirical analyses of the NATSISS data; providing first analyses of Indigenous participation in sport and AFL, and then of the benefits associated with that participation. Section 4 then looks more closely at Indigenous football in Western Australia drawing on both quantitative data and qualitative evidence from conversations with key stakeholders. The final section summarises the main findings and offers observations on policy implications.

# SPORT, FOOTBALL, AND INDIGENOUS WELLBEING: EVIDENCE, PRACTICE AND POLICY

For people young and old, active participation in sport is associated with better outcomes, and these extend across a range of life domains. Physical activity is associated with lower risk of all-cause mortality, with a number of prominent international public health authorities recommending adults accumulate a minimum of 150 minutes of moderate intensity activity per week (Samitz, Egger & Zwahlen 2011). Moreover, Samitz et al's (2011) meta-analysis suggests that physical activity in the form of vigorous exercise and sport has a stronger protective effect against mortality than physical activity undertaken in other forms, such as in the course of daily living, for transport or walking, with the biological mechanisms including improved cardiovascular health, lower cancer risks associated with reduced fat levels, and improved immune function.

While studies linking physical activity to mortality primarily relate to adult samples, health effects have also been identified for children. Janssen & LeBlanc (2010) undertook a systematic review of findings from studies of the relationship between physical activity and health for school-aged children and youth. They found a range of health benefits, including a lowering of blood lipids (such as cholesterol), lower blood pressure, reduced incidence of being overweight or obese, improved bone density and reduction in depressive symptoms. 'Dose-response' studies indicate that for a number of outcomes the benefits increase with the amount of physical activity undertaken, leading Janssen and LeBlanc (2010) to support public health guidelines that recommend children participate in at least 60 minutes of moderate-to-intense physical activity per day, as set in a number of countries. The greatest benefits are derived from aerobic based exercise that works the cardiovascular and respiratory systems.

Participation in sport can promote positive feelings of control, self-esteem, self-efficacy and positive social interaction] (Dalton et al. 2015: 60).

In addition to physical health benefits, there is widespread international evidence that participation in sport promotes positive mental health and vice versa (Eime et al. 2013, Vella et al. 2017). Participation in sport can promote positive feelings of control, self-esteem, self-efficacy and positive social interaction (Dalton et al. 2015: 60). For adults and children, there is evidence that greater psycho-social benefits are derived from team sports as opposed to individual sports (Tsiros 2017, Vella et al. 2017). Vella et al. (2017) confirm such associations are bidirectional using data from the Longitudinal Study of Australian Children, finding that participation in organised sport at age 12 significantly predicted better mental health and fewer socio-emotional problems at age 14; while better mental health and fewer socio-emotional problems at age 12 also predicted participation in organised sport at age 14.

Previous studies have found a positive causal relationship between participation in sport and wellbeing.

In the presence of such bidirectional associations between sport participation and outcomes, it is challenging to empirically ascertain the existence and magnitude of any positive causal effect of sport participation. Importantly, however, the health literature has established that there is also a causal relationship flowing from participation in sport to wellbeing, through intervention studies, randomised control studies and the growing availability of longitudinal data. While intervention and randomised control studies have benefits with regard to establishing causality, they often focus on at-risk groups, such as people who are obese or with other chronic conditions. This limits the extent to which results can be used to draw conclusions relating to the health effects of sports participation for the general population.

Based on systematic evidence reviews, Australia's Commonwealth Department of Health publishes guidelines for physical activity recommending<sup>2</sup>:

Children aged 5 to 17 are encouraged to spend 1 hour a day doing physical activity.

- children aged 5 to 17 accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day and minimise the time spent sedentary.
- adults aged 18 to 64 accumulate 2 ½ to 5 hours of moderate intensity physical activity, or 1 ¼ to 2 ½ hours of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week.

Recent evidence for 10 to 13 year old children suggests that participation in sport has greater benefits than other forms of physical activity, such as activity undertaken as part of play or for transport, and those benefits extend to both physical and psycho-social health outcomes (Tsiros et al. 2017). Australia, along with New Zealand, are the leading nations in terms of sport participation by children and youth, and organised sport is a major component of the overall level of physical activity by children. A range of estimates indicate that between 64 per cent and 85 per cent of Australian children aged 5 to 17 have participated in organised sport in a preceding 12 month period (Vella et al. 2016). As in other countries, however, there is

<sup>2</sup> <http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines#apa512>

a growing concern in Australia of a 'pandemic of inactivity' among adults and children associated with modern lifestyles, and Kohl, et al. (2012) estimate physical inactivity to be the fourth leading cause of death worldwide.

Relatively few studies have looked at benefits associated with specific sports. A review of international evidence covering 26 different sport disciplines found running and football stand out as the two sports for which there is clear evidence of health benefits. Football – in this case the round-ball form of the game – was found to be associated with improved aerobic fitness and cardiovascular function at rest, fewer weight problems and lower blood lipids (Oja et al. 2015). Evidence for other individual sports was inconclusive, largely due the small number of studies with robust methodologies that distinguish between different sporting activities. Oja et al. (2017) drew on data for over 80,000 adults aged 38 to 66 who had participated in English and Scottish national health surveys between 1994 and 2003, and linked to the Central Mortality Register. In contrast to the earlier review, this study identified reductions in mortality rates overall, and mortality due to cardiovascular disease, associated with swimming, racquet sports and aerobics, but not for football, rugby or running<sup>3</sup>. A critical difference is likely to be the relatively old age of the sample analysed.

## SPORT AND INDIGENOUS WELLBEING

The gap in health status between Indigenous and non-Indigenous Australians is well documented, as well as in other important domains of wellbeing. Key indicators from the 2016 *Overcoming Indigenous Disadvantage* report, the annual scorecard on progress against the Closing the Gap targets, show Aboriginal and Torres Strait Islander Australians had lower life expectancy of around 10 years and are 1.7 times more likely to live with a disability.

Indigenous Australians have higher hospitalisation rates on all chronic diseases except cancer, including double the rate for circulatory diseases and 11 times the rate for kidney failure. While a number of indicators have shown progress in recent years, others have gone backwards in important areas, including more adults reporting high levels of psychological distress (now 3 times the rate for non-Indigenous adults) and an increase in the adult imprisonment rate. The incarceration rate for Indigenous juveniles has remained at 24 times that of their non-Indigenous counterparts (SCGRSP 2016a). On mainstream indicators, education outcomes are markedly lower for Indigenous children, and lower achievement and retention to Years 10 and 12 is more pronounced in remote areas (Cassells et al. 2017).

Aboriginal and Torres Strait Islander Australians have a lower life expectancy of around 10 years.

<sup>3</sup> Cycling was found to be associated with lower all-cause mortality, but no mortality due to cardio-vascular disease.

21.4% of Aboriginal and Torres Strait Islander Australians lived in remote or very remote areas, compared to only 1.7% of other Australians.

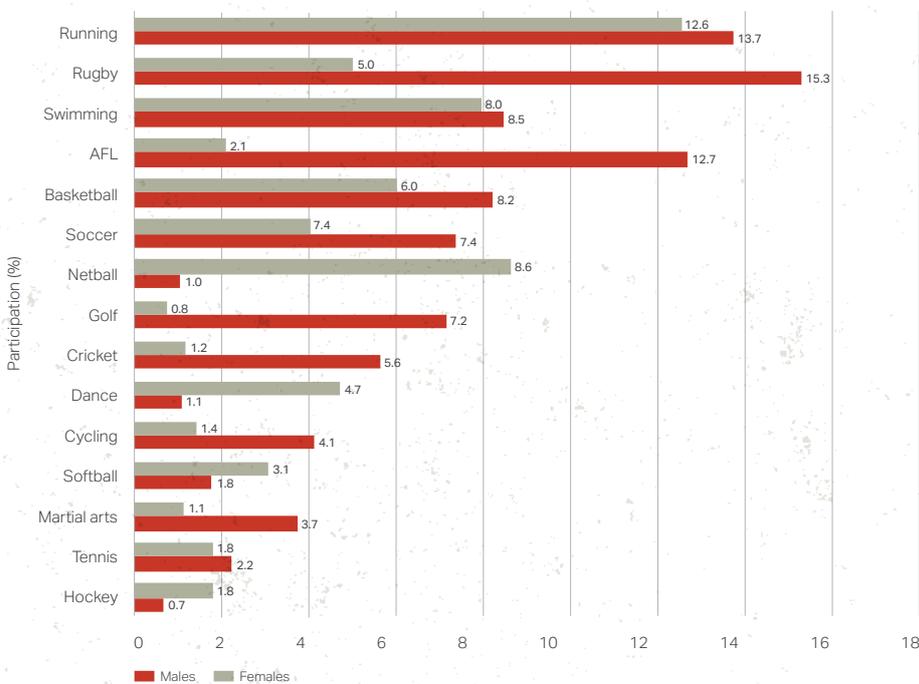
The role of geography in shaping differential outcomes for Indigenous and non-Indigenous Australians is both pivotal and controversial. A far higher proportion of Indigenous Australians live in remote parts of the country. Based on data from the 2011 Census<sup>4</sup>, 21.4 per cent of Aboriginal and Torres Strait Islander Australians lived in areas classified as Remote or Very remote, compared to just 1.7 per cent of other Australians; while 34 per cent of Aboriginal and Torres Strait Islanders lived in a major city, compared to 71 per cent of other Australians.

In remote Australia, many live in discrete remote Aboriginal communities which have been under the spotlight for a perceived lack of economic opportunity, inferior housing and service access, their demands on the public purse, and comparatively poor outcomes on a range of health, education and wellbeing measures (Australian Government, 2016; Productivity Commission, 2015). However, such communities also offer connection to homelands, culture and kinship networks that are intrinsic to the wellbeing of many Indigenous Australians (Dockery and Lovell 2016) and health benefits have been associated with attachment to country (Campbell et al. 2011).

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<sup>4</sup> At the time of writing, 2016 Census estimates by the main statistical remoteness classification (ARIA, the Accessibility/Remoteness index of Australia) had not been released.

**FIGURE 1. Participation rates by sports by Indigenous Australians, 2014-15**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

**Notes:** relates to participation in organised sports in the 12 months leading up to the survey.

The importance of sport to the lives of Indigenous Australians, and the range of potential benefits from participation in sport, has been widely acknowledged, particularly in the context of remote communities. Figure 1 shows participation rates by Indigenous Australians in different types of sports, as estimated from the 2014-15 NATSISS data. The figure highlights the strength of participation in AFL among Indigenous Australians, particularly among men. AFL is second only to rugby in terms of Indigenous male participation in team sports.

AFL is second only to rugby in terms of Indigenous male participation in team sports.

AFL participation is currently much lower among Indigenous women, but has the potential to rise significantly with the advent of the new AFL Women's League.

In 2011, the House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs (HRSCATSIA 2011) completed an inquiry into the high rates of involvement of Indigenous juveniles and young adults in the criminal justice system. An extensive body of evidence presented through hearings and submissions led the Committee to conclude:

**“The engagement of Indigenous youth in sport and recreation can promote positive social and health wellbeing and can help to minimise the potential for offending behaviour for Indigenous youth.”**

(HRSCATSIA 2011: 64-65)

Submissions to the inquiry included stories of a number of programs utilising sport to generate positive behaviours, including Commonwealth programs that fund sport and recreation initiatives and development officers in remote communities, and programs initiated or implemented in cooperation with the local police, such as the Midnight Basketball program. These also included a number of programs initiated through the AFL: the Kickstart program, AFL Club Fostership and AFL Ambassadors for Life Mentoring Programs.

The Australian Sports Commission’s submission argued that while sport and recreation had positive impacts for Indigenous youth’s health, crime, substance abuse, self-harm and school attendance, available funding was spread too thinly, with duplication across agencies and a lack of strategic direction in sport and recreation service delivery. The committee’s recommendations called for the Commonwealth to provide more support for sport, particularly for youth in remote and regional Australia, and to investigate impediments to participation in sport for young Indigenous men and women (HRSCATSIA 2011: 72). Moreover, the arguments presented were compelling enough that in 2012 a further inquiry was initiated into ‘the contribution of sport to Indigenous wellbeing and mentoring’. The terms of reference explicitly called for consideration of opportunities in sport for Indigenous women.

The importance of sport to the lives of Indigenous Australians has been widely acknowledged, particularly in the context of remote communities.

This inquiry was presented with many similar stories of government and non-government agencies drawing upon sports-based programs to achieve non-sporting outcomes. These are documented in the resulting report *Sport – More Than Just a Game* (HRSCATSIA 2013). The (then) Department of Education, Employment and Workplace Relations (DEEWR) had used ‘no school no play’ as a principle in a range of programs to leverage improvements in school attendance, an approach adopted by a number of other agencies and continued even after DEEWR discontinued the ‘no school no play’ programs. The Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) submission detailed \$13.2 million allocated to projects through the AFL. The submission contained a great deal of anecdotal evidence on the community-wide benefits of such programs. FaHCSIA’s submission included independently commissioned evaluations on the AFL Remote Regional Development Program in Wadeye, the AFL National Partnership Agreement and Youth in Communities program, which indicated positive impacts on participants’ self-esteem, community cohesion, school attendance and engagement in training, education and paid work (HRSCATSIA 2013: 27).

Evidence presented to the inquiry also stressed the significance of sporting carnivals. These were seen as effective in bringing communities together and providing unique opportunities for service providers to reach clients. In 2011, for example, the Queensland Aboriginal and Islander Health Council used the Murri Rugby League carnival to conduct over 1,200 health checks of players and officials.

Dr Bruce Hearn Mackinnon, author of *The Liam Jurrah Story: From Yuendumu to the MCG*, observed in his appearance:

**“It is one activity for all people, which includes elders, young people, men, women – it just does not seem to matter. There is a unified excitement and passion for sports. You only have to visit a remote community sports weekend or the Lightning Carnival in Alice Springs for instance to see that engagement of people.”** (cited in HRSCATSIA 2013: 35-36)

Much of the evidence presented to the Committee was anecdotal or qualitative in nature, lacking even informal control or comparison groups, and there is a striking lack of quantitative evidence from rigorous evaluation methodologies. Indeed, *Sport – More Than Just a Game* observed “The national research and data collection is very limited in relation to the contribution of sport to Indigenous wellbeing” (HRSCATSIA 2013: 47) and recommended the Commonwealth develop evaluation mechanisms, collect more comprehensive data on Indigenous participation in sport and incorporate this data into *Closing the Gap* reporting.

It remains the case that there are very limited studies offering empirical estimates of the effects of participation in sport for Indigenous Australians, and of course those dealing specifically with AFL are rarer still. Dinanthompson, Sellwood and Carless (2008) report on an evaluation of the AFL Kickstart program in Cape York. Again the evidence is primarily qualitative, based on focus groups with school students and interviews with other stakeholders. While participants’ comments suggested the program was associated with positive attitudinal change relating to life-skills, self-esteem and social cohesion, no actual observation of behavioural outcomes was made. Ware and Meredith (2003) provide a more recent review of findings relating to community sports and recreation programs targeting Indigenous Australians.

In Colin Tatz’s pioneering work, extensive interviews with Aboriginal men and women, and sports and other officials across 80 communities, led him to conclude that sport plays a more significant role in the lives of Aboriginal Australians than for any other section of Australian society, and provides a sense of belonging, cohesiveness and purpose that counteracts feelings of alienation and the loss of cultural identity and social structures (Tatz 1994, 2012). Thus, Tatz argues, participation in sport acts as a guard against ‘internalised violence’ that can lead to suicide, self-harm, assaults on others and property crimes. As evidence, he points to examples of communities in which Aboriginal juvenile offending is minimal during football season, but soars off-season (2012: 926)

**“It is surprising that a nation so dedicated to sport has ignored its role in trying to alleviate youth suicide ... Sport is a major element in contemporary Aboriginal life: it provides meaning, a sense of purpose and belonging; it is inclusive and embracing in a world where most Aboriginal youth feel alienated, disempowered, rejected and excluded.”** (Colin Tatz 2012: 922)

While also providing a fascinating glimpse into the machinations of football in remote desert communities, McCoy (2008) describes how AFL, in part, substitutes for traditional roles and activities for men that in many cases have disappeared. This includes men of all ages gathering together in large groups, talking, travelling together, and older men 'holding' – taking responsibility for – younger men during these occasions. The simple exchange McCoy (2008: 145) recounts to initiate the discussion of football well sums it up:

Football's good?

Yeah

In what way?

Like joining in together now. Back then they had corroborees.

In discussing men's health, a father and remote community resident indicated the only time he saw young men happy was when they were playing sport together. Football carnivals bring even bigger groups together, offering opportunities to strengthen and pass on kinship networks, for the men and women to gather separately to talk about issues. Football can promote important meanings for men, and provide the context for 'the construction of particular forms of Aboriginal masculinity' (McCoy 2008: 153).

It can be expected that many of the same beneficial associations between physical activity associated with sport and physical health – and negative impacts of inactivity – observed for other populations will hold for the Indigenous population. Shilton and Brown (2004) also cite studies identifying reductions in skin infections and eardrum perforations following the opening of swimming pools in two remote communities in Western Australia. Dalton et al. (2015) used cross-sectional data from the 2012 Mission Australia Youth Survey to compare self-assessed general health and mental health (Kessler 6 psychological distress scale) between sport participants and non-participants. Using logistic regression models with very limited controls, they find that participation in sport is associated with a substantial reduction in the probability of reporting poor general health or mental illness for the subsample of Indigenous respondents (n=639). In line with recommendations from the *Sport – More Than Just a Game* Report (HRSCATSIA 2013), the annual *Overcoming Indigenous Disadvantage* reports now monitor rates of participation in sport and recreational activities (SSCRGSP 2016b: Chapter 5), acknowledging the positive associations with individual physical, emotional and social wellbeing and with community cohesiveness.

Our focus in this review has been on outcomes associated with participation in community or grass-roots sport and AFL. There is a considerable further literature looking at the history of Indigenous Australians' engagement at elite levels of competition: their biographies, successes, the unique obstacle and challenges that they have faced and the wider implications for Australian society. See, for example, Gorman 2010 and Tatz & Tatz 1996 with respect to Australian sports generally; and Gorman 2010, 2012, Gorman & Applebee 2016, Hearn Mackinnon 2011 with respect to Indigenous participation in AFL.

# 3RD ||

A SPORTING CULTURE:  
INDIGENOUS PARTICIPATION  
IN SPORT

SPORTING CULTURE:  
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The origins of AFL were born in 1857, as a way to keep cricketers fit during the winter months.

History – or white history, at least – traces the origins of Australian Rules Football to 1857 colonial and cricket-loving Melbourne, and the efforts of Tom Wills and colleagues to promote a new sport to keep cricketers fit during the winter months.

Wills was Australian-born but, like many in his circle of friends, had been educated in an English public school and hence the formulation of the rules of the new game was influenced by forms of football played in those schools – in both adopting some elements and the desire to avoid others such as the offside rule (Grow 1998a). Academic historians have become embroiled in something of a 'history war' regarding the potential Indigenous influence on the birth of the game. Wills was known to have spent time with the Djabwuring people who played a game called 'marn-grook' with a ball fashioned from stuffed opossum skins. Prominent historians such as Gillian Hibbin and Geoffrey Blainey have dismissed the idea of a link between Australian Rules and Aboriginal games as 'a seductive myth', although Blainey does acknowledge that the high mark in Australian Rules Football may have partly evolved from players emulating the style of leaping and catching of Aboriginal players of marn-grook (Hallinan and Judd 2012: 980).

The popularity of the game spread quickly among Melbournians, then to regional Victoria and South Australia. The new code was first played in Western Australia in the early 1880s, where it competed for prominence with rugby. Thankfully, the Australian game gained a foothold in the West, unlike NSW and Queensland where rugby took hold despite concerted efforts to promote Australian Rules Football in the two States (Grow 1998b).

Albert 'Pompey' Austen is the first known Indigenous player in the VFL, debuting for Geelong in 1872.

By the 1870s, games were regularly drawing 10,000 spectators, large crowds even by international standards (Blainey 1990: 63–64). Before long, the AFL had established itself as our national game and an iconic symbol of Australian culture. The success of Indigenous Australians in the AFL adds to its status as a truly national and uniquely Australian game. Debuting for Geelong in 1872, Albert 'Pompey' Austen is the first known Indigenous player in the VFL, the forebearer to the AFL (Gorman 2010: 18).

Remarkably, up until 1962 – almost a century later – it is believed that only 10 Indigenous men had played in the VFL (Stephen 2009: 72). WA's Graham 'Polly' Farmer played for Geelong from 1962 to 1967, an achievement made possible only by a public outcry against labour laws of the time that governed Aboriginal youth, and that would have seen the promising junior footballer sent to work as a farm hand (Gorman et al. 2015). Only since the 1980s has the number of Indigenous players at the top level accelerated. The League's governing body now proudly points to a significant over-representation of Indigenous Australians playing at the elite level, one that is even more pronounced in the newly formed AFL Women's League. An annual Indigenous Round is held each year to celebrate Indigenous contributions to the game, named after Sir Doug Nicholls, an Aboriginal player for Carlton in the 1930s, and featuring the popular 'Dreamtime at the G' match. The history of Indigenous contributions to the sport centres around the stories of these champions, and debates over a potential Aboriginal influence in its creation.

These discourses, while valuable, overlook perhaps the most important and remarkable development between 'our national game' and the First Australians. That development is not how some Indigenous people navigated their way to the top of state and national competitions, but rather how Indigenous people adopted the game and took it to the most remote reaches of the land. Little seems to have been written about how Indigenous participation in grass roots and community football evolved, but its intensity and geographical reach are surely the major contribution Indigenous Australians have given the game, and the game to them. And while Indigenous champions have provided powerful role models and voices against racism and discrimination, it is participation at the grass roots level that has the most significant and pervasive social impacts.

The following section draws on unit record data from the National Aboriginal and Torres Strait Islander Social Survey 2014-15 (NATSISS) to provide a detailed picture of Aboriginal and Torres Strait Islander participation in sport, and AFL in particular, across Australia. The NATSISS is unique in making such an exploration possible. As it targets only the Aboriginal and Torres Strait Islander population, it offers a very large and representative sample of Indigenous persons including, importantly, good coverage of those living in remote Australia. With Indigenous people comprising around 3 per cent of the population, nationally representative datasets typically have inadequate numbers of Indigenous persons or geographical coverage for meaningful analyses of many important issues for Indigenous peoples. The survey collects data not only on sports participation for children and adults, but on the type of organised sports participated in 16 separate categories, of which one is AFL. Finally, these detailed data on sporting activities are accompanied by an unusually rich array of potential outcome measures and demographic control variables to include in analyses.

We commence with a descriptive overview of patterns of Indigenous participation in sport and progress to detailed examinations of participation in AFL, and of the factors associated with that participation for Indigenous children and Indigenous adults.

# THE NATIONAL ABORIGINAL AND TORRES STRAIT ISLANDER SOCIAL SURVEY

The NATSISS is conducted every six years by the Australian Bureau of Statistics (ABS). Undertaken between September 2014 and June 2015, NATSISS 2014-15 collected data for 11,178 Aboriginal and Torres Strait Islanders across Australia. The survey consisted of separate instruments for children aged up to 14 years and for adults aged 15 and over. Information was collected by 'proxy' interviews for 4,156 children, where the proxy was a parent or guardian of the child, wherever possible. A total of 7,022 persons aged 15 or over responded to the adult survey (ABS 2016).

NATSISS included a module relating to social interaction and community participation and, as part of this module, information was collected on participation in organised sport. Adults were asked if they had played sport or taken part in physical activities in the twelve months prior to the interview, and those who had were asked what type of organised sport or activity they participated in. For children aged 4 to 14, their parent (or guardian) was asked if the child had played or trained for any organised sport through a club or outside of school hours through their school; and then to nominate the type of sport.

In total, 34.6 per cent of Aboriginal and Torres Strait Islander adults reported having participated in sport as a player in the past 12 months, and 46.6 per cent of children aged 4 to 14 had played organised sport.<sup>5</sup>

46.6% of Aboriginal and Torres Strait Islander children reported playing sport in the past 12 months.

<sup>5</sup> Unless otherwise stated, all descriptive statistics, such as proportions, means or frequencies, are calculated using the person weights provided in the NATSISS data and thus represent estimates for the relevant population. Weights have not been used for regression modelling.

Although the questions and response options in the adult and child surveys differ slightly, Table 1 aligns the types of activities as best as possible to present overall participation in different sporting activities for the Aboriginal and Torres Strait Islander population. The most common activity falls into a broad category of walking, running and other general fitness, and this result derives mainly from the popularity of this activity among adults. Rugby rates second as the most popular sport among Aboriginal and Torres Strait Islander Australians, played by around 13 per cent of youth and 9 per cent of adults (touch football was included in this category for youth). This is followed by swimming, with Australian Rules Football (or AFL) as the second most popular team sport. An estimated 44,779 Aboriginal and Torres Strait Islander persons played AFL in the twelve months before the survey, representing 7 per cent of the Aboriginal and Torres Strait Islander population aged 4 and over.

Participation in AFL is slightly higher among children (8.2%) than among adults (7.3%).

**TABLE 1. Participation in sport and physical activities, previous 12 months, Aboriginal and Torres Strait Islander persons aged 4 years and over**

	Children (aged 4-14)		Adults (aged 15+)		Total (aged 4+)	
	Number	%	Number	%	Number	%
Walking, running, athletics/track & field, fitness, gym	7,935	4.58	73,095	16.48	81,029	13.14
Rugby (and touch football) <sup>a</sup>	22,308	12.88	39,617	8.93	61,925	10.04
Swimming and other water sports	17,011	9.82	33,640	7.58	50,651	8.21
AFL	14,040	8.15	30,739	6.93	44,779	7.27
Basketball	11,986	6.92	31,717	7.15	43,703	7.09
Soccer	16,078	9.28	18,863	4.25	34,941	5.66
Netball	11,239	6.49	19,113	4.31	30,351	4.92
Cricket	4,549	2.63	16,100	3.63	20,650	3.35
Dancing/ballet	8,053	4.65	10,131	2.28	18,184	2.95
Cycling/BMX	2,932	1.69	13,999	3.16	16,931	2.74
Softball	4,009	2.31	11,053	2.49	15,063	2.44
Martial arts	5,442	3.14	9,315	2.10	14,757	2.39
Tennis	4,110	2.37	8,256	1.86	12,366	2.00
Golf	n.a.		16,986	3.83	n.a.	

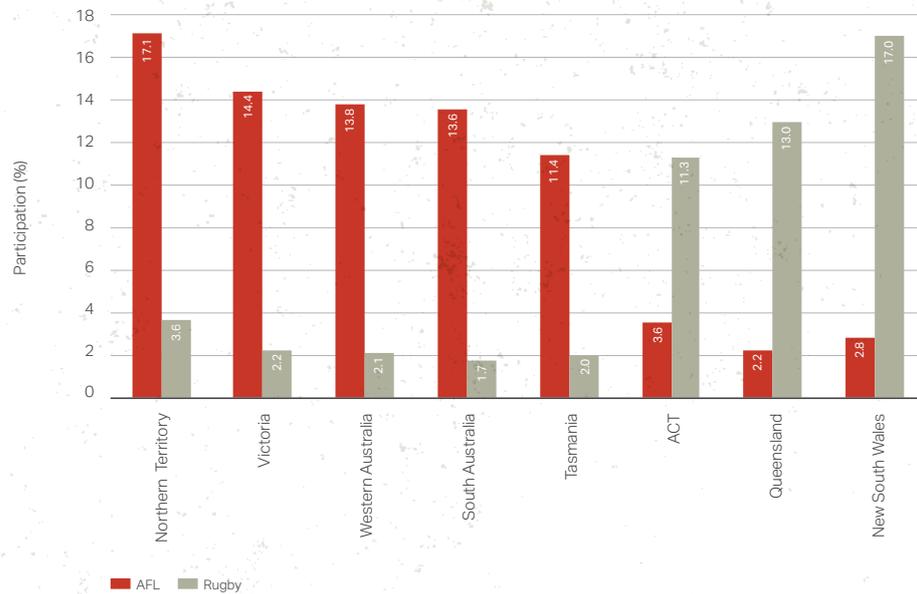
Source: 2014-15 NATSISS.

Notes: Multiple responses permitted. Estimates calculated using ABS provided person weights. Participation rates calculated as percentage of applicable Aboriginal and Torres Strait Islander population a. For the child sample touch football was grouped with rugby. The data does not permit any distinction between rugby union and rugby league.

As the most played team sports among Indigenous Australians, rugby and AFL are highly male dominated. Participation rates for female Aboriginal and Torres Strait Islanders in rugby/touch football are estimated at 5 per cent and in AFL just 2 per cent. For girls and women the most popular team sports are netball and basketball, with estimated participation rates of 8.6 per cent and 6.0 per cent, respectively.

The well-known State divide in football codes is evident in the NATSISS data (see Figure 2 and Figure 3). Rugby is by far the dominant code in New South Wales, Queensland and the ACT. Among Aboriginal and Torres Strait Islanders, both male and female, the Northern Territory has the highest rate of participation in AFL, with 17.1 per cent of the population aged 4 and over having played in the past 12 months. The NT is followed by Victoria (14.4%), Western Australia (13.8%), South Australia (13.6%) and Tasmania (11.4%). Playing rugby narrowly edges out bobsleIGHing in those AFL states.

**FIGURE 2. Aboriginal and Torres Strait Islander participation rates in rugby and AFL, males and females combined, by State and Territory**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

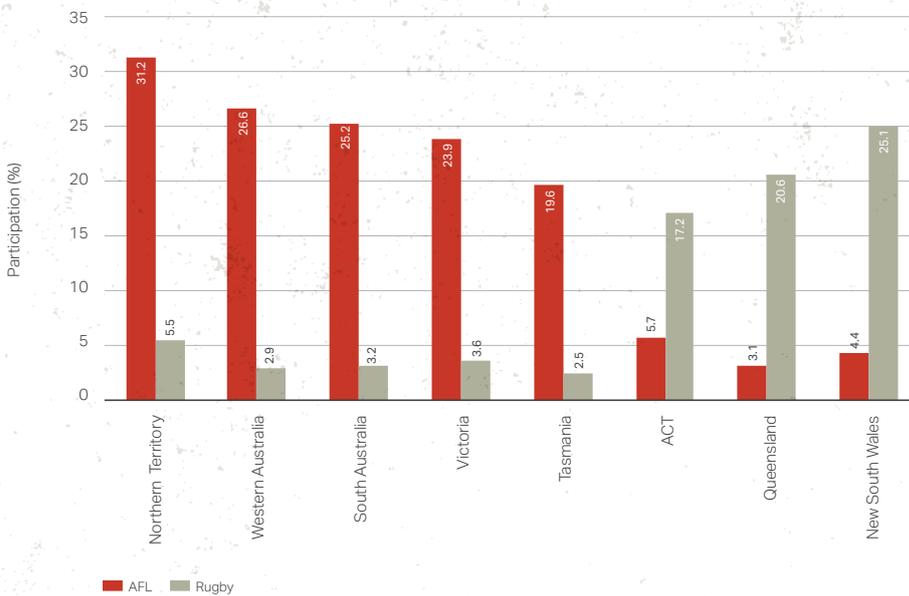
1 in 4 Indigenous men in WA play AFL, second only to the Northern Territory at 31.2%.

Participation rates in football are of course much higher within the male population (Figure 3). With the sample restricted to males, Western Australia (26.6 %) now ranks second to the Northern Territory (31.2 %) in terms of rates of AFL participation, followed by South Australia, Victoria and Tasmania.

This change in rankings reflects the relatively higher participation of girls and women in AFL in Victoria compared to WA, at least in 2014-15 when the NATSISS was undertaken. The greater popularity of rugby among women can also be seen. As a proportion of the whole population, participation in rugby in NSW is on a par with participation in football in the NT, both at around 17 per cent. Among men, however, AFL participation eclipses participation in rugby in NSW by over 5 percentage

points. Of course, there have been massive developments in women’s involvement in AFL since the NATSISS was conducted, as discussed later. And while WA has a slightly lower participation rate in AFL than the NT, it boasts the highest number of Indigenous AFL players at an estimated 9,900 males compared to second placed NT’s 9,450.<sup>6</sup> The ‘home’ of the AFL, Victoria, had around 5,400 Indigenous male players. Despite the much lower participation rate in Australian Rules Football in NSW, with its larger population that state had a similar number of male participants as South Australia, at around 4,100.

**FIGURE 3. Aboriginal and Torres Strait Islander participation in rugby and AFL, males, by State and Territory**



**Source:** Bankwest Curtin Economics Centre | Authors’ calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

In addition to actively playing sport, around 65,500 Indigenous Australians – 11 per cent of the population aged 4 and over – reported having participated in sport as a coach, umpire or official, or committee member or administrator in the 12 months leading up to the survey. A total of 261,500 or 42.4 per cent of the Aboriginal and Torres Strait Islander population had attended a sporting event as a spectator. However, it is not possible to identify which particular sport these additional activities related to.

Around 65,500 Indigenous Australians participated in sport, other than as a player.

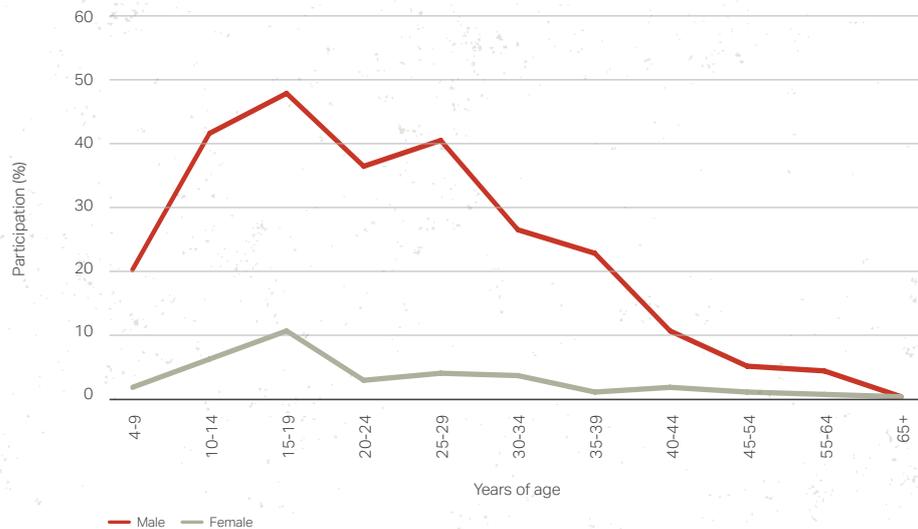
<sup>6</sup> WA also rates as the State with the most male and female AFL players, at 10,900 to NT’s 10,500.

# WHO WANTS TO PLAY FOOTY?

Almost 50% of young Indigenous men aged 15 to 19 living in the AFL States, participate in AFL.

This section looks in more detail at Aboriginal and Torres Strait Islander people's participation as a player in AFL. Having established that folk from New South Wales, Queensland and the Australian Capital Territory are something of an alien mob, the analysis is restricted to people from the five AFL states (Victoria, South Australia, Western Australia, Tasmania and the Northern Territory). We also limit the analysis to persons aged 4 and over, since participation in AFL is not recorded for younger children. Figure 4 shows participation rates by age group and gender, and the male dominance in the sport is immediately apparent. For both males and females, playing AFL is most common for the 15 to 19 year old age group, but at a peak of 48.0 per cent for males compared to just 10.6 per cent for females. For males, participation rates average around 40 per cent right through from age 10 to 29.

**FIGURE 4. AFL participation rates, AFL States, by gender**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

The classification of the degree of remoteness of the area in which respondents live available in NATSISS is not consistent across states and territories. Under the Australian Standard Geographical Classification's Accessibility/Remoteness Index of

Australia (ARIA), areas are classified into five levels of remoteness: major cities, inner regional, outer regional, remote or very remote areas of Australia. For all respondents a basic dichotomy of remote versus non-remote is available, with the former including remote and very remote areas and the latter including outer regional, inner regional and major cities. Table 2 shows that within each state, participation in AFL is markedly higher in remote areas.

**TABLE 2. AFL participation rates by remoteness: AFL States**

	Non-remote (%)	Remote (%)	Total (%)
Victoria	14.4	n.a. <sup>a</sup>	14.4
South Australia	12.5	18.4	13.6
Western Australia	12.2	16.2	13.8
Tasmania	11.5	n.a. <sup>b</sup>	11.4
Northern Territory	10.9	18.7	17.1
Total	12.7	17.7	14.5

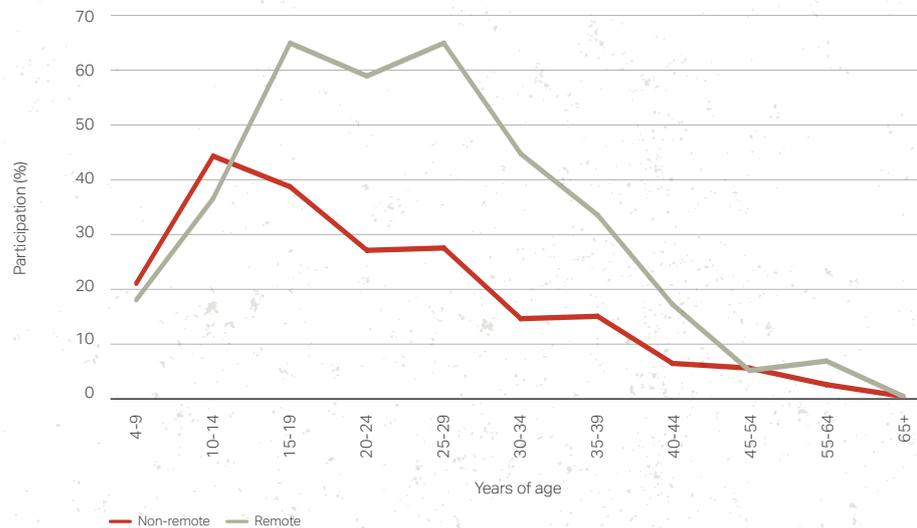
**Notes:** a. there are no remote areas in Victoria; b. figure considered unreliable due to the very small sample of Tasmanian respondents classified as remote.

For Victoria and Western Australia data are available at a more disaggregated geographical level. These data confirm that participation in AFL increases as one moves away from the major cities. In Victoria, the proportion of the Indigenous population who played AFL in the 12 months leading up to the survey was 10.5 per cent in the major cities compared to 18.1 per cent for those living in inner-regional or outer-regional Victoria. In WA, the participation rate rises from 11.6 per cent in Perth, to 13.3 per cent in inner/outer regional WA and, as noted in Table 2, up to 16.2 per cent in remote WA.

Restricting the sample to males only, participation is slightly higher in non-remote areas compared to remote areas for children aged between 4 and 14. However, in non-remote areas participation peaks for Indigenous children aged 10 to 14 and then steadily declines to zero. In contrast, participation in football continues to increase beyond age 14 in remote areas, climbing to around 60 per cent for men aged 15 to 19 years, 20 to 24 years and 25 to 30 years, before then dropping off. Thus the gap in participation rates between remote and non-remote areas is most pronounced for the 25 to 29 year old age group, at 37.7 percentage points. This highlights just how big a part AFL plays in the lives of Indigenous people in remote communities, with a remarkable two-thirds of men aged 15 to 30 years having played the sport in the previous 12 months.

Participation in AFL increases as one moves away from the major cities.

**FIGURE 5. Male AFL participation rates by age and remoteness: AFL States**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

## WHAT FACTORS DETERMINE PARTICIPATION? CHILDREN AGED 4 TO 14

To assess how a wider range of factors relate to participation in sport, multivariate logit models are estimated with the dependent variable being the likelihood that an individual has participated. Models are estimated for both overall participation in sport in the past 12 months, and specifically for participation in AFL. For this section, the sample is restricted to the AFL States only. Due to differences in the data collected in the child and adult surveys, the multivariate analysis is undertaken separately for the child (4 to 14) and adult (15+) populations.

47% of Indigenous children aged 4 to 14 in the AFL States participated in organised sport.

Among Indigenous children aged 4 to 14 in Victoria, South Australia, Western Australia, Tasmania and the Northern Territory, just under half, or 47 per cent, were reported to have participated in organised sport in the 12 months leading up to the survey.

Recall that for children attending school, the wording of the question made clear this related to organised sport outside of school hours. A higher proportion of boys participated in organised sport (55 per cent) compared to girls (44 per cent) in the AFL States. Among boys, 29 per cent – over half of all sports participants – had participated in AFL. Unlike adult males, AFL participation is lower in remote communities (26 per cent compared to 32 per cent in non-remote areas).

To assess the factors related to participation in AFL, and how these may differ between AFL and participation in sport more generally, a series of models are estimated. First, we estimate the probability of participating in any organised sport for the full sample of children (that is, boys and girls). Second, we estimate that same model for the sub-population of boys and, third, we estimate the likelihood of boys having played AFL. To further focus on factors that shape participation in AFL as opposed to other sports, a final model estimates the likelihood of boys having played AFL conditional upon having participated in sport; that is, within the sample of sports participants. A range of variables that were deemed to potentially influence participation were tested as explanatory variables in the models, and successively dropped from the estimation if they were insignificant.<sup>7</sup>

Children of families who own their home are around 20 percentage points more likely to have participated in sport.

Model 1 in Table 3 reports the results of the model of the likelihood of participation in sport overall. The results reported are 'marginal effects', where the figure represents the effect of a 1 unit change in the variable on the predicted probability that an individual participates in sport, with all other variables held at their mean. For example, the marginal effect of being male as opposed to female (ie. the variable male=1 as opposed to male=0) is estimated to be 0.10 (or 10 per cent). Hence, after controlling for all other factors, the model estimates that boys are 10 percentage points more likely to participate in organised sport, in line with the descriptive statistics given above.

The results suggest that a number of factors have a common effect on sports participation for Indigenous children overall, on Indigenous boys' participation in sport and on their participation in AFL. In Models 1 to 3, the likelihood of participation increases rapidly with age, but at a declining rate, as shown by the negative marginal effect for the quadratic of the age variable. Children in remote areas are around 6 percentage points more likely to have participated in sport, with the effect being stronger for the male sub-sample (9 percentage points). Results are not reported for the series of variables capturing home ownership status and state of residence. However, the family's home ownership status has a very large estimated effect. Children of families who own their home, as opposed to renting in public housing or through an Indigenous housing organisation, are around 20 percentage points more likely to have participated in sport, but this does not apply to AFL.

After controlling for remoteness, participation in sport generally is higher outside of the Northern Territory, but less so with respect to participation in AFL. On these estimates, Western Australia is the most ardent AFL State for Indigenous boys. After controlling for other factors, the participation rate for boys in Western Australia is around 8 percentage points higher than in the Territory. The estimate is only weakly significant, but it is a substantial difference given the baseline participation rate of around 25 per cent.

<sup>7</sup> Variables were dropped if the chi-square statistic indicated that the probability of the null hypothesis of no effect was 0.30 or higher. Variables comprising a mutually exclusive group (such as the State dummies) are dropped only if all variables in that group return a significance level of 0.30 or weaker.

Identification with Indigenous culture is strongly complementary to participating in AFL.

Several factors associated with children's family background impact upon their participation in sport in general. Having people within the household who smoke, a lack of a family car, financial stress, living in a sole-parent family and having moved house in the past 5 years all reduce the likelihood of participating in sport by substantial margins – each in the broad vicinity of 5 to 9 percentage points. Identification with Indigenous culture is strongly complementary to participating in AFL and sport more generally. The variable labelled 'Identifies with cultural group' in Table 3 is based on the parent or carer indicating that the child identifies with a clan, tribal group or language group. Those children are estimated to be 11 percentage points more likely to participate in organised sport than children who did not identify with an Indigenous cultural group, and 6 percentage points more likely to have played AFL.

Children living in more advantaged neighbourhoods are more likely to participate in organised sport – however, these effects are less apparent in the case of participation in AFL.

Some interesting differences can be seen in the factors shaping participation in AFL (Table 3, Model 3), when compared to sport more generally (Models 1 and 2). Participation in sport generally increases for both boys and girls with the decile of socio-economic advantage of the family. This variable is based on the ABS constructed index of relative socio-economic disadvantage for areas, and relates to the child's residential postcode. The result indicates that children living in more advantaged neighbourhoods are more likely to participate in organised sport.

The effect is of quite some magnitude – with the likelihood of participation estimated to increase by around 1 percentage point with each decile of advantage. However, no such effect is observed for the likelihood that boys play AFL. A number of other variables likely to reflect a less advantaged family background suppress overall sport participation, but those effects are less robust or absent in the case of participation in AFL. These include the number of adults living in the household, people smoking within the household and the family having experienced financial stress (ie. reported having run out of money for basic living expenses in the last 12 months). In this sense, it appears AFL is a sport that offers wide accessibility irrespective of children's socio-economic background.

AFL is a sport that offers wide accessibility irrespective of a child's socio-economic background.

In the NATSISS survey, the responding parent or carer was asked if the child had ever been bullied at school, and whether they had ever been treated unfairly at school because they are Aboriginal or Torres Strait Islander. While having been bullied had no significant association with the likelihood of playing sport or AFL, there is a large, significant effect for boys who have experienced discrimination on the basis of their Aboriginality. This group are around 11 percentage points more likely to participate in sport and AFL. One interpretation of this is that boys may experience discrimination in the course of their participation in sport. However the question on unfair treatment relates specifically to treatment at school, while the question on organised sport refers to participation outside of school hours. Hence, an alternative proposition is that sport may be something parents engage their children in when they believe them to be experiencing discrimination in other spheres.

Controls for the child's overall health were not included in the participation models due to the potential endogeneity between sport participation and current health, and

there is little information included in NATSISS relating to long-term health conditions for the child sample. Variables were included relating to whether or not the child had eye or sight problems and ear or hearing problems. The presence of hearing or sight related problems was not significant in the models of sport participation. However, having sight problems was found to significantly reduce the likelihood of boys playing AFL. In part this is likely to reflect the physical contact involved in AFL making it relatively unsuited to people who wear glasses. Having eye or sight problems is estimated to reduce a boy's likelihood of playing AFL by almost half.

Notable among the variables tested but found to be insignificant, is the number of children in the household. It was anticipated that participation in sport generally, and in AFL specifically, would increase with the number of children in the household due to network effects.

Differences in the factors shaping participation in AFL as opposed to other sports were estimated more directly by restricting the sample to boys who had participated in sport in the past 12 months, and modelling the likelihood that they had played AFL (Model 4). Therefore the estimates relate to the likelihood of a child choosing to play AFL among those participating in sport. Western Australians again stand out as having a strong preference for AFL, while boys in Tasmania are substantially less likely to choose AFL as their sport relative to those in the Northern Territory (results for State dummies are not reported in the table). Having no car in the household is estimated to increase the probability of choosing AFL as a sport by 15 percentage points. The results in Model 4 confirm that problems with sight inhibit football as a choice of sports.

Among boys participating in sport, boys from sole-parent families are substantially less likely to play football. A likely contributing factor here is that children in sole-parent families overwhelmingly live with their mother rather than father. In the current sample of 4 to 14 year old Indigenous boys from the AFL States, among those living in sole-parent families the main carer was the child's father or step-father in just 9 per cent of cases. This compared to 68 per cent of cases in which the primary carer was the mother or step-mother. In cases where the child's main carer was a grandparent, other relative or non-related person, close to 90 per cent of those were female. As we have seen football is very much a male dominated sport and hence where a father is present, boys' participation may be encouraged via role model effects, from having a kick at home, and through connections to a football club.

Two other variables proved to be significant or marginally significant in the final model. The variable labelled 'Family crisis' is based on whether or not the child had to stay overnight somewhere else due to a family crisis in the past six months. The marginal effects indicate that such an occurrence is associated with a 20 percentage point reduction in the likelihood of having participated in AFL when the child does play sport. As with the finding noted above pertaining to residential moves, this may reflect that as a team sport, participation in AFL is embedded in social networks. When these networks are ruptured, participation is affected more than might be the case in individual sports. Finally, having had a parent in prison in the last 12 months is

Among boys participating in sport, boys from sole-parent families are substantially less likely to play football.

**TABLE 3. Probability of participating in sport and AFL, Children aged 4 to 14 in AFL States, logistic regression results**

Control Variable	Model 1 Any sport: boys and girls		Model 2 Any sport boys only		Model 3 AFL: boys only		Model 4 AFL among sports participants: boys	
	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$
Male	0.10 ***	0.000	n.a.		n.a.		n.a.	
Age	0.24 ***	0.000	0.21 ***	0.000	0.15 ***	0.000	0.09	0.113
Age-squared	-0.01 ***	0.000	-0.01 ***	0.000	-0.01 ***	0.000	0.00	0.263
Crowding (requires more bedrooms)							0.09	0.132
No. adults in household	-0.02 *	0.060	-0.04 **	0.043				
SEIFA socio-economic decile	0.01 **	0.027	0.01	0.104				
People smoke at home	-0.07 **	0.013	-0.11 ***	0.007	-0.04	0.230		
No vehicle in household	-0.09 ***	0.005	-0.13 ***	0.003	-0.04	0.266	0.15 **	0.031
Family in financial stress	-0.05 *	0.084					0.08	0.204
Sole parent family	-0.07 **	0.017	-0.09 **	0.021			-0.12 **	0.018
Identifies with cultural group	0.11 ***	0.000	0.11 ***	0.005	0.06 *	0.076		
Parent in jail (last 12 months)					0.10	0.133	0.17 *	0.095
Experienced family crisis	0.06	0.287	0.11	0.143			-0.20 **	0.047
Experienced discrimination			0.14 *	0.072	0.08	0.154		
Child has sight problems					-0.10 **	0.036	-0.16 **	0.048
Child has hearing problems	-0.04	0.280	-0.06	0.269	-0.06	0.167		
Moved in past 5 years	-0.07 ***	0.010	-0.05	0.226				
Dependent mean (predicted)	0.24		0.50		0.25		0.59	
Observations	1911		980		980		492	
Likelihood ratio	406.1 ***	0.000	205.5 ***	0.000	137.4 ***	0.000	78.4 ***	0.000

**Notes:** Controls for State/Territory of residence and housing tenure included but not reported. \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively.

**TABLE 4. Probability of participating in sport & AFL: Adults in AFL States, logistic regression results**

Control Variable	Model 1 Any sport: males and females		Model 2 Any sport males only		Model 3 AFL: males only		Model 4 AFL among sports participants: males	
	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$
Male	0.10 ***	0.000	n.a.		n.a.		n.a.	
Age (years)	-0.03 ***	0.000	-0.03 ***	0.000	-0.01 ***	0.000	-0.01 ***	0.000
Age-squared	0.00 ***	0.000	0.00 ***	0.000				
Remote	0.06 ***	0.008	0.11 ***	0.004	0.08 ***	0.001	0.15 **	0.022
SEIFA socio-economic decile [1-10]	0.01 **	0.024	0.01 *	0.067				
Family status								
Married, no kids	0.01	0.736	0.01	0.789	0.00	0.828	-0.03	0.697
Married, with kids	0.04 **	0.038	0.04	0.168	0.04 **	0.021	0.13 **	0.015
Single, no kids	—		—		—		—	
Single, with kids	0.00	0.936	-0.05	0.410	-0.02	0.497	-0.05	0.736
Crowding (requires more bedrooms)					0.02	0.223	0.10	0.125
Main language at home Indigenous	-0.11 ***	0.000	-0.12 ***	0.008	-0.11 ***	0.001	-0.28	0.000
Recognises homelands							0.08	0.127
Identifies with clan/language group	0.10 ***	0.000	0.08 ***	0.003	0.04 ***	0.010		
Experienced discrimination	0.03 *	0.080	0.05 *	0.087	0.05 ***	0.003	0.12 **	0.015
Disability status								
No disability	—		—		—		—	
Mild/moderate limitation	-0.03 *	0.096	-0.03	0.290			-0.08	0.241
Profound/severe limitation	-0.06 **	0.029	-0.09 *	0.065			-0.06	0.596
Has long term health condition			-0.06 **	0.038	-0.05 ***	0.003	-0.12 **	0.018
Smoker status:								
Non-smoker	—		—		—		—	
Occasional smoker (weekly or less)	-0.04	0.225	-0.03	0.583	-0.04 *	0.091	-0.10	0.378
Daily smoker	-0.07 ***	0.000	-0.08 ***	0.002	-0.03	0.185	0.07	0.202
Drinker status								
Non-drinker	-0.05 ***	0.004						
Moderate drinker	—		—		—		—	
Risky drinker	-0.01	0.651						
Currently studying	0.05 **	0.022			0.02	0.246	0.11 *	0.054
Highest level of qualification:								
Year 9 or below	-0.08 ***	0.000	-0.12 ***	0.000	-0.02	0.155	0.12 *	0.057
Completed Year 10 or 11	—		—		—		—	
Completed Year 12	-0.01	0.824	-0.02	0.624	0.00	0.818	0.06	0.403
Cert III/IV or Diploma	0.00	0.910	-0.01	0.767	0.02	0.322	-0.12 **	0.030
University degree	0.09 **	0.019	0.24 ***	0.001	0.06	0.268	0.01	0.948
Labour force status								
Employed full-time	0.11 ***	0.000	0.13 ***	0.001	0.06 **	0.014		
Employed part-time	0.10 ***	0.000	0.13 ***	0.002	0.06 **	0.019		
Unemployed	0.07 ***	0.009	0.13 ***	0.003	0.06 **	0.023		
Not in the labour force	—		—		—		—	
Difficulty with transport								
Can easily get places	—		—		—		—	
Have difficulty getting places	-0.03	0.102						
Can't get places	-0.05 **	0.016					0.11 *	0.093
Has current driver's licence	0.05 ***	0.003	0.04	0.241			0.19 ***	0.010
Moved in past 5 years	-0.02	0.216					0.09 *	0.074
Ever charged by police	0.04 **	0.024	0.06 **	0.019	0.04 **	0.015	0.06	0.219
Dependent mean	0.27		0.41		0.25		0.61	
Observations	4413		1895		1895		698	
Likelihood ratio	968.3 ***	0.000	454.2 ***	0.000	476.7 ***	0.000	254.8 ***	0.000

**Notes:** Controls for State/Territory of residence and housing tenure included but not reported. \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category.

Children that encountered a family crisis and had to stay overnight somewhere else were substantially less likely to participate in AFL – by a factor of 20 percentage points.

In the AFL States, 34% of Indigenous adults participated in organised sport in the past 12 months.

1 in 4 Indigenous men in the AFL states had played AFL in the last 12 months.

estimated to substantially increase the chance of participation in AFL among sport-active boys. In part this result may be inter-related with the finding observed for sole-parent families, since if that parent has remained in jail, the child is also more likely to live in a sole-parent family. Alternatively, as with experiences of discrimination, AFL maybe an activity young Indigenous boys turn to or are encouraged to participate in as a means of dealing with adverse life events.

## DRIVERS OF ADULT PARTICIPATION IN FOOTY

We follow the same approach in investigating factors contributing to Indigenous adults' participation in AFL, initially estimating models for men and women's participation in any sports, then focusing in on male participation in organised sport generally and in AFL specifically (Table 4). There is a much wider range of potential control variables available for adults than was the case for children. In the AFL States overall, 34 per cent of the adult Indigenous population participated in organised sport in the past 12 months, with the figure higher for men (41%) than women (27%). One-quarter of Indigenous men had played AFL.

The modelling results confirm that men are more active in organised sport than women, and participation declines with age. Results for State dummies (not reported) show that Victoria and Tasmania stand out as States with high sport participation rates for Indigenous adults overall and for men, but that does not apply when we look specifically at men's participation in AFL. There are minimal differences across the AFL States in terms of the rate at which Indigenous adult males play AFL, after controlling for other factors.

As would be expected, people with disabilities or long-term health conditions are less likely to have participated in organised sport. Indigenous people who smoke daily are 7 percentage points less likely to participate in sport. This is substantial given the baseline participation rate of 34 per cent. For men, daily smokers are 8 percentage points less likely to have participated compared to a mean of round 41 per cent. No negative impacts of being a moderate or heavy drinker on sports participation are apparent.

Effects according to family status are modest, with people who are married with dependent children marginally more likely to participate in sport by around 4 percentage points, and this applies also to married men in the case of playing AFL. Participation in general sports increases with the socio-economic status of the individual's residential neighbourhood with. There is also a big difference between those with the highest and lowest levels of education. Compared to people who completed Year 10, those with a university level qualification are 9 percentage points more likely to participate, and those who completed only Year 9 or below, 8 percentage points less likely. That large gap is accentuated even further for the sub-sample of men. Irrespective of whether they are employed full-time, part-time or unemployed, labour force participants are also more likely to play sport compared to those outside the labour force.

As was observed with children, cultural identification appears to be complementary to participation in general sports. However, there is a concerning association whereby people who speak an Indigenous language at home are around 11 percentage points less likely to participate in organised sport. This appears to apply equally to men and women, and with respect to men's participation in AFL. Indigenous people who indicated that they had experienced discrimination in the past 12 months are around 3 percentage points more likely to have also played organised sport, and 5 percentage points when the sample is narrowed to men with respect to both general sports and playing AFL. More specifically, the question related to whether the person believed they had been treated unfairly in the past 12 months on the basis of their Aboriginality. This perceived unfair treatment may have arisen in the course of participation in sport.

Focusing on the differential effects for participation in AFL, we see that those in remote areas are more likely to play sport, and AFL is a particularly popular choice of sport among men in remote areas. Being married with children increases the likelihood of men playing AFL relative to other sports by 13 percentage points, compared to being single without children, suggesting AFL is something of a 'family game'. Neither of the 'gradients' associated with level of education nor neighbourhood socio-economic status are apparent for AFL. Among those who do play sports, it is men with the lowest level of education and with certificate level qualifications that are most drawn to AFL.

There are conflicting results relating to mobility. Among sports active men, those who report being unable to get to places due to transport difficulties are 11 percentage points more likely to have played AFL, which suggests AFL is a relatively accessible sport. In contrast, having a current driver's licence is associated with an increased likelihood of choosing AFL by an estimated 19 percentage points. This is a very large effect, even in relation to the high baseline of 60 per cent of sport-active Indigenous men having played AFL.

Men who experienced unfair treatment in the past year were substantially more likely (12 percentage points) to have played AFL than other organised sports, raising the spectre of that racial discrimination being football related, as explored further below. The negative association of speaking an Indigenous language at home on the likelihood of playing AFL is even more pronounced when the sample is restricted to sports participants. It is hard to know why this would be, but possibly reflects that language barriers to participation are higher for team sports than individual sports. Separate estimation of the model for the remote and non-remote sample suggests the language 'barrier' to participation applies equally in both geographical contexts.

Adults with a university qualification are 9 percentage points more likely to participate in sport than those who completed Year 10.



# 4THE

## THE BENEFITS OF PARTICIPATION IN AFL FOR INDIGENOUS AUSTRALIANS

BENEFITS OF PARTICIPATION IN AFL FOR INDIGENOUS AUSTRALIANS



We now turn attention to the association between participation in football and outcomes across a range of life domains. Again due to the different data items available for children and adults, outcomes for these two groups are estimated separately. For children aged 4 to 14, we look at health, school attendance and whether the child has been in trouble with the police. In light of the limited number of studies that differentiate outcomes by type of sport, for each outcome we start by drawing on the national data and differentiating between football (encompassing AFL, rugby and soccer) and other sports. This has the added advantage of providing a larger sample for estimation. We then look more specifically at outcomes for boys playing Australian Rules Football within the AFL States. It must be stressed that differences in outcomes for participants in sport (or football) and non-participants are *associations*, and cannot necessarily be taken to imply a causal effect of participation. This is a caveat that applies to much of the existing literature based on observational studies, as opposed to intervention studies, as reviewed above. In multivariate analyses that follows, we employ statistical techniques where possible to attempt to adjust the estimates for potential reverse causality or 'endogeneity' – for the possibility that people with better outcomes are more likely to play football, rather than playing football contributing to better outcomes.

# FOOTBALL AND CHILDREN'S OUTCOMES

## CHILDREN'S HEALTH OUTCOMES

To investigate the association between Indigenous children's participation in football and health, we utilise two indicators available in the NATSISS. The first is based on a question which asks the responding parent or carer to assess the child's general health, and the second on whether any aspect of the child's health has led to concerns about the child's learning. The assessment of the child's general health is collected through the question "In general, would you say [the child's] health is excellent, very good, good, fair or poor?". Nationally, 51 per cent of respondents indicated their child's health was excellent and a further 30 per cent indicated the child was in very good health.

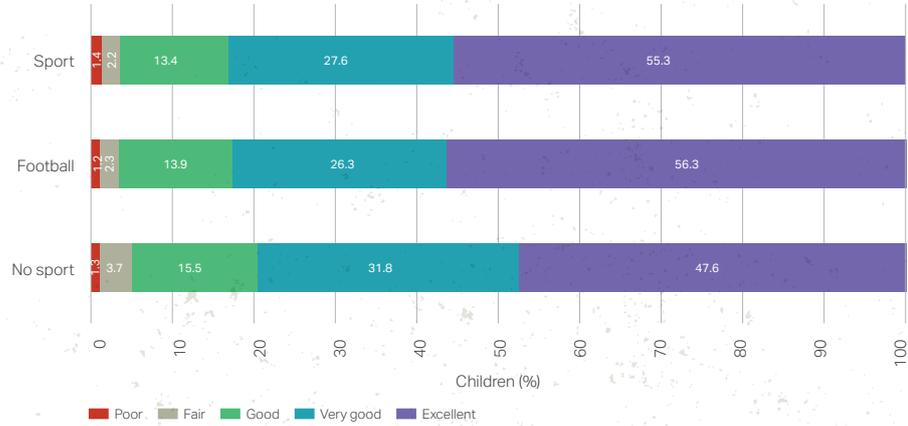
Figure 6 shows the breakdown of those responses for children who participated in any organised sport in the past 12 months, for the subset who participated in football, and for those who did not participate in any organised sport. Football in this instance is defined to include AFL, rugby league, rugby union, touch rugby and soccer. It can be seen that a higher proportion of children who participated in sport (55%) and who participated in football (56%) were assessed as being in excellent health compared to those who had not participated in any organised sport (48%), with commensurately fewer sporting children being assessed as in poor or fair health.

When the sample is restricted to boys in the AFL States, and football defined only as AFL, the corresponding proportions are presented in Figure 7. Here the better assessed health of boys who play AFL compared to those who did not participate in sport is clear, though in this case results are better still for those participating in sport more generally.

Nationally, 51% of Indigenous parents indicated their child's health was excellent, and a further 30% indicated their child was in very good health.

56% of children who participated in football were assessed as being in excellent health compared to 48% of those who had not participated in any organised sport.

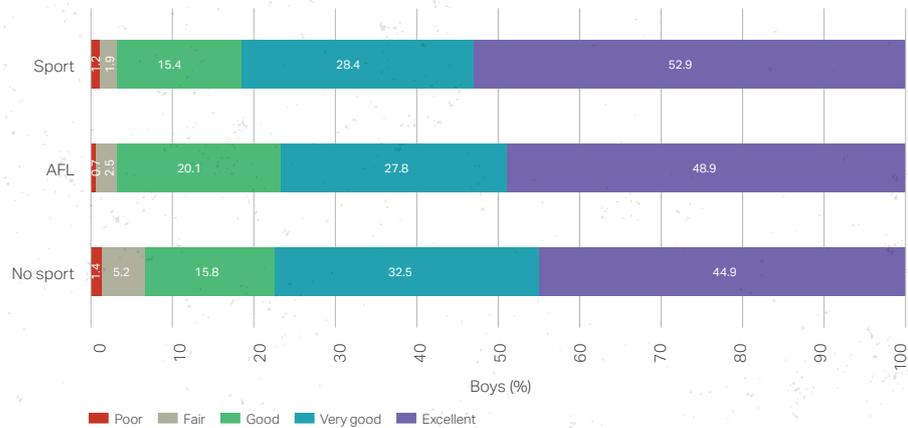
**FIGURE 6. Children's general health and sports participation, Australia**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

**Notes:** Includes boys and girls aged 4 to 14 years. Football includes AFL, rugby, (league, union and touch) and soccer.

**FIGURE 7. Boys' general health and participation in sport and AFL: AFL States**



**Source:** Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

When parents were asked whether aspects of the child's health had led to concerns about the child's learning, nationally just under one in five (19.8%) answered affirmatively. Health-related learning concerns were more commonly expressed for

boys (25.2%) than for girls (14.2%). There was a similar prevalence of concern among children who did (20.0%) and did not (19.7%) participate in sport, and marginally lower prevalence among children who played one of the football codes (19.1%). For boys living in the AFL States, parents expressed health concerns in 23.5 per cent of cases, with the prevalence higher among non-participants (26.7%) than for AFL players (22.9%) and sport participants more generally (20.4%).

To simultaneously control for age, gender and a range of other factors that might impact upon health, multivariate models of the likelihood of the carer indicating the child was in excellent health, and of the carer expressing health related concerns about the child's learning were estimated. The resulting models were arrived at after a range of available control variables were included and with iterative exclusion of those with low significance levels ( $p > 0.30$ ), and these are reported in full in Appendix Table 1. The key results of interest are summarised in Table 5. In the models for the assessment of the child's general health, the variables relating to the child having hearing problems or eye problems were not included, as the presence of such conditions may be a factor taken directly into account in the respondent's assessment of general health. Given that the vast bulk of children are assessed as being in very good or excellent health, the dependent variable modelled is whether or not the carer indicated the child was in excellent health, the highest possible rating. The variables relating to the presence of eye or ear problems were included in the model of reported health-related learning concerns, as these are likely to be causal factors (as opposed to definitional in the case of the general health assessment).

The results are again reported as marginal effects, and these show that controlling for background characteristics provide a markedly different story. In these models we differentiate between two mutually exclusive categories of participation: children who participated in organised sports but did not play football, and children who played football. Commencing with Model 1 of Table 5, the estimated marginal effect of 0.07 for having playing sport but not football implies that children who participate in organised sport other than football are 7 per cent more likely to be assessed as being in excellent health (compared to an overall mean of 51 per cent). Having played a code of football is associated with essentially an identical 'premium' in assessed general health (marginal effect = 0.07) – though note those footballers may have also played other sports. Both estimates are highly statistically significant. These findings for Aboriginal and Torres Strait Islander children are, unsurprisingly, consistent with the international literature on the health benefits associated with participation in children's sports, with the magnitude of the effects for football seemingly much the same as for other sports. Recall these estimates reflect an association with participation in sports, and cannot strictly be used by themselves to infer how much of the gap in health is caused by positive health effects of playing football and other sport.

In estimating Model 2, the sample is restricted to boys living in the AFL States, and the participation variables now distinguish between non-participants, boys who participated in AFL, and boys who participated in other sports (but not AFL). For this sub-group, participation in sports has an even larger association with the likelihood

Parents expressed health concerns for 22.9% of children playing AFL, compared to 26.7% for non-sporting participants.

of the respondent indicating the child is in excellent health: a 15 percentage point increase for non-AFL sports and a 13 percentage increase for AFL players ( $p < 0.01$  in both cases). Allowing for statistical variability in the estimates, the results essentially indicate that participation in AFL and other organised sports have a broadly similar, and very large, positive association with boys' health.

Using this relatively standard estimation approach, we are limited in what we can claim about whether participation in AFL actually has a causal effect on health. Technically, the problem lies in the fact that the outcome variable, health, may itself have a causal effect on participation in AFL in the first place. This means that the estimate for AFL participation will be biased, and most probably an overestimate of the causal relationship between AFL participation and health. Statistically this can be handled by jointly estimating the model for participation in AFL (Model 3 in Table 3) and the outcome model, and correcting estimates for any correlation between the error terms in each model.<sup>8</sup> This method relies on the presence of a factor which significantly influences participation in AFL, but not health. There are a number of variables in the participation model which do not appear in the model for health, allowing the joint-model to be identified. Importantly, in this instance, remoteness has a sizeable effect on the likelihood of a boy playing AFL, but is insignificant in the model for health. Using this approach the estimated marginal effect for a boy having played AFL is to increase to the probability of being assessed as in excellent health by 22.8 percent – even larger than the original estimate and highly significant ( $p < 0.01$ ). It was not anticipated that statistically controlling for participation in AFL would result in a larger estimate of the health benefits of playing AFL. However, it is in fact consistent with observations above that participation in AFL is associated with a number of indicators of disadvantage. Full validation of this result will require testing and refinement beyond the scope of the current report, but the result for now provides very strong evidence that there is a causal and positive effect of playing AFL on child health. We are confident that this is the first study in which such techniques have been used to establish causal effects of playing AFL on health using observational data; and most certainly the first time ever for the Indigenous population.

In terms of other influences on child health, there is evidence that reported health is higher in families who own their own home, increases with the socio-economic status of the neighbourhood and is lower where the home is crowded and the family experienced financial stress. Experiences of bullying and family crises in which the child needed to stay somewhere else overnight also detract from health. In the case of boys in the AFL States, the effects of participating in AFL and in other sports are stronger than any of these other effects (the full set of estimates can be found in Appendix Table 1).

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<sup>8</sup> With the both the outcome variable (excellent health = 0 or 1) and participation variable (AFL = 0 or 1) being binary, the appropriate model in this case is the bivariate probit model – see Greene 2008. The joint model was estimated using STATA's bipoibit command.

**TABLE 5. Health outcomes children aged 4-14, key logistic regression results**

Control Variable	Child's health assessed as excellent			
	Model 1 – All children (boys and girls, Australia)		Model 2 – Boys only, AFL States	
	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$
Sport Participation status				
Did not play sport	—		—	
Sport but not football (any code)	0.07 ***	0.004	n.a.	
Played football (any code)	0.07	0.002	n.a.	
Sport but not AFL	n.a.		0.15 ***	0.001
Played AFL	n.a.		0.13 ***	0.001

Control Variable	Concerns about learning due to health			
	Model 3 – All children (boys and girls, Australia)		Model 4 – Boys only, AFL States	
	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$
Sport Participation status				
Did not play sport	—		—	
Sport but not football (any code)	-0.01	0.373	n.a.	
Played football (any code)	-0.06 ***	0.000	n.a.	
Sport but not AFL	n.a.		-0.09 ***	0.001
Played AFL	n.a.		-0.10 ***	0.001

**Notes:** See Appendix Table 1 for full results. \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category.

Moving to Model 3, in Table 5, compared to boys and girls who do not participate in sport children who played a code of football were 6 percentage points less likely to be assessed as having learning difficulties due to health issues. This is a very large effect given that only around 15 per cent of children are assessed as having health-related learning difficulties: equating to a 40 per cent reduction. In this case no significant association is observed for children playing sports other than football. When the sample is restricted to boys in the AFL States, there is an even larger effect associated with playing AFL, representing a 10 percentage point lower probability of such difficulties being reported. Within this sample, participation in other sports is estimated to have a similar beneficial association (9 percentage points). Hence, parents and carers of boys who participate in organised sport are less than half as likely to report concerns about their child's learning as a result of health. Again a bivariate probit model was estimated to test whether this result is robust to controlling for the possibility of endogeneity in which boys with health issues are less likely to participate in AFL. In this case, the results do not support a causal relationship, with the estimate for participation being insignificant in the joint-estimation.

Children who played football were 6 percentage points less likely to be assessed as having learning difficulties due to health issues.

## TRUANCY AND TROUBLE WITH THE LAW

The NATSISS child questionnaire asked whether, in the past 12 months, there had been problems with the child missing school without the parents' or main carer's permission. As this is non-applicable to children aged 4, we restrict the sample to children aged 5 to 14 and who were enrolled at school. Nationally, just over 6 per cent of parents reported problems with their child missing school, however the proportions are notably higher for boys (7.5 per cent versus 4.8 per cent for girls), for children in remote areas (14.3 per cent versus 4.2 per cent in non-remote areas), and vary substantially according to the year of schooling. There are only marginal differences in truancy rates by sport participation status, but it is clear that multivariate analysis controlling for these and other factors is needed.

The results (not reported<sup>9</sup>) show Indigenous children who play footy are less likely to have skipped school, but estimates are not statistically significant at accepted levels. For all Indigenous Australian children, playing some code of football is associated with around a 1 percentage point lower incidence of skipping school, but we cannot confidently reject the hypothesis that the true relationship is zero ( $p=0.19$ ). For boys within the AFL States, football players are estimated to be 2 percentage points less likely to have skipped school, but again the effect is not statistically significant (also  $p=0.19$ ). However, evidence that boys who play football were less likely to miss school was identified for remote areas. For boys living in remote areas of the AFL States, playing AFL was associated with a 5 percentage point lower likelihood of truancy, with this estimate significant at the 10 per cent level ( $p=0.07$ ), and equating to more than a 20 per cent lower incidence.

Boys living in remote areas playing AFL had a 20% lower truancy incidence.

The incidence of truancy increases with age, with a rapid escalation when children enter high school. Other factors associated with higher reported truancy include living in public housing, the family having experienced a crisis that meant the child had to stay somewhere else overnight, and the child being bullied at school.

As a final indicator of child outcomes, we looked at whether or not the parent/carer reported that the child had been in trouble with the police in the past 12 months. With rare exceptions, only children aged 9 and upwards were reported to have such incidences. For Indigenous children aged 9 to 14, 5.1 per cent were reported to have been in trouble with the police, with the proportion higher in remote areas (7.0%) than in non-remote areas (4.7%). Interestingly, the situation is reversed for boys in the AFL States. The overall proportion who have had a run in with the law as reported by their parents is higher at 9.4 per cent, but it is Indigenous boys in non-remote areas (10.2%) who are more likely to had a run in with the law rather than those in remote communities (7.7%).

<sup>9</sup> Full results for models relating to skipping school and being in trouble with the police are available upon request from the authors.

Following the same approach as above, we estimate multivariate models to control for other factors when estimating the association between sport participation and encounters with the police. Nationally, for both boys and girls, no significant association is observed between infringements with the constabulary and either participation in football or other sports. For boys within the AFL States, however, those who play AFL are found to be 6 percentage points more likely to have been in trouble with the police. Estimation on the separate samples by remoteness shows that this result derives primarily from the non-remote areas of those States. That is, boys aged 11 to 14 in the major cities and regional towns are more likely to have encountered trouble with the police if they play AFL (marginal effect = 0.08,  $p=0.02$ ). However, when models for participation in AFL and the outcome (trouble with police) are estimated jointly to control for endogeneity, the estimate for having played AFL for all boys in the AFL States is insignificant, and the estimate for boys in non-remote areas becomes negative and significant. This suggests, either, that the higher rate of contact with the police for boys who play AFL in non-remote areas is due to pre-existing characteristics or that having been in trouble with the police 'causes' boys to participate in football. The latter such effect is not inconceivable, given evidence of the use of football in programs for young offenders.

Brushes with the law are also more likely where the child faces other disadvantages in terms of family background, including coming from a sole parent family, the family having experienced crises in the past year, financial stress, living in neighbourhoods of lower socio-economic status and having a parent who has recently been incarcerated.

# FOOTBALL AND ADULT OUTCOMES

The NATSISS data show that around one-third of all Aboriginal and Torres Strait Islander adults participated in sport in the past 12 months.

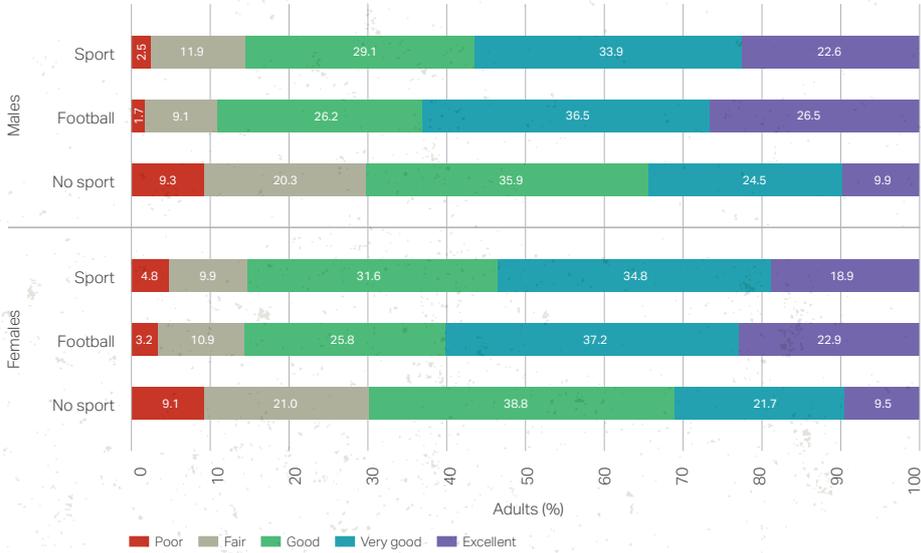
Among Indigenous men, 27% participated in some code of football.

Among Indigenous men, 27 per cent participated in some code of football. In the AFL States 25 per cent of men participated in AFL, but as noted participation is twice as high for men in remote areas of those States (37 per cent) compared to non-remote areas (19 per cent). This section looks at the associations between participation in sport by Indigenous adults and a range of life outcomes, with a focus on participation in AFL. Outcomes investigated include physical health, mental health, subjective wellbeing and community connectedness. As there are no people aged 65 or older in the data who reported playing AFL, the analysis of outcomes is based on the sample of persons aged 15 to 64.

## PHYSICAL HEALTH

In NATSISS, individuals were asked to rate their own health on a 5-point scale ranging from 'poor' to 'excellent'. This is a well-used and standard survey item often termed 'self-assessed health' and considered to relate primarily to the respondent's physical health. Figure 8 shows the pattern of responses for Indigenous males and females across all of Australia, conditional upon whether or not they had participated in sport. For both men and women, it can be seen that those who participated in sport in the past 12 months were markedly more likely than non-participants to report being in excellent or very good health. The subset of participants who had played a code of football (rugby, AFL or soccer) are even more positive about their health. This applies equally in the case of the 8 per cent of adult women who participated in football (most prominently rugby, followed by soccer and AFL).

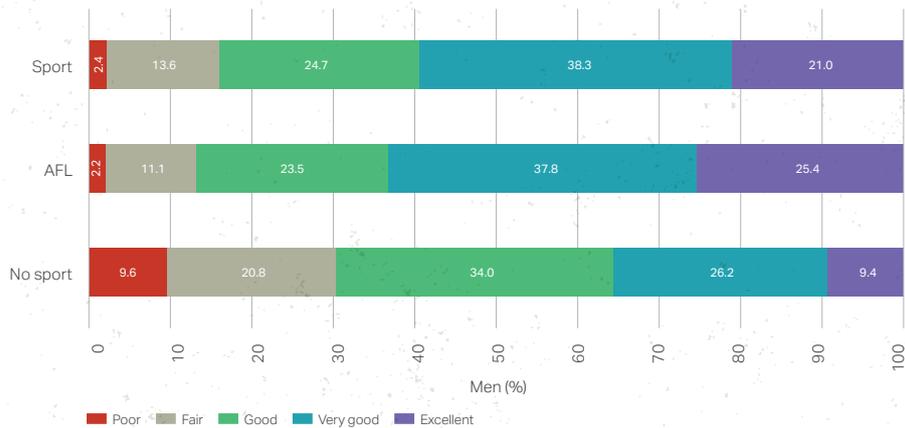
**FIGURE 8. Adult self-assessed health and sport participation, Australia**



Source: Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

For men in the AFL States, Figure 9 reveals similarly more positive self-assessed health outcomes among AFL players, even relative to male participants in other sports.

**FIGURE 9. Men's self-assessed health and participation in sport: AFL States**



Source: Bankwest Curtin Economics Centre | Authors' calculations from the ABS 2014-15 National Aboriginal and Torres Strait Islander Social Survey.

To compare the health outcomes of football participants and non-participants while controlling for age, remoteness and a range of other factors, multivariate logit models were estimated in which the dependent variable is the probability of the individual assessing their own health as excellent. As with the child sample, we first estimate models for all Indigenous Australians, distinguishing between those who did not participate in organised sport, those who played any code of football, and those who participated in organised sport but had not played football. The reported coefficients are the marginal effects, giving the percentage point change in the likelihood of the respondent reporting excellent health arising from a one-unit change in the independent variable. Estimates for the variables relating to participation in AFL, football and sport are summarised in Table 6, and the full models are reported in Appendix Table 2.

There is a strong positive association between self-assessed health and participating in organised sport. While 15.6 per cent of Indigenous people aged 15 to 64 rated their health as excellent, the effect of having participated in football, as opposed to doing no organised sport, is an increase of 14 percentage points – almost doubling the proportion reporting excellent health (Model 1, Table 6).

For other sports the estimated marginal effect is an increase of 10 percentage points. Much the same applies when we look specifically at men in the AFL states (Model 2, Table 6), where participation in AFL is associated with a 14 percentage point increase in the likelihood of reporting excellent health ( $p=0.01$ ), higher than the association for participation in other sports (+9 percentage points,  $p=0.05$ ). In joint estimate of the models for health and participation the estimate for having participated in AFL becomes smaller and insignificant, suggesting this is an upper bound estimate of any causal effect.<sup>10</sup>

Among the other results (see Appendix Table 2), and consistent with existing literature, married persons are observed to report better health status, while heavy smokers and drinkers are less likely to do so. People with disabilities or long term health conditions, as expected, are less likely to report being in excellent health, while Indigenous people experiencing financial stress and living in rented, public or community housing (as opposed to home ownership) also report inferior health status. The estimated marginal effects put the scale of the gap in health status of footballers in perspective: only the presence of a disability or long term health condition have larger (but opposite) impacts on the likelihood of reporting excellent health. Note that variables capturing labour force status were not included, given the very direct causal link between physical health and labour market engagement.

<sup>10</sup> The results are sensitive to the 'exclusion' criteria, particularly whether or not remoteness is included in the outcome model.

Those playing AFL were twice as likely as those playing no sport to rate their health as excellent.

**TABLE 6. Self-assessed health and emotional wellbeing, adults aged 15 to 64, key multivariate regression estimates**

Self-assessed health excellent – logit models				
	Model 1 Australia, males and females		Model 2 AFL States, males only	
	Marginal effect	Pr > $\chi^2$	Marginal effect	Pr > $\chi^2$
Sport Participation status				
Did not play sport	—		—	
Sport but not football (any code)	0.10 ***	0.000	n.a.	
Played football (any code)	0.14 ***	0.000	n.a.	
Sport but not AFL	n.a.		0.09 **	0.017
Played AFL	n.a.		0.14 ***	0.000

Emotional wellbeing – linear regression				
	Model 3 – Australia, males and females		Model 4 – AFL States, males only	
	Coefficient	Pr > $\chi^2$	Coefficient	Pr > $\chi^2$
Sport Participation status				
Did not play sport	—		—	
Sport but not football (any code)	0.25 **	0.022	n.a.	
Played football (any code)	0.54 ***	0.000	n.a.	
Sport but not AFL	n.a.		0.22	0.314
Played AFL	n.a.		0.73***	0.000

**Notes:** See Appendix Table 2 for full results. \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category.

## MENTAL HEALTH

The NATSISS included a subset of questions from a well-established instrument, the ‘SF-36’.<sup>11</sup> The full SF-36 instrument is designed to provide a multi-dimensional measure of overall health covering physical and mental health. Four items were included in the NATSISS that contribute to the SF-36 mental health score. In these, respondents were asked about how often in the past four weeks they:

- Had felt calm and peaceful?
- Had been a happy person?
- Felt full of life?
- Had a lot of energy?

Responses were recorded on a five-point scale ranging from none of the time, a

<sup>11</sup> In full, the Medical Outcomes Study 36-item Short Form Survey.

little of the time, some of the time, most of the time and all of the time. We simply aggregate these to give a scale that can potentially range from 4, if a person indicated 'none of the time' to all four items, through to 20 if they indicated 'all of the time' on all four items.

The results obtained when this proxy for mental health is used as the dependent variable in a linear regression are reported in Models 3 and 4 of Table 6. The mental health variable has a mean of 14.3 for the full adult sample of men and women, 14.6 for the sample of adult men from the AFL States, and standard deviations of 3.58 and 2.56, respectively. Again many of the estimated associations may be bi-directional, but in this case we do include the variables capturing labour force status. There is considerable evidence that labour market factors, including stress, hours of work and time in unemployment have a causal impact upon mental health.

In these linear models the value of the coefficients relate to the movement up or down the scale that is associated with a 1 unit change in the explanatory variable. A coefficient of 0.50 is estimated for the variable 'male' in model 3 (see Appendix Table 2). This means that the estimated effect of an increase in the value of 'male' from 0 to 1 (that is, being male as opposed to female) is associated with a movement up the scale of 0.50. That is, males on average report higher mental health. A shift of one-half of a point may seem small, but in reality is not a trivial difference in mental wellbeing, given the standard deviation of 3.58. It would equate to a shift from the 50th percentile in the population to the 55th percentile.

The results reported in Appendix Table 2 show Indigenous people living in remote Australia and those living on their homelands do display higher levels of mental health on this measure. The better mental health associated with living in remote areas is more pronounced for males from the AFL States, and is one of the largest effects observed. As is typical of other studies, being married is conducive to better mental health. Financial stress, encountering perceived discrimination, having a disability or long term health condition, being more educated, non-participation in the labour market and barriers to mobility all act to detract from mental health. Negative effects are observed for people whose main language spoken at home is an Indigenous language, though the estimate is not statistically significant in the model for men from the AFL States ( $\beta=-0.37$ ,  $p=0.17$ ).

Turning to the key results (Table 6), mental health is estimated to be higher among Indigenous men and women who participate in organised sport after controlling for an extensive range of other factors. The estimated effect for having played a code of football ( $\beta=0.54$   $p=0.00$ ) is highly significant and twice the magnitude of the estimate for participation in other sports. Among men in the AFL States, having played AFL has an even stronger association with mental health ( $\beta=0.73$ ,  $p=0.00$ ), while the effect for participation in other sports is insignificant. The coefficient for having played AFL equates to a shift from the 50th percentile of men in those States, to the 61st percentile. This provides a strong indication that participation in football, and AFL in particular, promotes better mental health. Of course, we must again caution that associations do not necessarily imply causation, but the results have an intuitively

Indigenous people living in remote Australia and those living on their homelands display higher levels of mental health.

appealing explanation consistent with existing evidence.<sup>12</sup> As summarised in the Background section, exercise has been found to promote positive feelings of control, self-esteem, and self-efficacy, with evidence of stronger psycho-social benefits for team sports relative to individual sports given the greater degree of social interaction generated.

## LIFE SATISFACTION

A burgeoning “happiness” literature has developed in which there is wide acceptance that meaningful inferences about the factors that contribute to the quality of people’s lives can be made based on simple subjective wellbeing measures (see, for example, Dolan, Peasegood & White 2008, Frey 2008). One typical such construct was included in the NATSISS, in which people were asked “Overall, how satisfied are you with life as a whole these days”, to be assessed on an 11-point scale ranging from 0 (not at all satisfied) through to 10 (completely satisfied). Responses on such scales are typically tightly clustered between 7 and 8, with relatively few people venturing to the ‘negative’ half of the distribution below 5. That same holds for this population with the mean for the full adult sample aged 15 to 64 equalling 7.25, with 53 per cent of responses lying within the interval from 7 to 10. The respective figures for the sample of men in the AFL States are a mean of 7.27 and 70 per cent of the distribution lying from 7 to 10, inclusive.

Such scales are ordinal rather cardinal. That is to say, movements up the scale from, say, 6 to 7, and from 7 to 8 imply higher levels of life satisfaction in each case. However, we can infer nothing about the ‘distances’ – a move from 5 to 6 does not imply an equivalent increase in life satisfaction as a move from 6 to 7. The technically correct approach for modelling such ordered, discrete variables is to use the ordered logit or probit specifications. However, results have been shown to be very similar when simple linear regression is used (see Kristoffersen 2010, Ferrer-i-Carbonell and Frijters 2004), for which interpretation of the coefficients is straight-forward. Hence we use ordinary least squares regression to model factors impacting upon life satisfaction (Table 7).

Indigenous adults who played any code of football in the previous 12 months reported higher life satisfaction than people who did not participate in sport, associated with a move up the scale of 0.18 ( $p=0.02$ ). A similar association was observed for participating in sports other than football ( $\beta=0.17$ ,  $p=0.01$ ). When the model is estimated for Indigenous men in the AFL States, playing AFL is estimated to have a positive impact on life satisfaction of a similar magnitude ( $\beta=0.16$ ) but in this case the estimate is not statistically significant, which in part may be due to

<sup>12</sup> The NATSISS unit record data was accessed through the ABS Remote Access Data Laboratory. The appropriate STATA command (ETREGRESS) to test the robustness of the estimates for the linear mental health and life satisfaction models was not accessible through the versions of the software available on that platform.

Indigenous adults who played football in the previous 12 months reported higher life satisfaction than people who did not participate in sport.

the much smaller sample size.<sup>13</sup> The estimated effect of playing sports other than AFL is much smaller and insignificant.

Interestingly, Indigenous Australians living in remote communities report being substantially more satisfied with their lives than those living in non-remote areas, despite the picture of dysfunction and despair that is so widely painted of remote communities. There is an additional positive impact on subjective wellbeing associated with living on homelands, but again negative impacts are observed for people who speak an Indigenous language as their main language at home.

To briefly comment on the other results, married people report higher life satisfaction than non-married, as is almost universally observed in such 'happiness' studies. Life satisfaction is lower for those who have recently experienced financial stress, who have a disability or long term health condition, those who face mobility barriers and experienced contact with the justice system. Employment promotes positive wellbeing relative to either unemployment or non-participation in the labour market.

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<sup>13</sup> When an ordered probit specification is used, the estimate for having played AFL is virtually identical to that for having played football in the national sample, but just fails to attain significant at the 10 per cent level ( $p=0.3$ ).

TABLE 7. Life satisfaction, adults aged 15 to 64, multivariate linear regression results

Control Variable	Model 1 Australia, males and females		Model 2 AFL States, males only	
	Coefficient	Pr >  t	Coefficient	Pr >  t
Sport Participation status				
Did not play sport	—		—	
Sport but not football (any code)	0.17 **	0.013	n.a.	
Played football (any code)	0.18 **	0.024	n.a.	
Sport but not AFL	n.a.		0.07	0.605
Played AFL	n.a.		0.16	0.207
Male	-0.08	0.138	n.a.	
Age (years)	0.00	0.215	-0.05 *	0.068
Age-squared			0.00 *	0.058
State of residence				
New South Wales	0.04	0.680	n.a.	
Victoria	0.19 *	0.094	0.42 **	0.018
Queensland	-0.02	0.815	n.a.	
South Australia	0.05	0.617	0.23	0.177
Western Australia	0.03	0.770	0.06	0.688
Tasmania	0.04	0.731	0.40 **	0.030
Northern Territory	—		—	
Australian Capital Territory	0.30 **	0.042	n.a.	
Remote	0.30 ***	0.000	0.44 ***	0.003
Family status				
Married, no kids	0.37 ***	0.000	0.51 ***	0.000
Married, with kids	0.47 ***	0.000	0.57 ***	0.000
Single, no kids	—		—	0.000
Single, with kids	-0.08	0.317	-0.48 **	0.046
Housing tenure:				
Home owner	0.12	0.131	-0.02	0.853
Rents – privately	-0.05	0.581	—	
Rents – State housing authority	—		—	
Rents – Indigenous Housing organisation	0.17 *	0.057	—	
Other tenure	0.06	0.490	0.27 *	0.053
Crowding (requires more bedrooms)			-0.17	0.228
Family in financial stress	-0.53 ***	0.000	-0.57 ***	0.000
Main language at home Indigenous	-0.29 ***	0.001	-0.54 ***	0.001
Identifies with clan/language group			-0.20 *	0.080
Lives on homelands	0.18 ***	0.003	0.31 ***	0.007
Experienced discrimination	-0.23 ***	0.000	-0.14	0.177
Disability status				
No disability	—		—	
Mild/moderate limitation	-0.66 ***	0.000	-0.40 ***	0.002
Profound/severe limitation	-1.07 ***	0.000	-0.89 ***	0.000
Has long term health condition	-0.31 ***	0.000	-0.41 ***	0.000
Smoker status:				
Non-smoker	—		—	
Occasional smoker (weekly or less)	-0.03	0.800	0.15	0.519
Daily smoker	-0.31 ***	0.000	-0.23 **	0.040
Drinker status				
Non-drinker	0.12 **	0.039	0.18	0.118
Moderate drinker	—		—	
Risky drinker	-0.13	0.120	-0.03	0.829
Currently studying	0.18 **	0.013		
Highest level of qualification:				
Year 9 or below	0.03	0.631	0.03	0.838
Completed Year 10 or 11	—		—	
Completed Year 12	-0.15 *	0.081	-0.19	0.270
Cert III/IV or Diploma	-0.20 ***	0.004	-0.08	0.543
University degree	-0.12	0.315	-0.36	0.184
Labour force status				
Employed full-time	0.47 ***	0.000	0.53 ***	0.000
Employed part-time	0.34 ***	0.000	0.38 ***	0.011
Unemployed	-0.28 ***	0.001	-0.01	0.968
Not in the labour force	—		—	
Difficulty with transport				
Can easily get places	—		—	
Have difficulty getting places	-0.24 ***	0.002	-0.25 *	0.080
Can't get places	-0.59 ***	0.000	-0.63 ***	0.000
Has current driver's licence	-0.33 ***	0.000	-0.31 ***	0.017
Moved in past 5 years			-0.14	0.172
Arrested by police in past 5 years	-0.18 ***	0.016	-0.25 **	0.042
Intercept term	7.90 ***	0.000	8.72 ***	0.000
dep mean	7.25		7.27	
Observations	6424		1745	
Adjusted R-squared	0.16		0.16	
F-test	29.97 ***	0.000	9.3 ***	0.000

Notes: \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category.

## COMMUNITY CONNECTEDNESS AND SOCIAL SUPPORT

Beyond the boundary lines of the football field, the role that sporting clubs and associations play in bringing communities together is acknowledged as one of the most important social benefits associated with sport. This is particularly so in Australian rural communities, where sport and sport clubs foster social interaction, a sense of place and community that extends not only to players, but to the many associated support, administrative and social roles. Sport can also provide a psychological buffer for such communities in times of drought or economic downturn (Spaaij 2009). In the remote central desert, McCoy (2008) detailed the special role of football and football carnivals in bringing communities together, and in maintaining networks and cultural roles for men. With the individual NATSISS level data, it is not possible to directly assess community level effects, but we can say something about networks and social contact of individuals, connections which are of course embedded within communities.

The variables relating to participation in sport are derived from modules in the NATSISS relating to social contact and social capital. In these, adult respondents were asked a number of questions relating to other forms of social contact and support. Specifically, we investigated indicators relating to the following:

- Whether people felt they had any family or friends outside the household that they could confide in;
- The frequency of contact with family and friends outside the household;
- Whether they were able to get general support from outside the household, and whether they could do so in time of a crisis.

The vast majority of people report having access to support: 89 per cent indicate they have access to general support outside their household, and 92 per cent that they would be able to access support in time of a crisis; 83 per cent felt they had someone they could confide in. On these indicators, the figures are very similar for men and women. One difference along gender lines relates to frequency of contact with family and friends outside the household, with 72 per cent of women indicating they had daily contact, compared to 61 per cent of men. However, a similar proportion reported having at least weekly contact, at 96 per cent of women and 93 per cent of men.

To assess the role of participation in sport and football to social connectedness, we estimated very simple multivariate models with controls for gender, age, remoteness, marital status and labour force status. We considered it important to control for labour force status as the workplace can be expected to be an important source of social interaction outside of the household. With the inclusion of variables capturing

sport participation status, the estimates for those variables can essentially be considered as a comparison of 'standardised' measures of social connectedness between participants and non-participants. Table 8 reports just the marginal effects relating to participation in sport and football. Interpretation can be illustrated by taking the first coefficient in the table. The marginal effect of 0.03 in the 'played football' column indicates that, relative to people who had not participated in any sport, adults who played football during the previous 12 months were 3 percentage points more likely to indicate that they had friends or family outside the household that they could confide in. The estimate is moderately significant, with  $p=0.019$  indicating there is less than a 2 percent probability that such a difference would occur purely through sampling variability.

**TABLE 8. Effects of participation in sport on social connectedness (marginal effects), adults aged 15 to 64**

Social connectedness indicator	Australia, males and females (n=6,424)		AFL States, males only (n=1,745)	
	Played football	Played other sports	Played AFL	Played other sports
Has family/friends to confide in	0.03** (0.019)	0.07*** (0.000)	0.03 (0.284)	0.08*** (0.001)
Has general support	0.04*** (0.000)	0.03*** (0.001)	0.06*** (0.000)	0.05** (0.003)
Has support in time of crisis	0.02** (0.015)	0.02*** (0.009)	0.04*** (0.008)	0.03* (0.086)
Daily contact	0.05*** (0.004)	0.01 (0.616)	0.09*** (0.000)	0.00 (0.980)
At least weekly contact	0.02*** (0.001)	0.01 (0.196)	0.02 (0.159)	0.02 (0.122)

The results provide some gauge of the way in which sport contributes to wider social connectedness and support. Across Australia, Indigenous adults who had played some code of football report more frequent social contact, are more likely feel they have support outside their immediate household and to have people to confide in.

Similar positive associations are observed for participation in other sports, though generally the effects are more robust in relation to football. The exception is with regard to having somebody to confide in, which is highest for those playing other sports (7 percentage points higher, compared to 3 percentage points higher for footballers).

Looking specifically at men in the AFL States, we similarly observe that AFL players report more contact and support than men who do not play sport, and the effects are generally similar but marginally stronger than for participation in non-AFL sports. The largest difference is with respect to the likelihood of having daily contact with friends and family: 9 percentage points higher for men who played AFL with no effect observed for participation in other sports. Again it is with respect to having

Indigenous adults who play football report more frequent social contact and are more likely feel they have support outside their immediate household.

somebody outside the household to confide in that participation in other sports has the stronger effect, with the estimate for having played AFL insignificant on this indicator.

On face value these effects seem modest – with differences between sports participants and non-participants generally lying between 2 to 6 percentage points, and none exceeding 10 percentage points. However, these can be considered as under-estimates of the wider community effects. As reported above, 11 per cent of the Indigenous population participated in sports in some capacity other than as a player, such as coaches, officials and administrators, while almost half attended sporting events as a spectator. Hence a significant proportion of people in the comparison category of ‘non-participants’ will also have experienced some social interaction linked to sport. Additionally, each indicator of social connectedness will be largely reciprocal – interactions by a sports participant occur with other community members, who in some case will be non-sports-participants. The full extent of Indigenous Australians’ social capital generated by sport will clearly be greater than the figures in Table 8 suggest.

And from a different perspective, the effects could be considered much more substantial. If we reverse the measures they can be thought of as indicators of social isolation. Where 89 per cent of people report having general social support to call upon, it follows that 11 per cent of adults therefore have no support. A 4 percentage point difference associated with having participated in football can be thought of as a very substantial reduction in social isolation. Similarly, in the context of the 39 per cent of Indigenous men who do not have daily contact with friends or family outside the household, a 9 percentage point difference associated with playing AFL is far from trivial.

The results certainly fit with the widespread beliefs based on anecdotal and qualitative evidence that sport, and particularly AFL in the case of Indigenous Australians, is an important component of the social and cultural fabric of communities – described by Spaaij (2009) as ‘the glue that holds the community together’ in reference to rural communities. To fully assess the contribution of AFL and other sports to social connectivity and community cohesiveness would require community level data that distinguishes between communities with and without sporting clubs and organisations, and/or with measures of the intensity of participation within those communities.

## **RACISM AND DISCRIMINATION**

A potential negative effect of participation in organised sport for Indigenous people and for community cohesiveness is that sport provides a setting for racism to bubble to the surface, especially as emotions on and off the field can run high. While Australians have celebrated the success of Indigenous sportsmen and women at elite levels, those achievements have been made against a history of exclusion and under-representation of Indigenous people in organised sports (Tatz and Taz 1996).

Indigenous players are now over-represented on the team lists of the 18 clubs in the AFL national competition, relative to their share of the population, but the racism that many of the pioneering Indigenous champions endured in AFL has been extensively documented (Burdsey and Gorman 2015, Gorman 2005) and in other sports (Tatz and Tatz 1996). In modelling the probability of Indigenous adults participating in organised sport, we observed that there was a positive association between having experienced discrimination and participation, and this was more pronounced for men who had played AFL.

Indigenous players are now over-represented on the team lists of the 18 clubs in the AFL national competition, relative to their share of the population.

We briefly investigate this association in more detail. The exact question asked in the NATSISS was whether or not, in the past 12 months, the person had any of a range of experiences in which they had been treated unfairly because they were Aboriginal or a Torres Strait Islander. This included being called names, being subject to racist comments or jokes, being ignored by service providers or refused entry, unfairly arrested or charged, and any other unfair treatment on the basis of their Aboriginality. Overall, among Indigenous men and women aged 15 to 64, 35 per cent reported having been treated unfairly, with the figure slightly higher for women (37%) than men (33%). At 40 per cent, a markedly higher proportion of people who had participated in sport reported experiencing racism when compared to those who had not.

Looking specifically at the AFL States, 33 per cent of males who had not participated in sport reported having experienced discrimination or racism. The figure is virtually the same for sports participants at 34 per cent. However, the incidence of reported discrimination is higher among men who played AFL at 37 per cent, compared to 28 per cent for men playing sports other than AFL.

People who reported having been treated unfairly were further asked the situation in which this most recently occurred, with one of the options being 'while doing any sporting, recreational or leisure activities'. Of AFL players reporting unfair treatment on the basis of their race, 12 per cent indicated the most recent incident occurred while doing sport, recreation or leisure activities, compared to 9 per cent of men participating in other sports. The most common setting for unfair treatment was at work or in applying for work, at around 20 per cent of cases.

37% of male Indigenous AFL players reported experiencing discrimination or racism.

Remembering that fieldwork for the NATSISS was undertaken from September 2014 to June 2015, the bulk of interviews are likely to have been completed outside of football season. This would mitigate against reporting of unfair treatment associated with playing AFL as the setting of 'the most recent' incident, and perhaps disguise the full extent of racism experienced as a footballer. Hence the NATSISS figures suggest Indigenous men who participate in AFL are more likely to experience racism and at least some of this is due to racism experienced in the course of participating in sports. It is difficult to ascertain with any confidence what proportion can be attributed to experiences as an AFL player. Of course, no level of discrimination on the basis of race is acceptable.

By way of comparison to the other major football code, Indigenous men who played rugby were also more likely to report having experienced unfair treatment, at 39 per cent nationally. Of those a similar proportion reported their most incident to be during sporting, recreational or leisure activities, at 13 per cent.

5 THE

COMMUNITY FOOTBALL  
IN THE WEST

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The 'Victorian game' was first played in Western Australia in 1868, when soldiers from a battalion temporarily based in Perth played against a team of locals (Blainey 1990: 80). It would be played intermittently and compete for prominence with rugby until the 1880s. After a series of matches featuring both codes was played in 1883, *The West Australian* newspaper gave a ringing endorsement of the new game: "... the Victorian game ... for life, dash and general interest to spectators, is probably unequalled..." (Barker 2004: 6). The Western Australian Football Association was established in 1885 and the game flourished from there, spreading to the Goldfields and a WA team first toured Victoria in 1904. Little information appears to have been collated on the spread of grass-roots football, but Barker (2004) reports 'Country Week' tournaments thriving by the mid-1920s.

By the 1980s Western Australia had emerged as a footballing power to rival Victoria. The WA State team won the national championships for the fourth time in 1983, a year in which Victorian football experts estimated that 24 of the top 40 players in the VFL emanated from WA. WA won the national under-17 competition – the Teal Cup – for the first time in 1985 (Barker 2004: 188-194). With financial pressures facing both the VFL and WAFL administrations, the evolution to a national league was a natural step. The Perth-based West Coast Eagles entered an expanded VFL in 1987, followed by the Fremantle Football Club in 1995 into what had become the Australian Football League in 1989.

In 2016, the West Australian Football Commission recorded 302,662 AFL participants, from juniors through to seniors.

The West Australian Football Commission (WAFC) was created that same year of 1989. As a not-for-profit sports association, WAFC holds the licences for the State's two AFL teams, manages the Western Australian Football League and is charged with overseeing growth and development of the game in WA. The 2016 Annual Report estimates there were 302,662 participants (Indigenous and non-Indigenous) in WAFC backed competitions, from Auskick (for juniors from 5 years of age) through to senior competitions. In this section we review Indigenous West Australians' participation in AFL. Reflecting on the evidence presented in the previous chapters, and drawing on conversations with a range of stakeholders, we consider the existing arrangements and the potential benefits from expanding the game, notably in regional WA and through the new AFL Women's League.

# WA'S INDIGENOUS POPULATION & AFL

Indigenous participation in AFL has special significance in Western Australia. Estimates from the first release of 2016 Census data show that WA has a higher Indigenous share in its population, at 3.1 per cent, when compared to the nation overall. The more youthful age profile of the Indigenous population provides an added imperative for harnessing sport and football as means to promoting wellbeing. The junior age ranks from 5 years to 14 years account for 23 per cent of WA's Indigenous population, compared to just 12 per cent of the non-Indigenous population. Peak participation in AFL occurs at 15-19 years of age (see Figure 4), a cohort encompassing 10 per cent of the Indigenous population compared to 6 per cent of other Western Australians.

Almost 10,000  
Indigenous West  
Australians  
participate in AFL.

The previous (2011) census shows a stark contrast in geography, with a much larger share of WA's Indigenous population living in the regional towns and remote communities where sport and football are an intrinsic component of the local communities. Of WA's Indigenous population, 14 per cent lived in in outer regional areas in 2011, 16 per cent in areas classified as remote, and 24 per cent in very remote WA. The respective figures for non-Indigenous West Australians were outer regional 8 per cent; remote 4 per cent; and just 3 per cent living in very remote parts of the State. Moreover, as noted in the section on participation, the NATSISS data suggest that among Indigenous males aged 4 and over, WA has the second highest participation rate in AFL, behind the Northern Territory, and the largest number of Indigenous participants of the States and Territories, at 9,900 players. Current WAFC records show that 7 per cent of AFL club participants identify as Indigenous (WAFC 2017).

Given this profile, it follows from the results presented in the preceding chapters of widespread health and other benefits associated with playing football, and evidence submitted to the two parliamentary enquiries, *Doing time – time for doing* and *Sport – more than just a game* (HRSCATSIA 2011, 2013), and other literature of the special role of AFL in regional towns and remote Indigenous communities, that AFL is a major contributor to the health and happiness of Indigenous West Australians. Addressing the unacceptable gap in physical health, mental health and socio-economic outcomes between Indigenous and non-Indigenous people in this State, as in the

rest of the nation, remains a policy and moral imperative. Nowhere is this more so than in remote WA, where perceived dysfunction of some communities and lack of opportunity in education and employment continue to attract controversy, as does the seeming failure of substantial program expenditure to make an impact on socio-economic marginalisation (see, for example Regional Services Reform Unit (RSRU) 2016).

In late 2014 the Western Australian government foreshadowed the withdrawal of services from a number of the smaller and more remote communities in WA, with media reports suggesting as many as 150 communities may be affected (WA Today 2014a, 2014b). Much of government policy appears to be predicated on the assumption – or rather the hope - that such communities will one day disappear, rather than focussing on addressing problems in order to strengthen those communities. This can be seen in the current regional services reform ‘roadmap’, developed under the previous Liberal Government, where the explicit strategy is ‘... to focus its efforts and investment on regional locations that have significant educational and employment opportunities’, while accepting this will ‘...support fewer communities over time, particularly as migration away from small outstations continues.’ (RSRU 2016: 12). However, recent population modelling suggests smaller and remote Indigenous communities are not shrinking (Dockery et al. 2017). In this case, withdrawing services and funding would be a major policy failure; alas not the first such policy failure due to misunderstanding the importance Indigenous Australians place on connection to country, kin and culture (Dockery 2016).

# THE BENEFITS OF PLAYING FOOTY - STORIES FROM THE WEST

In framing this research we had conversations with a range of stakeholders. Indigenous West Australians' love of football was doubted by no one. There is widespread acceptance of the power of community sports, and of AFL in particular, to promote positive physical and social outcomes for Indigenous children and social cohesiveness in racially diverse communities. We spoke to an Indigenous official from one suburban club which had a number of recently formed teams with a high proportion of Indigenous players. Their on-field success, achieved in only a short period, was conveyed with enthusiasm and pride, and a short exchange could easily have stopped there. Scores, ladder positions, flags, players progressing to the WAFL Reserves or being drafted to an AFL club, these are readily conveyed, part of a common language that one can be confident any follower of AFL will relate to, Indigenous and non-Indigenous. However, a longer conversation revealed a deeper satisfaction around the engagement of local Indigenous youth and the way the football club acted as hub to bring together not only Indigenous families from the local area, but also a number of refugee and migrant groups living in the local community.

This was common in conversations with people involved in football. When asked about the benefits to Indigenous people, their first impulse is to point to Indigenous players from their region or their club who had made it to the ranks of the WAFL or AFL. That people within the sector do not have ready evidence of the wider community benefits will hopefully be addressed to some degree by this report. However, the acceptance of those benefits is clear, even if definitive measures of them are lacking, as evidenced by the investment in Indigenous football programs. The WAFC's recently released Reconciliation Action Plan notes "Football has a remarkable capacity to engage the Aboriginal community of Western Australia through a genuine love of the sport". This is the key asset upon which a wide range of programs are based to achieve health, wellbeing, cultural, employment and education outcomes, and for re-engaging youth at risk (WAFC 2017). The WAFC Aboriginal Football program now comprises of over 50 programs and events. These include, for example, the Night Fields program targeting at-risk youth and providing free structured competitions from a number of metropolitan venues.

Stakeholders revealed a deep satisfaction around the way the football club acted as hub to bring together not only Indigenous families from the local area, but also a number of refugee and migrant groups living in the local community.

## FOOTBALL IN REGIONAL AND REMOTE WA

**"I felt the soul of footy when I went to an Aboriginal communities football carnival at Wanarn 100 km west of the NT-WA border ... This was the game played purely. For the love of it. Without any of the trappings of commerce or media. This was the heart of football."**

Journalist John Harms cited in Gorman et al. (2015: 1950)

Football is engrained in community life. The remarkable popularity of AFL in remote areas was demonstrated in Figure 5, with participation for Indigenous males aged between 15 years and 29 years at over 60 per cent in the AFL States. Even with the sample size available in the NATSISS, estimates at an individual state or territory level need to be treated with caution. However, on the NATSISS figures for WA, the participation rate in AFL for males aged 4 and over is estimated at 32 per cent, which is almost 50 per cent greater than the rate for regional WA (24 per cent) and the Perth metropolitan area (23 per cent).

Speaking as a mentor with the David Wirrpanda Foundation, former Fremantle champion Dale Kickett gave evidence to the 2013 Inquiry on the role of sport in remote Indigenous communities:

**The contribution of sport ... can sometimes be underestimated in terms of breaking down barriers of equality ... So there has been some Indigenous legends created through the interaction of themselves and sport but more importantly its opened doors to education, about each other's cultures, and created pathways for our young to follow.** (HRSCATSIA 2013: 3)

Like Kickett, contacts most commonly referred to benefits in the form of re-engaging youth. The power of sport in opening communication between cultures applies not only to children. Stakeholders indicated that in remote communities, there are numerous forums where women come together as a group and hence were often the target for the delivery of programs and for consultation. Football provided a way to access men as a group. We heard of programs against domestic violence, and promoting awareness about Foetal Alcohol Spectrum Disorder being delivered to men through football clubs. In a coordinated program to reduce the road toll in the Derby area, described as having among the worst road safety statistics in Australia, the Derby Tigers are sponsored by the Road Safety Commission. Similar to Richmond's AFL jumpers, the new Tigers' jumpers feature the angled stripe replaced by a seatbelt. The program has been used to deliver information on road statistics and road safety, and to conduct vehicle and seat-belt checks. This has reportedly been associated with a reduction in road related injuries and fatalities. However, the first-mentioned benefit was the excitement of the local community at the Tigers finishing on top of the ladder and about to play off in the grand final, after coming last in 2016. These experiences resonate with evidence provided to the 2013 parliamentary enquiry on how football had been used to deliver programs, such as health checks at carnivals.

Another stakeholder with many years' of experience working with remote communities indicated that, in his view, football often worked better than the Community Development Employment Programs. In participating in football, people learned about the need to pay fees, bookkeeping, administration and a range of other skills. He suggested government agencies should draw more often on things that evolve out of the community, such as football, rather than imposing externally formulated programs upon them. These observations echoed those expressed by Dr Bruce MacKinnon:

**"... we should be building on an activity which already has the passion and interest of the communities. ... Sporting teams need administrators, coaches, physios, bus drivers, cooks, timekeepers. Using sport as a model, I can see it as having the opportunity to become the centre for growth in community development"** (HRSCATSIA 2013: 11)

Given all this evidence, it seems astonishing that a town such as Fitzroy Crossing should not have a junior football competition. Communities in the Fitzroy Valley region face issues with low school attendance, unemployment, gambling and substance abuse – it is believed to have one of the highest incidences of Foetal Alcohol Spectrum Disorder in the world (Fitzpatrick 2015). Led by a committed group of community leaders through Fitzroy Valley Futures, which includes representatives of all local traditional owner groups, the community is seeking to develop an integrated youth engagement strategy. We estimate from 2011 Census data that there would be a population of close to 600 children aged from 5 to 17 years in Fitzroy Crossing and surrounding communities in the Fitzroy Valley. There is an active adult league under the Central Kimberley Football League, and a local resident runs training for juniors on Friday nights on a voluntary basis, but there is no structured competition.

Enquiries revealed that there was also no junior competition in Halls Creek, with football opportunities limited to occasional visiting clinics by the Clontarf Academy once or twice per year. We estimate from 2011 Census data that there are over 400 children aged 5-17 in Halls Creek and the surrounding area, and contacts indicated there would easily be enough numbers and interest to support 4 junior teams in a regular competition. Similarly, the junior competition in Warmun ceased several years ago. Even in Kununurra, which we estimate also has a catchment for the relevant age group of around 400 children, a very limited competition exists in which an Under 13s side played only four or five games this year. Stakeholders indicate that the key limitation to such competitions is not a lack of interest or demand, but simply the need for somebody in a position, such as a Youth Development Officer, to coordinate and manage them. Others pointed to the need for such positions to be filled by people from within the community – 'fly-in fly-out' type appointments have proved unsuccessful. Note, however, the absence of junior competitions is not limited to the Kimberley and Pilbara. A number of towns in the Wheatbelt and Great Southern are also without junior competitions.

AFL has frequently been used as a vehicle to deliver broader community wellbeing programs.

"Government agencies should draw more often on things that evolve out of the community, such as football, rather than imposing externally formulated programs upon them," AFL Stakeholder Interviewee.

In reference to program spending in remote communities, the Regional Services Reform Unit argues "Lots of money is being spent on services but it is not well targeted, and nobody is clear if it is making any meaningful difference." (2016: 5). It is clear, however, that football does make a difference in regional WA, and there is surely a very strong case to incorporate football development programs into towns such as Fitzroy Crossing, Halls Creek and Warmun, where they are not currently present. Even where there are Auskick programs, stakeholders indicated that there was often a gap in opportunity in regional and remote areas around Year 10, when boys are too old for junior competitions but not able to play in the senior competition. Previous BCEC research has indicated that this is also a critical transition point where Indigenous youth are at risk of becoming disengaged from education and training (Cassells et al. 2017).

"You can't get a better conduit for community development. Footy carnivals get everyone together,"  
AFL Stakeholder Interviewee.

The tyranny of distance was indicated as one factor that could contribute to a lack of AFL competitions. However, it is also that distance that has led to the evolution of the many football carnivals and festivals that have become such a celebrated and distinctive feature of AFL in remote Western Australia and Central Australia. One stakeholder commented "You can't get a better conduit for community development. Footy carnivals get everyone together", and noting that football grounds offered an ideal space for getting many different skin groups together.

# A GAME CHANGER? THE AFL WOMEN'S COMPETITION

Compiling *After the Siren* has given us a welcome excuse to delve back into some of the history of the great game of AFL. However, when the sports historians of the future look back on the history of football in Australia, we suspect that this very year of 2017, and the introduction of the AFL Women's League (AFLW) will feature prominently in lists of critical turning points.

The AFLW commenced on 3 February, 2017, with a Friday night match at Princes Park in Melbourne between Carlton and Collingwood, before a crowd of 24,500. At one level, the entry of women at the elite level into what is the highest profile sport in Australia is likely to have social, cultural and economic ramifications for Australian sport generally (Willson et al. forthcoming). This will undoubtedly have flow on effects for the position of Indigenous women in Australian society, given their over-representation in the sport. At another level, the lower participation of Indigenous women in sport is evidence enough that a competition that stimulates greater involvement of young girls and women, and likely to produce many female Indigenous role-models, will have positive social benefits.

Table 9 reports participation by gender for Indigenous children and adults based on the NATSISS 2014-15 data. Indigenous girls are around 8 percentage points less likely than males to participate in organised sport. This gender gap widens to almost 15 percentage points in adulthood. These are substantial gaps in physical activity in light of challenges surrounding obesity and associated renal and cardiac conditions. In 2014-15, only around 2 per cent of Indigenous girls and women played AFL nationally, and even within the AFL States the figure was only 3.4 per cent. Elevating women's participation in AFL to being in line with males would largely eliminate those differences – though note new female AFL players may come from the ranks of girls and women already active in other sports.

The AFL Women's League is likely to stimulate greater involvement of young girls and women in sport and to produce many female Indigenous role-models.

**TABLE 9. Male and female Indigenous participation rates in sport and AFL, per cent**

	Participation in AFL		Participation in sport	
	Females	Males	Females	Males
Australia				
Children (aged 4-14)	2.0	14.0	42.4	50.6
Adults (aged 15-64)	2.3	12.9	29.8	43.1
AFL States				
Children (aged 4-14)	3.4	29.6	43.7	50.0
Adults (aged 15-64)	3.4	26.5	28.6	42.9

Aside from the potential to impact directly on participation in AFL, the AFLW is positioned to create wider interest in women's sport generally and produce high profile Indigenous role models that will motivate greater participation across all sports. WA has already seen the emergence of such role models, with a very strong over-representation of WA Indigenous women in the inaugural competition. The Kirby Bentley Cup was initiated to engage 13 to 17 year old Indigenous girls and link them to continuing sports pathways. Following in the tradition of promotional events such as the Nicky Winmar Carnival, the tournament is named in honour of Fremantle Dockers star Kirby Bentley, considered one of the best ever female players, and involved over 250 participants in 2016 (WAFC 2017). Although not officially verified, contacts suggested the high proportion of Indigenous players in the 2017 WA State female under-18s, at around 50 per cent, was probably a new record for a sporting team at the State representative level. Clearly, there are many Indigenous female AFLW stars already in the pipeline.

WA has already seen the emergence of such role models, with a very strong over-representation of WA Indigenous women in the inaugural competition.

There is a further reason to anticipate the success of the AFLW. From the very earliest matches, AFL has swayed stimulated enormous interest from female spectators. In fact, Hess & Stewart (1998: 2) claim that AFL attracts a larger proportion of female spectators than any other football code. Signs of the AFLW filling this obvious potential are already emerging. The WAFC reported almost a doubling in the number of female football teams in WA from 84 to 157 (2016 Annual Report). For many of the same reasons noted above of the importance of football in remote WA, the impacts of the AFLW are likely to be most profound in remote Aboriginal communities and regional towns. We spoke to a stakeholder in one remote town where a girl's competition was formed for the first time, and was attracting around 35 girls to training every week, of whom around 80 per cent were Indigenous. The contact believed 'huge benefits' were already apparent in terms of the girls' confidence and standing in the community, and a marked improvement in their school attendance rates.

The seeds of the AFLW were sown 21 years ago, with the introduction of the Auskick program for both boys and girls, allowing for a mixed competition and the first generation of female AFL players. Since the announcement of the intention to create the AFLW, female participation has grown exponentially – almost 8 fold in the past decade – and the first season of the AFLW competition surpassed all expectations (Willson et al. forthcoming). The positive social and community level impacts are likely to commence with today's young girls, but the longer-term health and those harder-to-measure benefits in the form of positive self-esteem and identity for Indigenous girls and women, will flow over the years to come. An extensive literature now demonstrates the very high social return across many domains when such effects are imparted in children's early developmental stages.

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Indigenous Australians have contributed much to the game of Australian Rules Football. The great Indigenous players have enthralled crowds with their skills, athleticism, courage and, often, uncanny reading of the game. Through the history of Indigenous engagement with AFL, their abilities on the field and their success have generated a respect that has contributed to the gradual dissolution of racist attitudes, discriminatory practices and even laws. Sport, and AFL in particular, creates a rare arena in which non-Indigenous Australians unreservedly celebrate Indigenous achievement. Their success, sheer love of the game, and the unique carnivals, festivals and other settings in which it is played across the country, all help to make AFL 'a game of our own'.

In turn, many benefits accrue to Indigenous Australians from participation in AFL. The starting point in any estimation of the magnitude of those benefits should be the direct pleasure Indigenous people experience from playing and watching AFL. When one considers the efforts many Indigenous Australians go to, in terms of travel and associated expenses, in order to participate in football, any such economic assessment of direct benefits would undoubtedly be very, very large. This is a matter of individual preference, and those benefits accrue directly to the individual participant at the time. The focus of this report has been on those indirect benefits that materialise after the siren, accrue over time and flow to the wider community and society as a whole.

Chief among these are the health benefits associated with vigorous physical activity. International literature demonstrates that engagement in sport is associated with improved physical health and mental health for both children and adults. While there are challenges in empirically establishing this as a causal relationship, there are well established biological mechanisms to link exercise to improved physical health, and linking both exercise and social interaction associated with organised sport to psychological wellbeing. Physical inactivity threatens to become the 21st century's equivalent to smoking. The evidence is conclusive enough that many countries have adopted public health guidelines for children to participate in at least 1 hour of moderate-to-physical activity per day, and adults a minimum of 150 minutes of moderate-intensity exercise per week.

So while participation in organised sport is good for people in general, there are solid grounds for believing that AFL offers added power as a tool for leveraging positive outcomes for Australia's Indigenous population. In football, Indigenous and non-Indigenous Australians compete on an equal footing, both against one another and alongside one another as team mates. This can be empowering for Indigenous people, as too often it contrasts with alienation experienced in other aspects of their lives. Second, football holds a special place for Indigenous Australians individually, and within Aboriginal communities. A third reason is simply the poorer starting point that many Aboriginal and Torres Strait Islanders commence from, in terms of physical health, psychological wellbeing, and socio-economic resources available to them. While we do not wish to dwell on 'deficits', it would be remiss not to acknowledge there are major challenges that need to be addressed in Indigenous affairs in Australia, and we are seeking positive outcomes in a context where so many other initiatives have failed.

The analysis has provided insights into the factors associated with participation in AFL, concentrating on the 'AFL States' of Victoria, South Australia, Western Australia, Tasmania and the Northern Territory. It confirms perceptions of the integral part AFL plays in the lives of Indigenous Australians. Among Indigenous adults, participation in AFL is much higher in remote areas than in metropolitan and regional areas. In remote areas of the AFL States, over 60 per cent of men aged between 15 and 29 had played football in the previous 12 months. This is a truly remarkable rate of participation for a single sport. An important finding from the participation modelling is that AFL appears to be a highly accessible sport. Among children, a number of characteristics signalling socio-economic disadvantage were observed to reduce participation in organised sport generally, but those relationships were absent or even reversed in the case of boys playing AFL. These include neighbourhood socio-economic status, financial stress, people smoking in the home and the lack of a vehicle in the household. The same is true for adults with respect to neighbourhood socio-economic status and educational attainment and, for men, being married with children increases their participation in AFL and their preference for AFL over other sports. These results empirically confirm what has been noted in the literature right from the very first games, that AFL is a game of the people. This offers a further attribute that makes AFL well suited as a vehicle for delivering social programs.

A range of positive outcomes were identified for Indigenous boys and men participating in AFL. Within the AFL States, for boys aged 4 to 14, there is very strong evidence that those who play AFL have substantially better health than those who do not play sport. This is observed in respect to parents' assessments of their children's general health, and whether the parent has concerns about their child's health affecting learning outcomes. For these outcomes, the positive effects of playing AFL are similar to those observed for Indigenous boys and girls from participation in sports in general. There is also evidence that in the AFL States, boys who play AFL are less likely to be truant from school. This applies only to those living in remote areas, and while the result is only moderately significant, it is substantial, representing a five percentage point decrease in reported truancy, or around a one-quarter reduction on the average truancy rate for boys in those areas.

Of some concern, we also observed that Indigenous boys aged 9 to 14 who play AFL are more likely than other boys to have been in trouble with the police. This applies mainly in the major cities and large regional towns, rather than in remote communities. Statistical tests suggest this may not be a causal relationship, and indeed there are football based programs that focus on young offenders and youth at risk, such as the Night Fields program. However, that young boys in sporting teams have a tendency to get up to mischief would probably not go down as a shock finding, and we do not want to dismiss it out of hand. It reinforces the need for sporting codes, such as AFL, to be vigilant of the potential anti-social behaviours that can develop in team environments, and of the need to positively manage such peer group effects.

For adult males there is strong evidence of a positive association between playing AFL and physical and mental health. Men who play football are happier, and have

modestly enhanced levels of social connectedness and support. These latter results are consistent with established evidence on the positive role of sport in building a sense of community and bringing together people of different backgrounds, and were powerfully reinforced by the views expressed by stakeholders and the stories they related about the role of football clubs in metropolitan, regional and remote WA. Broadly speaking, the effects of playing AFL on physical health and wellbeing are much the same as those observed for playing football generally among the Australian population, but larger than for participation in non-football sports. The benefits in terms of community connectedness apply across organised sports generally.

On the negative side, there is evidence that Indigenous AFL players are more likely to be subject to racism or discrimination. It is possible to relate a part of this to a greater exposure to racism experienced in the course of sporting and recreational activities and, moreover, this is experienced more commonly in AFL and rugby than in other organised sports, though that may be anticipated given both are team sports. The AFL has been a prominent leader in taking action to stamp out racial vilification, both on the field and by spectators. However, Indigenous people's responses revealed in the NATSISS data provide a timely reminder of the need to continue to foster an ethic of intolerance for racism throughout all levels of the sport.

This report has broken new grounds in a number of respects. Very few studies have analysed benefits associated with participation in individual sports. To the best of our knowledge none have previously done so for AFL in a population representative study, and most certainly none have done so for Indigenous Australians. It compiles evidence on outcomes across an unusually wide range of domains of wellbeing, and accounts for a rich set of control variables in seeking to identify the independent effects of participation. We have also employed techniques to address the issue of reverse causality that plagues much of the existing literature based on observational studies (as opposed to intervention studies or randomised trials). While there is more work to be done in that regard, we have at least found strong evidence of a causal link running from participation in AFL to Indigenous boys' general health.

Indeed, *Sport – More Than Just a Game* observed "The national research and data collection is very limited in relation to the contribution of sport to Indigenous wellbeing" (HRSCATSIA 2013: 47). We believe *After the Siren* makes a major contribution to addressing this gap. We also believe it has raised some critical policy implications. The empirical data here reinforce widespread anecdotal evidence of the benefits of football for Indigenous people in terms of individual health and wellbeing and for wider community cohesiveness, and particularly for youth in remote areas. Information from stakeholders in Western Australia added to numerous existing examples of how football can be used to achieve non-sporting outcomes through programs by leveraging off Indigenous peoples' passion for the game and bringing people from all sectors of the community together in a safe space of mutual respect.

In light of this evidence, and the challenges facing remote Aboriginal communities, we believe there is a compelling argument – and need – for promotion of football

competitions and other structured sports across these communities. Agencies, policies and programs come and go at a great pace in remote communities, from the many incarnations of the Community Development Employment Program, to those under the National Indigenous Reform Agenda to, now, the Indigenous Advancement Strategy, and typically with little discernible impact. It seems almost astounding, then, that a town such as Fitzroy Crossing, with an estimated 600 local children of relevant age, should not have a formal junior football competition. A full audit of which communities do and do not have AFL competitions is difficult due to the ambiguity associated with travel between regional towns, and beyond the intended scope of this report. However, initial investigations suggest significant under-investment in areas where promotion of health, psychological wellbeing and community strength is urgently needed.

Some stakeholders suggested that WA had, to some degree, been a victim of its own success. Because of the high number of Indigenous Western Australians taken in recent AFL drafts, there is a perception that Indigenous football is already strong in WA, and thus WA has not been a priority for Indigenous development. But, we are not criticising the AFL for a lack of programs. There are two elements to the formula for leveraging community benefits through football. One is to create the game: to ignite the passion and to produce the champions like Eddie Betts, Adam Goodes, Buddy Franklin and Cyril Rioli, that kids dream of emulating. This is what the AFL does and does well. It is, we believe, the greatest game in the world. And this is no easy challenge, to provide a grass-roots competition with pathways to the elite levels, but also positively managing expectations and failures.

The other element is to take that brand – the passion and unifying spirit – to leverage non-sport outcomes. This is not the role of the AFL, but where all agencies need to work together in concert, and where failures have been documented in previous reports (HRSCATSIA 2011, 2013). Evidence presented to those enquires noted that it is unrealistic to expect sport to deliver non-sport outcomes in isolation to its core business, which is to achieve quality sport outcomes. This requires partnerships with service providers of health, education, employment, social wellbeing and justice. Indeed, Tatz argues that Indigenous sports development officers should be in place in every Indigenous community to assist in organising sporting activities and competitions, and to coordinate funding (HRSCATSIA 2013: 16).

Sport and culture often get lumped together in agency structures and funding programs. Interestingly, the participation models show that for both children and adults there is a complementarity between Indigenous cultural identification and participation in AFL. This is perhaps the first empirical proof on something long suspected. However, we want to stress that we are not insinuating that sport is a substitute for traditional Indigenous culture. For many Indigenous Australians, and in remote communities in particular, participation in AFL and sport provides benefits because it acts as a protective factor against the effects of loss or marginalisation of their culture and cultural identity. Football is not an adequate substitute – the better policy is to arrest that cultural loss in the first place, through policies that respect, celebrate and strengthen traditional culture.

In terms of promoting participation in AFL, a finding warranting further investigation is the substantial barrier to participation for children with sight problems. It is possible such barriers may be readily addressed through corrective measures, such as contact lenses or sports goggles, and may reflect another area where football can be used to stimulate appropriate health screening and treatment.

An appropriate note to conclude on is the exciting potential of the AFL Women's League, for all the reasons set out in the previous section. Simple mathematics suggests this will be accompanied by a widening of all of those benefits outlined above, but potentially with added benefits in raising the status of Indigenous sportswomen and now leveraging the potential of AFL to address gender discrimination where it has previously taken on racial discrimination. The participation models show markedly lower participation in AFL for children from sole parent families. Greater engagement of women in AFL may help to mitigate this. From a research methodology perspective, the growth of the women's league also provides a major opportunity to build on the work started in this report. As female participation grows, and girls' and women's teams are established where none previously existed, perspective changes in relative outcomes between males and females, such as in health, school attendance, education results and contact with the justice system, offers a unique 'natural experiment' framework from which to identify causal links between AFL participation and outcomes.

# 7TH REFERENCES

# REFERENCES



Australian Bureau of Statistics (ABS)(2016), *National Aboriginal and Torres Strait Islander Social Survey: User Guide, 2014-15*, Catalogue No. 4720.0, ABS: Canberra.

Australian Government. (2015), *Closing the Gap: Prime Minister's Report 2015*. Retrieved from Canberra: [http://www.dpmc.gov.au/sites/default/files/publications/Closing\\_the\\_Gap\\_2015\\_Report\\_0.pdf](http://www.dpmc.gov.au/sites/default/files/publications/Closing_the_Gap_2015_Report_0.pdf).

Australian Government. (2016), *Closing the Gap Prime Minister's Report 2016*. Retrieved from Canberra: <http://closingthegap.dpmc.gov.au/>

Barker, A. (2004), *Behind the play ... a history of football in Western Australia from 1868*, West Australian Football Commission: Perth.

Blainey, G. (1990), *A game of our own*, Information Australia: Melbourne.

Burdsey, D., and Gorman, S. (2015), "When Adam met Rio: Conversations on racism, anti-racism and multiculturalism in the Australian Football League and English Premier League", *Sport in Society: Cultures, Commerce, Media, Politics* 18(5): 577-587.

Campbell, D., Burgess, C., Garnett, A. and Wakerman, J. (2011), 'Potential primary health care savings for chronic disease care associated with Australian Aboriginal involvement in land management', *Health Policy*, 99(1), 83-89.

Cassells, R., Dockery, M., Duncan, A., Gao, G. and Seymour, R. (2017), *Educate Australia Fair?: Education inequality in Australia*, Bankwest Curtin Economics Centre, Focus on the States Series, Issue No. 5, June.

Dalton, B., Wilson, R., Evans, JR. & Cochrane, S. (2015), 'Australian indigenous youth's participation in sport and associated outcomes: empirical analysis and implications', *Sport Management Review*, 18(1), 57-68.

DinanThompson, M., Sellwood, J. and Carless, F. (2008), 'A kickstart to life: Australian Football Leagues as a medium for promoting lifeskills in Cape York Indigenous communities', *Australian Journal of Indigenous Education*, 37, 152-164.

Dockery, A.M. (2016), "A wellbeing approach to mobility and its application to Aboriginal and Torres Strait Islander Australians", *Social Indicators Research*, 125(1), 243-255.

Dockery, A.M., Singh, R., Harris M. and Holyoak, N. (2017), 'Projecting Aboriginal and Torres Strait Islander populations for remote communities: a small number approach', CRC-REP Working Paper CW030, Ninti One Limited, Alice Springs.

Dockery, A.M. and Lovell, J. (2016), "Far removed: an insight into the labour markets of remote communities in central Australia", *Australian Journal of Labour Economics*, 19(3), 145-174.

Dolan, P., Peasegood, T. and White, M. (2008), 'Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing', *Journal of Economic Psychology*, 29(1), 94–122.

Eime, R., Young, J., Harvey, J., Charity, M., Payne, W. (2013), 'A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport', *International Journal of Behavioral Nutrition and Physical Activity*, (10)98.

Ferrer-i-Carbonell, A. and Frijters, P. (2004), 'How important is methodology for the estimates of the determinants of happiness', *The Economic Journal*, 114, 641–659.

Fitzpatrick, J. et al (2015), 'Prevalence of fetal alcohol syndrome in a population-based sample of children living in remote Australia: The Lirilwan Project', *Journal of Paediatrics and Child Health*, 51(4), 45–457.

Frey, B. (2008), *Happiness: A revolution in economics*, MIT Press: Massachusetts.

Gorman, S. (2005), *Brotherboys: the story of Jim and Phillip Krakouer*, Allen & Unwin

Gorman, S. (2010), 'Sporting chance: Indigenous participation in Australian sport history', *Cosmopolitan Civil Societies Journal*, 2(2), 12–22.

Gorman, S. (2012), 'Voices from the boundary line: the Australian Football League's Indigenous team of the century', *Sport in Society: Cultures, Commerce, Media, Politics* 15 (7): 1014–1025.

Gorman, S. and Applebee, K. (2016), 'Many stories, one goal: Indigenous pathways in the AFL', in Drummond, M. and Pill, S. (eds) *Advances in Australian football: A sociological and applied science exploration of the game*, Australian Council for Health, Physical Education and Recreation: South Australia.

Gorman, S., Judd, B., Reeves, K., Osmond, G., Klugman, M. and McCarthy, G. (2015), *The International Journal of the History of Sport*, 32(16), 1947–62.

Greene, W. (2008), *Econometric Analysis*, 6th edition, Pearson Prentice Hall: Upper Saddle River.

Grow, R. (1998a), 'From gum trees to goalposts, 1858–1876', in Hess, R. and Stewart, B. (eds) *More than a game: an unauthorised history of Australian Rules Football*, Melbourne University Press: Carlton, 4–43.

Grow, R. (1998b), 'The Victorian Football Association in control, 1877–1896', in Hess, R. and Stewart, B. (eds) *More than a game: an unauthorised history of Australian Rules Football*, Melbourne University Press: Carlton, 45–85.

- Hallinan, c. and Judd, B. (2012), 'Duelling paradigms: Australian Aborigines, marn-grook and football histories', *Sport in Society*, 15(7), 975-986.
- Hayward, E. (2006), *No free kicks: A Noongar story*, Fremantle Arts Centre Press: Fremantle.
- Hearn Mackinnon, B. (2011), *The Liam Jurrah Story: From Yuendumu to the MCG*, Melbourne University Press: Carlton.
- House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs (HRSCATSI)(2011), *Doing time – time for doing: Indigenous youth in the criminal justice system*, Commonwealth of Australia: Canberra.
- House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs (HRSCATSI)(2013), *Sport – More than just a game: Contribution of sport to Indigenous wellbeing and mentoring*, Commonwealth of Australia: Canberra.
- Janssen, I. and LeBlanc, A. (2010), 'Systematic review of the health benefits of physical activity and fitness in school-aged children and youth', *International Journal of Behavioral Nutrition and Physical Activity*, 7(40).
- Kohl, H., Craig, C., Lambert, E., et al. (2012), 'the pandemic of physical inactivity: Global action for public health', *Lancet*, 380(9838), 294-305.
- Kristoffersen, I. (2010), 'The Metrics of Subjective Wellbeing: Cardinality, Neutrality and Additivity', *Economic Record*, 86(272), 98-123.
- McCoy, B. (2008), *Holding men: Kanyirninpa and the health of Aboriginal men*, Aboriginal Studies Press: Australia
- Oja, P., Kelly, P., Pedsic, Z., Titze, S., Bauman, A., Foster, C., Hamer, M., Hillsdon, M. and Stamatakis, E. (2017), 'Associations of specific types of sports and exercise with all-cause and cardiovascular mortality: a cohort study of 80 306 British adults', *British Journal of Sports Medicine*, 51, 812-817.
- Oja, P., Titze, S., Kokko, S., Kujala, U., Heinonen, A., Kelly, P., Koski, P. and Foster, C. (2015), 'Health benefits of different sport disciplines for adults: systematic review of observational and intervention studies with meta-analysis', *British Journal of Sports Medicine*, 49, 434-40.
- Productivity Commission. (2015). National Indigenous Reform Agreement: Performance Assessment 2013-14. Retrieved from Canberra: <http://www.pc.gov.au/research/supporting/indigenous-reform-assessment/indigenous-reform-assessment.pdf>

Regional Services Reform Unit (RFSU)(2016), *Resilient families, strong communities: a roadmap for regional and remote Aboriginal communities*, Government of Western Australia.

Samitz, G., Egger, M. and Zwahlen, M. (2011), 'Domains of physical activity and all-cause mortality: systematic review and dose-response meta-analysis of cohort studies', *International Journal of Epidemiology*, 40, 1382-1400.

Senate Standing Committee for the Review of Government Service Provision (SSCRGSP)(2016a), *Overcoming Indigenous disadvantage: Key indicators 2016, Overview*, Productivity Commission: Canberra.

Senate Standing Committee for the Review of Government Service Provision (SSCRGSP)(2016b), *Overcoming Indigenous disadvantage: Key indicators 2016*, Productivity Commission: Canberra.

Shilton, T. and Brown, W. (2004), 'Physical activity among Aboriginal and Torres Strait Islander people and communities', *Journal of Science and Medicine in Sport*, 7(1) Supplement, 39-42.

Spaaij, R. (2009), 'The glue that holds the community together? Sport and sustainability in rural Australia', *Sport in Society*, 12(9), 1132-1146.

Stephen, M. (2009), 'Football, 'race' and resistance: the Darwin football league, 1926-29', *Australian Aboriginal Studies*, 2009/2, 61-77.

Tatz, c. (1994). 'Aborigines, sport, violence and survival', CRC Project 18/1989, Criminology Research Council, Canberra.

Tatz, C. (2012), 'Aborigines, sport and suicide', *Sport in Society*, 17(7), 922-935.

Tatz, C. and Tatz, P. (1996), *Black Diamonds: The Aboriginal and Islander sports hall of fame*, Allen & Unwin: New South Wales.

Tsiros, M., Samaras, M., coates, A. and Olds, T. (2017) 'Use-of-time and health-related quality of life in 10- to 13-year-old children: not all screen time or physical activity minutes are the same', *Quality of Life Research*, DOI: 10.1007/s11136-017-1639-9

Vella, S., Swann, C., Allen, M., Schweickle, M. and Magee, C. (2017), 'Bidirectional associations between sport involvement and mental health in adolescence', *Medicine & Science in Sports & Exercise*, 49(4), 687-694.

Vella, S., Schranz, N., Davern, M., Hardy, L., Hills, A., Morgan, P., Plotnikoff, R. and Tomkinson, G. (2016), 'The contribution of organised sports to physical activity in Australia: Results and directions for the Active Healthy Kids Australia 2014 Report Card on physical activity for children and young people', *Journal of Science and Medicine in Sport*, 19, 407-412.

WA Today (2014a), 'Colin Barnett expected flak over Aboriginal community closures', accessed 28 November 2015 at: <http://www.watoday.com.au/wa-news/colin-barnett-expected-flak-over-aboriginal-community-closures-20141114-11mybe.html>

WA Today (2014b), 'WA's remote communities plan condemned', accessed 28 November 2015 at: <http://www.watoday.com.au/wa-news/was-remote-communities-plan-condemned-20141113-11ltpt.html>

Ware, V. and Meredith, V. (2003), *Supporting healthy communities through sports and recreation programs*, Closing the Gap Clearinghouse Resource Sheet no. 26, Australian Institute of Health and Welfare/Australian Institute of Family Studies.

Western Australian Football Commission (WAFC)(2017), *Reconciliation Action Plan 2017-2019*, WAFC.

Willson, M., Tye, M., Gorman, S., Ely-Harper, K., Leaver, T., Magladry, M. and Efthimiou, O. (forthcoming), 'Framing the Women's AFL: Contested Spaces and Emerging Narratives of Hope and Opportunity for Women in Sport'.

# 8 THE APPENDIX

## INDEX



**APPENDIX TABLE 1. Health outcomes children aged 4-14, full logistic regression results**

Control Variable	Child's health assessed as excellent				Concerns about learning due to health			
	Model 1 – All children (boys and girls, Australia)		Model 2 – Boys only, AFL States		Model 3 – All children (boys and girls, Australia)		Model 4 – Boys only, AFL States	
	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$
Sport Participation status								
Did not play sport	—		—		—		—	
Sport but not football (any code)	0.07 ***	0.004	n.a.		-0.01	0.373	n.a.	
Played football (any code)	0.07 ***	0.002	n.a.		-0.06 ***	0.000	n.a.	
Sport but not AFL	n.a.		0.15 ***	0.001	n.a.		-0.09 ***	0.000
Played AFL	n.a.		0.13 ***	0.001	n.a.		-0.10 ***	0.000
Male			n.a.		0.09 ***	0.000	n.a.	
Age (years)			-0.05	0.147			0.05 **	0.041
Age-squared			0.00	0.256			0.00 *	0.058
State of residence								
New South Wales	-0.01	0.732	n.a.		0.05	0.119	n.a.	
Victoria	0.05	0.199	0.02	0.704	0.07 *	0.062	0.10 *	0.056
Queensland	0.05	0.157	n.a.		0.02	0.555	n.a.	
South Australia	-0.04	0.306	-0.09	0.123	0.02	0.561	0.03	0.519
Western Australia	-0.02	0.506	-0.08 *	0.090	0.00	0.968	0.02	0.585
Tasmania	-0.01	0.755	-0.11 **	0.050	0.06 *	0.078	0.15 ***	0.010
Northern Territory	—		—		—		—	
ACT	0.17 ***	0.004	n.a.		0.02	0.631	n.a.	
Remote	0.03	0.276			-0.07 ***	0.000		
Housing tenure:								
Home owner	0.10 ***	0.002	0.05	0.244	-0.01	0.471	0.04	0.243
Rents – privately	0.04	0.274	—		—		—	
Rents – State housing authority	—		—		—		—	
Rents – Indig. Housing org.	0.05	0.112	—		—		—	
Other tenure	0.04	0.211	—		0.02	0.245	—	
Crowding (requires more bedrooms)	-0.05 **	0.046	-0.06	0.153			-0.04	0.211
Number of children in household	0.02 **	0.021	0.02	0.245			0.02 *	0.091
SEIFA socio-economic decile	0.00	0.286	0.01	0.181			0.01 **	0.031
People smoke at home					-0.02	0.157		
No vehicle in household	0.03	0.171			-0.03 *	0.080	-0.05	0.117
Family in financial stress	-0.07 ***	0.001	-0.05	0.210	0.03 *	0.062	0.06 *	0.071
Sole parent family	-0.03	0.128	-0.04	0.287			0.03	0.201
Identifies with language group			-0.05	0.283				
Recognises homelands/trad. country			0.07	0.134				
Parent in jail (last 12 months)					0.08 **	0.028	0.14 **	0.046
Experienced family crisis	-0.13 ***	0.002	-0.13 *	0.062				
Experienced bullying	-0.11 ***	0.000	-0.10 ***	0.007	0.08 ***	0.000	0.07 **	0.011
Experienced discrimination			-0.09	0.210				
Child has sight problems	n.a.		n.a.		0.18 ***	0.000	0.31 ***	0.000
Child has hearing problems	n.a.		n.a.		0.32 ***	0.000	0.39 ***	0.000
Moved in past 5 years			0.04	0.252	-0.02	0.134	-0.03	0.207
Dependent mean (predicted)	0.50		0.49		0.15		0.17	
Observations	2911		980		2911		980	
Likelihood ratio	141.4 ***	0.000	64.2 ***	0.000	392.9	0.000	189.4 ***	0.000

**Notes:** Controls for State/Territory of residence and housing tenure included but not reported. \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category.

APPENDIX TABLE 2. Self-assessed health and emotional wellbeing, full multivariate regression results

Control Variable	Self-assessed health excellent – logit models				Emotional wellbeing – linear regression			
	Model 1 Australia, males and females		Model 2 AFL States, males only		Model 3 Australia, males and females		Model 4 AFL States, males only	
	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$	Marginal Effect	Pr > $\chi^2$
Sport Participation status								
Did not play sport	—		—		—		—	
Sport but not football (any code)	0.10 ***	0.000	n.a.		0.25 **	0.022	n.a.	
Played football (any code)	0.14 ***	0.000	n.a.		0.54 ***	0.000	n.a.	
Sport but not AFL	n.a.		0.09 **	0.017	n.a.		0.22	0.314
Played AFL	n.a.		0.14 ***	0.000	n.a.		0.73 ***	0.000
Male	0.03 **	0.023			0.50 ***	0.000		
Age (years)	0.00 ***	0.000	0.00 ***	0.000	-0.05 **	0.025		
Age-squared					0.00 **	0.014		
State of residence								
New South Wales	0.01	0.713	n.a.		-0.30 *	0.069	n.a.	
Victoria	0.04	0.167	0.00	0.947	-0.48 ***	0.007	-0.49 *	0.092
Queensland	0.00	0.875	n.a.		0.21	0.145	n.a.	
South Australia	0.05 *	0.080	0.05	0.255	-0.24	0.160	-0.19	0.505
Western Australia	0.03	0.221	0.01	0.769	-0.25 *	0.095	-0.57 **	0.017
Tasmania	0.04	0.185	0.07	0.172	-0.55 ***	0.002	-0.48	0.104
Northern Territory	—		—		—		—	
ACT	0.00	0.975	n.a.		-0.21	0.372	n.a.	
Remote	0.02	0.296	0.05	0.153	0.66 ***	0.000	0.99 ***	0.000
SEIFA socio-economic decile					-0.05 **	0.013	-0.08 **	0.032
Family status								
Married, no kids	0.05 **	0.012	0.05	0.208	0.54 ***	0.000	0.61 ***	0.006
Married, with kids	0.06 ***	0.001	0.07 **	0.029	0.34 ***	0.002	0.29	0.137
Single, no kids	—		—		—		—	
Single, with kids	0.03	0.115	0.05	0.433	-0.04	0.782	-0.41	0.285
Housing tenure:								
Home owner	0.06 ***	0.001	0.07 *	0.058	-0.28 **	0.027	-0.32	0.189
Rents – privately	—		0.05	0.263	-0.17	0.222	0.39	0.177
Rents – State housing authority	—		—		—		—	
Rents – Indig. Housing org.	—		0.05	0.284	0.22	0.110	0.27	0.328
Other tenure	-0.01	0.616	0.07	0.115	-0.17	0.205	-0.03	0.909
Family in financial stress	-0.06 ***	0.000	-0.08 ***	0.006	-0.84 ***	0.000	-0.89 ***	0.000
Main language at home Indigenous	-0.02	0.293			-0.54 ***	0.000	-0.37	0.175
Identifies with clan/language group					0.15	0.134		
Recognises homelands			-0.06 *	0.097	0.15	0.199		
Lives on homelands	0.02	0.224	0.04	0.260	0.27 ***	0.008	0.45 **	0.016
Experienced discrimination	-0.03 *	0.060			-0.41 ***	0.000	-0.28 **	0.096
Disability status								
No disability	—		—		—		—	
Mild/moderate limitation	-0.21 ***	0.000	-0.18 ***	0.000	-1.63 ***	0.000	-1.25 ***	0.000
Profound/severe limitation	-0.23 ***	0.000	-0.23 ***	0.000	-2.42 ***	0.000	-1.80 ***	0.000
Has long term health condition	-0.16	0.000	-0.13 ***	0.000	-0.90 ***	0.000	-0.87 ***	0.000
Smoker status:								
Non-smoker	—		—		—		—	
Occasional smoker (weekly or less)	-0.09 ***	0.004	-0.06	0.260	-0.38 *	0.085	-0.38	0.313
Daily smoker	-0.06 ***	0.000	-0.09 ***	0.001	-0.30 ***	0.001	-0.57 ***	0.001

**APPENDIX TABLE 2. Self-assessed health and emotional wellbeing, full multivariate regression results, continued**

Control Variable	Self-assessed health excellent – logit models				Emotional wellbeing – linear regression			
	Model 1 Australia, males and females		Model 2 AFL States, males only		Model 3 Australia, males and females		Model 4 AFL States, males only	
	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$	Marginal effects	Pr > $\chi^2$
Drinker status								
Non-drinker	0.02	0.110	0.03	0.378			-0.02	0.930
Moderate drinker	—		—				—	
Risky drinker	-0.06 ***	0.004	-0.07 *	0.077			0.42 *	0.077
Currently studying							0.27	0.246
Highest level of qualification:								
Year 9 or below	-0.01	0.771			-0.12	0.267	0.08	0.712
Completed Year 10 or 11	—				—		—	
Completed Year 12	0.04	0.102			-0.13	0.333	-0.09	0.757
Cert III/IV or Diploma	0.00	0.852			-0.42 ***	0.000	-0.50 **	0.018
University degree	0.06 **	0.047			-0.66 ***	0.001	-0.91 **	0.035
Labour force status								
Employed full-time	n.a.		n.a.		0.50 ***	0.000	0.74 ***	0.002
Employed part-time	n.a.		n.a.		0.47 ***	0.000	0.64 ***	0.007
Unemployed	n.a.		n.a.		0.25 *	0.062	0.60 **	0.018
Not in the labour force	n.a.		n.a.		—		—	
Difficulty with transport								
Can easily get places					—		—	
Have difficulty getting places					-0.46 ***	0.000	-0.78 ***	0.001
Can't get places					-0.77 ***	0.000	-0.93 ***	0.000
Has current driver's licence					-0.34 ***	0.001	-0.36 *	0.075
Ever charged by police					-0.17 *	0.069		
Intercept term	n.a.		n.a.		16.86 ***	0.000	16.22 ***	0.000
Dependent/predicted mean <sup>a</sup>	0.36		0.40		14.28		14.62	
Observations	6424		1745		6362		1719	
Likelihood ratio	1135 ***	0.000	277 ***	0.000				
Adjusted R-squared					0.24	0.000	0.22	0.000
F-test					46.89 ***	0.000	13.84 ***	0.000

**Notes:** \*\*\*, \*\*, \* indicate the estimate is significant at the 1%, 5% and 10% level, respectively. A long dash (—) indicates the default or comparison category. a. For the logit models the figure given is the predicted value of the dependent variable when all variables are evaluated at their means.

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