Economic value of community club-based sport in Australia

A joint project by the Australian Sports Commission and

the Griffith Business School at Griffith University, Queensland.

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Executive summary

1. The aim of this study is to develop a valid model that will provide an economic estimate (i.e. Australian dollar value) of social benefits associated with the provision of, and participation in, club-based community sport to Australian society.
2. Following the Gratton et al. (2014) literature review, which was phase one of the project, it was agreed that the present study should concentrate on estimating the monetary value of subjective well-being, and social capital benefits derived from community club-based sport participation.
3. For each of these two benefits of club-based sport participation, two measures of sport participation are used in this report: participating at least once a week for at least 30 minutes (1x30) and participating three or more times a week for at least 30 minutes each time (3x30).
4. Primary data were needed for estimating subjective well-being and social capital. These data were obtained by adding a module to the Australian Sports Commission's sport participation survey (Ausplay) for the fourth quarter of 2016 (July to September). The sample size was 4,500.
5. To date, all the studies on the economic value of sport participation using subjective well-being have used essentially the same methodology: the income compensation (IC) approach. Since income is one of the independent variables in the regression model, together with the sport variable, it is possible to use the parameter estimates on these two variables to estimate the shadow price of sport participation. That is, it is possible to estimate how much income would have to increase to

compensate the individual if he or she were not to take part in sport in order to keep the person at the same level of subjective well-being. This approach is used to estimate the value of subjective well-being and social capital.

6. For subjective well-being three measures were used: SWB1 (life satisfaction), SWB2 (experienced well-being) and SWB3 (meaningfulness).

7. The estimated annual income compensation for SWB1 is $8,385 on the 1x30 measure of sport participation. Given that there are an estimated 3,149,280 sport club participants in Australia, the total monetary value of the SWB1 effect of club sport participation is this figure multiplied by $8,385 or $26.4 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $8,291. The total monetary value of the SWB1 effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $13.4 billion.

8. The estimated annual income compensation for SWB2 is $9,825 on the 1x30 measure of sport participation. Given that there are 3,149,280 adult club participants in Australia, the total monetary value of the SWB2 effect of club sport participation is this figure multiplied by $9,825 or $30.9 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $14,408. The total monetary value of the SWB2 effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $23.2 billion.

9. The estimated annual income compensation for SWB3 is $6,570 on the 1x30 measure of sport participation. Given that there are 3,149,280 adult club sport participants in Australia, the total monetary value of the SWB3 effect of club sport participation is this figure multiplied by $6,570 or $20.7 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $6,350. The total monetary

value of the SWB3 effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $10.2 billion.

10. The estimated annual income compensation for social capital on the 1x30 sport participation measure is $5,932. Given that there are 3,149,280 adult club sport participants in Australia, the total monetary value of the social capital effect of sport club participation is this figure multiplied by $5,932, or $18.7 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $4,204. The total monetary value of the social capital effect of sport club participation is this figure multiplied by the number of 3x30 sport club participants (1,613,520), or $6.8 billion.

1 Introduction

Recent systematic reviews illustrate that sports participation is associated with social benefits in youth and adult populations (Eime, Young, Harvey, Charity, & Wayne, 2013a; Eime, Young, Harvey, Charity, & Wayne, 2013b). Whilst the literature on social benefits from sport has a substantial history, attempts to measure and value these benefits have been limited.

Interest in understanding the social benefit of policy interventions and measuring the effects on individual well-being has grown significantly in recent years. It is widely recognised that while Gross Domestic Product (GDP) measures economic well-being, it does not indicate societal well-being, progress, nor individual quality of life or life satisfaction. Several countries have developed measures of national well-being as part of a long-term programme to present a more comprehensive measure of how society is doing. However, participation in, and engagement with sport (e.g. coaching and officiating), have rarely been included in such well-being research. A similar situation exists in research into the value of the social capital benefits of sport.

The aim of this study is to develop a valid model that will provide an economic estimate (i.e. Australian dollar value) of the broader social benefits associated with the provision of, and participation in, club-based community sport to Australian society.

Stage1

The initial stage of the project produced a literature review completed in 2014 (Gratton et al, 2014). The literature review sought global evidence on the five main social benefits associated with participation in sport: improved health status, improved subjective well-being, reduced criminal and anti-social behaviour, improved educational performance, and increased social capital. It concluded that:

1. Out of all the social benefits of sport, the improved health benefits associated with sports participation are the most well evidenced and widely accepted. It is clear that such benefits can be estimated from existing literature and secondary data analysis. The health benefits of community club-based sport participation are not considered here because they are the subject of a separate study by the Australian Sports Commission.
2. Recent research has shown a strong relationship between sport and well-being and has also provided the methodology for putting a valuation on the benefits of sport for a person's subjective well-being (SWB).
3. Evidence supporting the effect of sport on criminal and anti-social behaviour is quite mixed and largely comes from studies of intervention programmes targeting at-risk young people rather than the general population or a specific population such as those taking part in community club-based sport.
4. Although the weight of evidence shows that sport can increase educational performance, this evidence is dominated by studies conducted in the USA. In addition, there are no studies that attempt to put a monetary value on such benefits.
5. A wide range of studies from across the world provide strong evidence of a positive association between sport and social capital; this benefit is particularly relevant for community club-based sport.

We concluded from the literature that it is possible to estimate the subjective well-being and social capital benefits of sport. Because of equivocal and limited evidence we recommended that estimating the economic value from reductions in crime and anti-social behaviour and improvements in educational performance due to sport participation should not be investigated in Stage 2 (Gratton, et al 2014).

The following sections of this report detail Stage 2's overall research processes. Following the overview the estimations of the monetary value subjective well-being and social capital benefits of community club-based sport participation are provided.

Stage 2

Stage 2 of the project consisted of three sequential studies. Study one informed study two which in turn informed study three. Due to the nature of social capital, we only sampled people in each stage of the research who were 15 and older.

Study one

A cross-sectional pilot test of quantitative questionnaire items designed to measure social capital in organised community sport was commissioned. The items were based on existing measures of social capital (e.g. European Social Survey, World Values Survey). The study one questionnaire sought to provide valid and reliable measures for study two. Participants (n=500) were recruited from a market research panel to represent the gender and age characteristics of the population of Brisbane, Australia. Participants completed one online questionnaire, requiring approximately 10-15 minutes of their time. The questionnaire was distributed to a panel recruited by the provider using Qualtrics online survey software. We conducted extensive analysis of the social capital measures included in the survey to identify measures with abnormal distributions, weak relationships to the construct they were intended to measure, or unsatisfactory amounts of measurement error. This analysis provided us with a refined item pool for additional testing in study two.

Study two

A nationally representative sample was recruited to test the study two questionnaire (n=1,000 sample size), which included the refined social capital items and measures of SWB to provide further refinement of the measurement model for study three and a pilot analysis for the income compensation models. The research team sent a list of 15 items measuring social capital (i.e., community engagement, reciprocity, generalised and personalised trust, and community identification) to the ASC. The ASC integrated these items into a national quantitative participation study conducted by an ASC commercial provider using a bi-modal sampling approach targeted at home and mobile phones. The research team received the de-identified questionnaire responses and then conducted the same analyses as for study one.

This analysis resulted in the final list of items used in study three as the underpinning measurements for the income compensation models presented in this report.

Study three

A larger cross-sectional quantitative survey was distributed to a nationally representative sample of Australian residents (n=4500 sample size) as part of a larger ASC National Participation Survey conducted through an ASC commercial provider via a bi-modal sampling design targeted at home and mobile phones. Each instrument measured the social capital and SWB of participants to develop detailed models of the economic value of the social benefits of organized community sport in Australia. We received a de-identified SPSS file from the ASC provider after survey completion. We conducted the final analysis of the economic benefits of the subjective well-being and social capital benefits of organized community sport in Australia using the same procedures as study two.

Figure 1 shows that the economic values estimated in this report are not independent of each other. Social capital benefits include the resources available and accessed by individuals through social networks, trust and reciprocity. They also include increased community well-being which contributes to subjective well-being. Thus there is an overlap between social capital and subjective well-being which means that we cannot simply add up separate estimates of the economic value of social capital and subjective well-being to get a total economic benefit estimate.

Data sources

Primary data were used to estimate the value of subjective well-being and social capital. This was obtained through the Australian Sports Commission's sport participation survey (Ausplay) for the fourth quarter of 2016 (July to September). The sample size was 4,500. Reponses to these questions forms the basis of the analysis for Chapters 2 and 3.

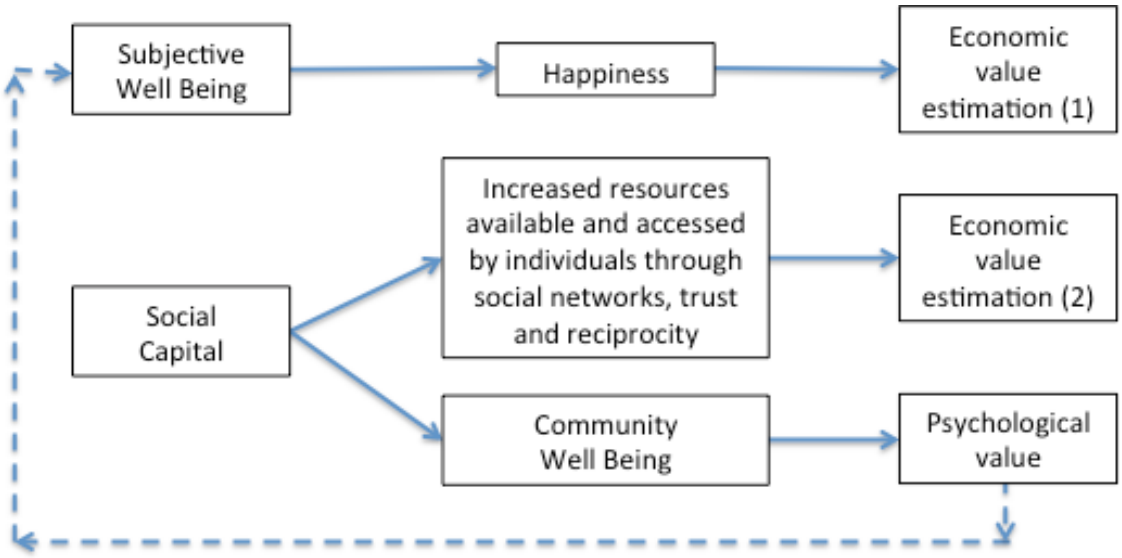

Figure 1: Economic values of club-based community sport

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2 Community club-based sport participation and Subjective Well-being (SWB): Economic value

The study of subjective well-being (SWB) has traditionally been a focus for psychologists rather than economists. In recent years, however, economists have been become increasingly involved in the study of subjective well-being and its determinants. For example, Dolan, Peasgood and White (2008) conducted a review of subjective well-being studies in economics, which pointed out the lack of research on the effect of sport and exercise on SWB and indicated that this could be an important area for future research.

Subjective well-being

The emergence of SWB as a focus for psychologists and, latterly, economists has sought to redress a long focus on unhappiness and negative psychological states. SWB concentrates, instead, on how people experience their lives in positive and negative ways and the underlying social, economic, and cultural conditions that are conducive to living a good life (Diener, 1994). A major strength of the construct is that it does not involve judgements about the positivity of an individual's life based on proxy measures or category memberships (e.g., socio-economic status). Instead, questions measuring SWB ask people to reflect on their own life and experiences (Graham, 2010).

Quantifications of SWB have typically drawn on retrospective measurements of life satisfaction (e.g., Diener et al., 1985). In fact, measures of life satisfaction consistently feature in major national and international population studies (Dolan & White, 2007). In a recent review, Dolan and Metcalfe (2012) examined existing evidence to conclude that life satisfaction (evaluation) correlates strongly with income, employment, marital status, health, personal characteristics and life events. However, a sole measurement of life satisfaction is limited because it does not capture how an individual experiences emotions from moment to moment or the extent to which his or her life is meaningful.

As the life satisfaction aspect of SWB asks people to remember happiness, the experienced domain of SWB reflects the pleasure or pain an individual feels in a specific moment. Rather than asking an individual how he or she feels broadly, the experienced dimension focuses on the emotions felt by an individual at specific moments in time (e.g., Kahnemann et al., 2004) or across a day (see Dolan & Metcalfe, 2012). The experienced component is an important aspect of SWB as it caters to the flux in human emotions and affect that are ignored by more global judgements of life satisfaction.

Dolan and Metcalfe (2012) suggest that in complement to life satisfaction and experienced well-being, researchers should also measure eudemonia. This self-evaluation measures the extent that a person perceives his or her life to be meaningful. Feelings that one's life is worthwhile can lead to feelings of control, autonomy, and self-determination (Deci & Ryan, 2008). Therefore, alongside life satisfaction and experienced well-being, Dolan and Metcalfe (2012) endorse the measurement of the eudemonic facet of SWB. In the present study, we use Dolan and Metcalfe's (2012) recommendations for policy based research to frame the measurement of SWB.

The effect of sport on subjective well-being

Gratton et al. (2014) pointed out that the gap in the literature examining the effect of sport on SWB has been partially filled by Marsh et al (2010), Downward and Rasciute (2011a, 20011b), and Sport England (2013). The Sport England (2013) study is not a new, independent piece of research but a reworking and updating of the Marsh et al. (2010) study. Also, Downward and Rasciute (2011b) is effectively a replication study of Downward and Rasciute (2011a), utilising the same methodological approach applied to an extended data source. Downward and Rascuite (2011a) was based on the first wave of Taking Part data (which is an annual government social survey in the UK with both sport and SWB questions included); Downward and Rascuite (2011b) was based on two waves of Taking Part data. Thus, these studies represent two substantive pieces of independent research rather than four.

These four studies all attempt to put a monetary valuation on the effect of sport on subjective well-being. Of note, all of the studies have used happiness or life satisfaction as a proxy to measure SWB. Furthermore, all studies have found a positive association between SWB and participation in sport and exercise. However, each of these studies used a single measurement of life satisfaction while ignoring experienced and eudemonic elements of SWB.

The approach used by Marsh et al (2010) and Downward and Rasciute (2011a) are essentially similar, although the former uses British Household Panel Survey data rather than the Taking Part data. Both datasets include questions on SWB and sport participation. They both use a regression model with SWB as the dependent variable. The independent variables include income, a variable measuring engagement in sport, and personal and social characteristics of the individual (such as age, gender, marital status, ethnicity, education, etc.).

Since the literature review component of this project (Gratton et al, 2014) was completed there have been several more published studies investigating the effect of sport on SWB (Ruseski et al., 2014; Wicker and Frick, 2015; Wicker, Coates and Breuer, 2014; and Downward and Dawson, 2016). All of these later studies attempting to measure the value of SWB generated from participation in sport and exercise use essentially the same income compensation (IC) approach as Marsh et al. (2010) and Downward and Rasciute (2011a, 20011b). The SWB measure used in these studies was a form of life satisfaction measure such as: 'On a scale of 0 to 10 where '0' represents 'not at all' and '10' represents 'completely', overall how satisfied are you with your life nowadays?' Because income is one of the independent variables in the regression model, together with the sport variable, it is possible to use the parameter estimates on these two variables to estimate the shadow price of sport participation. That is, it is possible to estimate how much a person's income would have to increase in order to keep the person at the same level of subjective well-being in the absence of sport participation.

Valuing the effect of sport on subjective well-being

The regression model used is as follows:

$$SWB_i = \beta_0 + \beta_1 \ln(Y_i) + \beta_2 E_i + \beta_3 X_i + \varepsilon_i \quad (1)$$

Where:

- SWB_i is individual i's SWB
- $\ln(Y_i)$ is the natural logarithm of household income
- E_i is engagement in sport
- X_i are personal and social characteristics
- ε_i is the error term

One of the problems in estimating this type of model is endogeneity or dual causality. That is, whereas it is hypothesised that taking part in sport leads to higher subjective well-being it is also a possibility that those with higher subjective well-being are more likely to take part in sport. If this is the case then the parameter estimates could be biased and unreliable. Marsh et al. (2010) address this problem and use an instrumental variable approach. However, Fujiwara, Kudrna and Dolan (2014) argue that this may not be enough to prevent problems of bias: 'The main technical issue involved in estimating equation (6) [our equation (1) above] is that we have a robust estimate of the *causal effect* of income and the non-market good on life satisfaction. In other words, *we require unbiased estimates of* β_1 *and* β_2. This has been especially problematic for income. The income variable in life satisfaction models suffers from endogeneity due to reverse causality and selection effects and measurement error which all tend to lead to a *downward* bias in the income coefficient in models like equation (7). Since the income coefficient acts as the denominator in the calculation of value in equation (6), this leads to an *upward bias* in the value of non-market goods using the Well-being Valuation (WV) method. As a result, we have seen implausibly high values for non-market goods in the WV literature in the past.' (p.16). Fujiwara (2013) suggests that this problem is best dealt with using a three-stage WV method analogous to the approach we have used. The methodology is explained fully in the Appendix.

All of the studies cited above use a variety of instrumental variables. The instrumental variable should be related to sport participation, but not directly to well-being. One popular instrument used is a measure of sport supply and we follow Wicker and Frick (2015) using the variable: sport opportunities, which is measured by the question: 'The area where you live offers you many opportunities to be physically active (1=totally agree; 4=totally disagree).'

The income compensation can be estimated from:

$$IC = \bar{Y} - e\{\ln(\bar{Y}) - \hat{\beta}_2/\hat{\beta}_1\}$$

Where $\bar{Y}$ is the average income of the sample population, and the $\hat{\beta}$ terms represent the estimated coefficients from the regression equation for SWB above.

Data

The data consisted of a national sample of 4,500 individuals. The data were collected from the beginning of July to the end of September 2016. Three measures of SWB were used as suggested by Dolan (2015):

- **SWB1** (Life satisfaction): On a scale of 0 to 10 (where 0 is 'Not at all satisfied' and 10 is 'Completely satisfied') overall, how satisfied are you with your life nowadays?
- **SWB2** (Experienced well-being): On a scale of 0 to 10 (where 0 is 'Not at all' and 10 is 'Completely'), how happy did you feel yesterday?
- **SWB3** (Meaningfulness): On a scale of 0 to 10 (where 0 is 'Not at all' and 10 is 'Completely'), how worthwhile are the things that you do in your life?

The average values of these three variables are reported in Table 1 for the whole sample, sports participants that are club members, sports participants who are not club members, and for non-participants in sport. All three measures show the same pattern: sports participants that take part in sport in clubs have the highest SWB, next are sports participants that do not take part in clubs and the lowest level of SWB is non-participants.

Table 1:
Mean scores on subjective well-being by type of participation*

	All	Sports club members	Other sport participants	Non-participants
SWB1: Life satisfaction	7.6	8.2	7.9	7.3
SWB2: Experienced well-being	7.5	7.9	7.7	7.3
SWB3: Meaningfulness	8.1	8.5	8.4	7.9

* Scale 0 = not at all to 10 = completely

Results

The estimated annual income compensation for SWB1 is $8,385 on the 1x30 measure of sport participation. Given that there are 3,149,280 adult club participants in Australia, the total monetary value of the SWB effect of club sport participation is this figure multiplied by $8,385 or $26.4 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $8,291. The total monetary value of the SWB effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants (1,613,520) or $13.4 billion.

The estimated annual income compensation for SWB2 is $9,825 on the 1x30 measure of sport participation. Given that there are 3,149,280 adult club participants in Australia, the total monetary value of the SWB2 effect of club sport participation is this figure multiplied by $9,825 or $30.9 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $14,408. The total monetary value of the SWB effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $23.2 billion.

The estimated annual income compensation for SWB3 is $6,570 on the 1x30 measure of sport participation. Given that there are 3,149,280 adult club participants in Australia, the total monetary value of the SWB effect of club sport participation is this figure multiplied by $6,570 or $20.7 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $6,350. The total monetary value of the SWB effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $10.2 billion.

Conclusions on club sport and subjective well-being

The economic literature on the determinants of subjective well-being has grown substantially over the last two decades. Until relatively recently, this literature has ignored the role of sport in improving subjective well-being. Over the last few years several studies have been carried out on the effect of sport participation on SWB. The results show a consistent positive effect of sport on SWB. This research has attempted to estimate the monetary value of this benefit using a more complex measurement of the construct than mere life satisfaction.

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3 Community club-based sport participation and Social Capital: Economic value

Communities are marked by deep, familiar and co-operative ties between people that often involve a high degree of personal intimacy, moral commitment, social cohesion and continuity in time. Communities are also committed to a clearly defined set of values that guide their behaviour through allied social norms (Field, 2003). Key to understanding community is the concept of identity. In social and psychological theory, identity refers to the development of a sense of self. This sense of self develops as a result of social interaction and group membership. Identity is also formed in a variety of social forums so that individuals learn and take on particular patterns of normative behaviour. This identity formation process is a fundamental element of sport as well as of communities (Skinner, Zakus, & Edwards, 2008).

Community identity and community belonging are a non-tangible benefit of participation in sport and are linked to positive social capital (Collins & Kay, 2003). Sport supplies benefits such as improved self-esteem, community identity and unity and can facilitate community development and social inclusion (Vail, 2007). Membership of a community provides a sense that an individual has invested a piece of themself (central contributor to an individual's feeling of group membership and to his or her sense of community) to become a member and consequently has an entitlement to belong (Skinner et. al, 2008). It results in a sense of belonging, of being a part of something bigger. With membership comes boundaries; this signifies that there are individuals who belong and individuals who do not. These boundaries grant the members the emotional safety essential for needs and feelings to be shared and for closeness to arise (McMillan & Chavis, 1986).

Positive social capital is considered a key element of communities that function effectively. It is a multifaceted phenomenon that has a strong association with community engagement (Putnam, 2000). Putnam makes reference to norms of mutual benefit and trustworthiness that arise from community engagement. This

facet of social capital can be seen as an intangible resource that is enmeshed in social networks and can act as a conduit through which communities can develop high levels of generalised trust (as opposed to particularised trust) and socially cohesive environments (van Oorschot, Arts & Gelissen, 2006). Generalised trust assists in the building of large scale, complex, interdependent social networks and institutions that make communities function more effectively and are central to 'producing a norm of generalised reciprocity' (Putnam, 2000, p. 21). Ties among individuals based on generalised trust and reciprocity are processes for generating participation in community sport organisations. The underlying logic of generalised trust and particularized trust can be further exemplified in the context of Putnam's dichotomy of bonding (or inclusive) and bridging (or exclusive) social capital as well as Granovetter's (1973) social capital dichotomy of weak ties and strong ties. Granovetter's distinction of the strength of weak ties differentiates between strong ties (those between close connections) and weak ties (those between acquaintances rather than family and friends). Based on this view, it can be argued that individuals who are connected to more weak ties have a greater range of associates and greater opportunities for broader community engagement.

A strong body of evidence demonstrates the benefits of community sporting clubs in terms of community benefits (such as reciprocity), social benefits (such as development of social networks) and economic benefits (such as increased employment and social enterprise), and a clear opportunity exists for individual skill development (ASC 2009). The provision of sporting infrastructure (an output) for example, is likely to lead to community benefits due to the high use of sporting facilities in Australia and the evidence based link between increased physical activity and increased well-being (health benefits, socialisation). This was clearly the case in findings published by the Centre for Sport and Social Impact (at La Trobe University) which surveyed over 1600 football clubs in Victoria, Australia and found that 'the social return on investment for an average community football club indicates that for every $1 spent to run a club, there is at least $4.40 return in social value in terms of increased social connectedness, well-being, and mental health status;

employment outcomes; personal development; physical health; civic pride and support of other community groups' (Skinner & Woolcock, 2017).

Similar results emerged from a like-minded study in the UK (Fujiwara, Kudrna & Dolan 2014) that commissioned researchers from the London School of Economics to undertake analysis and develop the evidence base on the social impacts of cultural engagement and sport participation, and to estimate the monetary values for those impacts. Social impacts were considered in four areas: health, education, employment and economic productivity, and civic participation. The social benefits of culture and sport participation were wide ranging and this research found several statistically significantly associations: Sports participants were 14% more likely to report good health than non-participants, this produced a cost saving to the government of £97 per person; generally, sports participants were not more likely to go on to further education than non-sports participants. However, among the sports variables, there was a statistically significant relationship for persons associated with swimming, they were 7% more likely to seek further education. Unemployed persons who participate in sport were 11% more likely to have looked for a job during the past four weeks; and sports participants are 3% more likely to be frequent volunteers and (on average) donate £25 more per person to charities than non-participants. However, these impacts depend upon gender and age (Skinner & Woolcock, 2017).

Interest in sport and social capital's capacity was the trigger for Delaney and Keaney (2005) to analyse data from a large number of existing statistical studies using data from both British and international surveys. Their research compared levels of sports participation in the United Kingdom with that of other European Union countries, and explored links between sports participation and social capital. These researchers suggest that sport has an important role to play in fostering social capital and one area they identified this could be done was through membership of sports clubs.

To participate in sport is to participate in social interactions of commonality and trust. Commonality and trust are main components of social capital. Sport is

inherently geared towards building social and community capital due to its organisational nature. Teams have players (team-mates), coaches, managers, referees, opponents and facilitators for sport to transpire. Specifically, participants are instructed on how to interrelate and behave within sport and societal boundaries. Sport teams, competitions and leagues are all systems of interactions. Developing life long friendships and significant networks due to involvement in a sporting club is frequently claimed (Zakus, et al, 2009). The necessity for working collaboratively to accomplish results, of anticipating in response to what an individual contributes into the sporting endeavour builds a mutual relationship. Sport is therefore capable of acquiring the vital components of social capital.

For this project, the relationship between sport and social capital is central as this is the area of social benefit of sport that best fits the sports club environment. Much of the material reviewed is very recent and this latest research has increased the weight of evidence in favour of sport generating social capital. At the time the literature review was completed in 2013 none of the research reviewed had attempted to measure the economic value of the social capital associated with sports participation, although there were studies of the economic value of social relationships (cf. Powdthavee, 2008). Since the literature review was completed, there have been several more studies of the economic value of social capital published (c.f. Orlowski and Wicker, 2014; Colombo and Stanca, 2014) but no research on the specific monetary value of sport's impact on social capital has yet been published using primary data research. Department of culture media and sport (2016) does have a monetary valuation but this was estimated from secondary data.

Data

Given the many dimensions of social capital seven different questions were used to measure social capital covering community engagement, personalised trust, generalised trust, community identification, and reciprocity based on Vyncke et al (2012). These questions and the categories they relate to are listed below. The agree/disagree variables were scaled on a 1 to 5 scale with 1 for 'strongly disagree' and 5 for 'strongly agree'. The yes/no variables were scaled as a 2 for 'No'

(corresponding to 'disagree' on the 1 to 5 scale) and a 4 for 'Yes' (corresponding to 'agree' on the 1 to 5 scale).

Community engagement

- **CE1** I have taken part in a local community project in the last 12 months (Yes/No).
- **CE2** I have volunteered for local community organisations or causes in the last 12 months (Yes/No).
- **CE3** I have been an active member of [a] local community organisation[s] in the last 12 months (Yes/No).

Personalised trust

- **PT** I feel safe walking in my local community after dark (Would you say you strongly agree, agree, neither agree or disagree, disagree or strongly disagree).

Generalised trust

- **GT** I think that most people can be trusted (Would you say you strongly agree, agree, neither agree or disagree, disagree or strongly disagree).

Community identification

- **CI** I identify with my local community (Would you say you strongly agree, agree, neither agree or disagree, disagree or strongly disagree).

Reciprocity

- **REC1** If there was a serious problem in my local community, the people here would come together to solve it (Would you say you strongly agree, agree, neither agree or disagree, disagree or strongly disagree).

An average value for social capital (SC) was obtained by averaging across the values for the seven variables listed above to provide a single measure of social capital and then this replaced the SWB in the regression equation to estimate the monetary value of social capital generated through sports participation using the same income compensation methodology as for SWB.

The average values of this SC variable are reported in Table 2 for the whole sample, sports participants that are club members, sports participants not club members, and for non-participants in sport. The pattern is the same as for SWB: sports

participants that take part in sport in clubs have the highest SC, next are sports participants that do not take part in clubs and the lowest level of SC is non-participants.

Table 2:
Mean scores on social capital by type of participation*

	All	Sports club members	Other sport participants	Non-participants
SC	3.2	3.5	3.3	3.1

Results

The estimated annual income compensation for social capital on the 1x30 sport participation measure is $5,932. Given that there are 3,149,280 club sport participants in Australia, the total monetary value of the SWB effect of club sport participation is this figure multiplied by $5,932, or $18.7 billion. For the 3x30 measure of sport participation, the estimated annual income compensation is $4,204. The total monetary value of the social capital effect of club sport participation is this figure multiplied by the number of 3x30 club sport participants 1,613,520 or $6.8 billion.

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4 Summary and conclusions

The objective of this report was to put an economic valuation on the social benefits (subjective well-being and social capital) of taking part in community club-based sport. This has been carried out using two measures of community based club sport: those taking part at least once a week for a minimum of 30 minutes (1x30) and those taking part at least three times a week for a minimum of 30 minutes each time (3x30).

The total value of the two social benefits of community club-based sport participation based on the 1x30 measure of participation is:

Benefit	$ billion
Subjective well-being:	
SWB1	26.4
SWB2	30.9
SWB3	20.7
Social capital	18.7

The total value of the two social benefits of community club-based sport participation based on the 3x30 measure of participation is:

Benefit	$ billion
Subjective well-being:	
SWB1	13.4
SWB2	23.2
SWB3	10.2
Social capital	6.8

As was pointed out earlier (see Figure 1), there is an overlap between subjective well-being and social capital. This is also true among the three subjective well-being

measures as some of the effect in each SWB measure is down to shared variance. Because of that, we cannot simply add up the estimates to get a total economic benefit estimate. It is clear that subjective well-being generates the highest economic value followed by social capital. The income compensation values are high but it should be emphasised that these do not represent any specific expenditures either by sports participants or government. Rather they represent a theoretical value that would be needed to compensate the sport participant if he or she was prevented from taking part in sport in order to maintain the same level of subjective well-being or social capital that was achieved with current level of sport participation.

The current research can draw parallels with other published work. For example, according to ASC (2016), the top three motivations for participation are physical health and fitness, fun/enjoyment and social reasons. In the case of the last two, organised sport significantly outperforms non-organised forms of participation. Overall, the extension of analysis from direct economic impact to subjective well-being and social capital 'uncovered' benefits generated by the activities of individuals which are monetised through the income compensation approach. Although this is a theoretical construct, as explained above, it contributes towards understanding the willingness of an individual to pay for extra sport services (if personal income can support such spending) or to volunteer if the market cannot cater for the existing demand. A sport participant has increasing community ties and therefore any decision on sport supply by public bodies should take into account not just the imminent economic benefit but also that generated through the social capital available to participants.

Throughout the analysis, organised sport generated higher values of subjective well-being and social capital. Therefore, it can be concluded that targeting higher levels of organised participation will help to achieve higher values of well-being and social capital (than otherwise). This result is consistent with findings in both Australian and international research. However, paradoxically, this most beneficiary target for society (in terms of SWB and social capital indicators) is also the most difficult to

achieve. According to ASC's participation plan (ASC, 2015): 'sports are operating in a rapidly changing environment where Australians are increasingly time-poor, have limited budgets and are inundated by new forms of entertainment. Preferences towards other leisure activities are on the rise eroding sports' traditional customer bases'.

The unprecedented technological revolution in indoor leisure has dominated the use of people's leisure time and squeezed the time dedicated to sport. As a result flexible non-organised personal activities (such as walking and jogging) have gained popularity reducing the potential of social capital and subjective well-being. Organised sport has not adapted to the new realities.

In the Australian context the major dip in organised sport participation occurs in teenage children (ASC, 2015), between the ages of 13 and 20. Characteristically, 77% of Australian children spend their spare time watching TV. The increasing number of adult Australians leading a sedentary life does not help this dip. In Australia, there is a strong correlation between the activity levels of parents and their children. According to ASC's report on participation (ASC, 2016), 72% of children who have at least one active parent are physically active in organised sport or physical activity outside of school compared to just 53% of children with at least one inactive parent. Further, if a parent both participates and volunteers in organised sport then the probability of participating (outside school) for the associated children increases to 90%.

In the light of the current research the existing 'Sporting School program' (ASC, 2015) gains renewed importance, for the children and youths aged 12 to 17. This programme is addressing the 'alarming dropout rates of our youth'. Given the policy context above, a stronger association between schools, parents and sport clubs could help to implement policy. Similarly, reflecting the available evidence, greater community access should be provided to tertiary education and other institutional sporting facilities. The programme should become more flexible to accommodate sudden changes in demand for sport provision following major sporting success.

Adequate coaching provision across many sports is essential. An example from the international experience includes the growth of gymnastics among children and teenagers in the UK, following Olympic success in London and Rio, and adequate increase in coaching supply to accommodate the surge in demand.

Further, sport clubs should become more youth friendly both in terms of technology and structure. The more feasible way of increasing organised sport participation is by 'recruiting' non-organised participants and by retaining youth after the age of 12. For this purpose, organised sport could incorporate technologies associated with personal use such as apps for tracking activity or training, wearable technology such as pedometers, and social media tools. A policy tool applied in Germany, using similar logic, was to ensure that young people were included in the organisation structures of sport clubs. This makes sport supply more relevant to a very important demographic and further increases social capital by providing managerial experience to young people.

Finally, the current research supports the importance of some already suggested polices (Commonwealth of Australians, 2011) related to the priorities of investment and the voluntary sector. The existence of high subjective well-being and social capital value in the organised community framework underpins motivations for sport volunteering and suggests that people would defend sport provision even when markets cannot support it. Volunteering programmes for sporting and physical activity organisations can attract and retain volunteers through education, accreditation and recognition. Regarding infrastructure programmes, to maximise social capital and sustainability, preference should be given to projects that have the potential to engage wide sections of the population, such as multi-sport facilities in proximity to other community infrastructure.

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Appendix:
The theoretical model of Income Compensation and its method of estimation: Example of SWB

THEORETICAL MODEL PART 1

The theoretical model used is:

$SWB_i = \beta_0 + \beta_1 \ln(Y_i) + \beta_2 E_i + \beta_3 X_i + \varepsilon_i$

Where:

SWB_i is individual i's SWB;

$\ln(Y_i)$ is the natural logarithm of household income;

E_i is engagement in sport;

X_i represents personal and social characteristics and

ε_i is the error term.

Assume that at the mean income $\bar{Y}$, SWB $=SWB_1$.

Hence: $SWB_1=\beta_0 + \beta_1\ln(\bar{Y}) + \beta_2E_1 + \beta_3 X_1 + \varepsilon_1$ ..... (1)

SWB increases by rises in both income and engagement in sport.

Let E_1 increase by one unit to E_1+1.

Then, in order to keep SWB constant at SWB_1, income has to decrease by IC (income compensation), where IC>0. Hence:

$SWB_1=\beta_0 + \beta_1\ln(\bar{Y}-IC) + \beta_2 (E_1 +1)+ \beta_3 X_1 + \varepsilon_1$ ..... (2)

By subtracting (2)-(1):

$0= \beta_1\ln(\bar{Y}-IC)- \beta_1\ln(\bar{Y}) + \beta_2 (E_1 +1- E_1)$ =>

$\beta_1\ln(\bar{Y}-IC)= \beta_1\ln(\bar{Y}) - \beta_2$ =>

$\ln(\bar{Y}-IC) = \ln(\bar{Y}) – (\beta_2 / \beta_1)$ =>

$\bar{Y}-IC = e^{\left\{\ln(\bar{Y})-(\frac{\beta_2}{\beta_1})\right\}}$ =>

$IC= \bar{Y} - e^{\left\{\ln(\bar{Y})-(\frac{\beta_2}{\beta_1})\right\}}$. ..... (3)

As a result, to estimate IC, we need to assign numerical values to the coefficients β_2 and β_3 in model (1). All of the studies considered use a variety of instrumental variables to estimate model (1). The instrumental variable is used in the place of

income in the original equation. Following the estimation of β_2 and β_1, income compensation is evaluated using equation (3).

ESTIMATING MODEL PART 2

The second question is how are we going to estimate the coefficients β_2 and β_1 in equations (3), or (1), above.

The theoretical foundation of the estimation can be found in the Centre for Economic Performance discussion paper by Daniel Fujiwara (2013) 'A General Method for Valuing Non-Market Goods Using Wellbeing Data: Three-Stage Wellbeing Valuation' (http://cep.lse.ac.uk/pubs/download/dp1233.pdf).

Within this discussion paper a three equation method is suggested to overcome a bias in the results when a single Instrumental Variable (IV) equation is used (i.e. when estimating equation (1) directly). In this discussion paper it was shown that measures close to income compensation (in this case Equivalent Surplus) would decrease from almost £23,000 under a single pooled-OLS model to almost £7,500 under the suggested three equation IV model. The model formulation used in this report is the following:

Equation 1:

$$\log(Income) = c + \alpha_1 IV + a_2 X + \hat{\theta}$$

where IV is an instrumental variable, X is a vector of demographic characteristics and c is a constant. This equation derives the residual vector $\hat{\theta}$ which is then used in equation 2.

Equation 2:

$$SWB = c + \beta_1 \log(income) + \gamma_1 X + \gamma_2 \hat{\theta} + \gamma_3 \hat{\theta} \log(income)$$

where X is a vector of demographic characteristics.

From this equation the coefficient β_1 is derived and used as an input in the Income Compensation equation (3) above.

Equation 3:

$$SWB = c + \beta_2 E + \gamma_2 \log(income) + \gamma_3 X$$

where *X* is a vector of demographic characteristics and E is an engagement in sport variable.

From this equation the coefficient β_2 is derived, and used as an input in the Income Compensation model (3) above.

Finally the estimating methods used are OLS for Equation 1 and Ordinal regression (with probit function) for Equations 2 and 3.