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Sport and Related Recreational Physical Activity - The Social Correlates of Participation and Non-Participation by Adults.

Mike Stratton, Lewis Conn, Charity Liaw and Lisa Conolly (Australian Bureau of Statistics).

ABSTRACT

Various government agencies are increasingly wishing to know more about the reasons why people participate in sport and recreational physical activity. Reliable information on these - the motivators and the barriers - can be difficult to measure across the population as a whole however one way of understanding the nature of participation is to first identify the characteristics of target groups with various levels of participation.

The Australian Bureau of Statistics conducted the first General Social Survey in 2002 to collect a range of information that could be used as indicators of social capital and well-being. At the same time the survey asked about participation in sport and physical activities. The resulting data provides a unique opportunity to examine the relationships between a range of social indicators and participation in sport and physical activity.

Through a multivariate logistic regression model, we quantify a number of associations between participation in sport, the socio-economic characteristics of participants and several other social indicators. The model estimates the likelihood of participation given the explanatory variables and so enables those with low levels of participation to be better defined. This in turn enables the development and targeting of policies aimed at increasing participation in sport and related physical activities.

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INTRODUCTION

The research presented in this paper has evolved from a review of the literature on measuring barriers and motives for participation and the need to better understand the characteristics of non-participants. Extensive use of information collected in the General Social Survey (GSS) has been undertaken to identify and examine relationships between participation and a range of social indicators and the findings may provide some insight into some of the drivers of non-participation by relating some of these indicators to commonly provided reasons for non-participation.

While the analysis presented in this paper considers the situation with regard to non-participation and any participation in sport and recreational physical activities, data are also available for the frequency of participation reported over a twelve month period. This additional data on frequency of participation will be analysed and reported on separately.

The Australian Bureau of Statistics has conducted a number of surveys to measure participation in sport and related recreational physical activity. Separate measures of exercise levels have also been compiled as part of national health surveys. The sport and physical activity surveys have been conducted primarily to provide information on participation in organised and non-organised sporting activities. The information is also increasingly being used to as one of a number of measures of social participation. While sport participation surveys are not intended to provide a detailed "exercise" measure (like that collected on the National Health Survey), non-participants in sport and physical activity are a likely target group for policies that are concerned about the level of physical activity being undertaken in the adult population.

The most recent sport participation survey was conducted as part of the General Social Survey in 2002. As well as participation in sport and recreational physical activities, a range of questions to obtain information about the social circumstances of individuals were asked. These included volunteering, social and community contact, access to transport, feelings of safety and personal stressors. The combination of these general social indicators with the questions on sport provides an opportunity to analyse a wider range of demographic and social characteristics of participants in sport in Australia.

Sport and recreation policy makers are increasingly interested in non-participants and the barriers to participation. At the core of this direction is increasing concern at the incidence of obesity and the need to encourage increased levels of physical activity. It has been reported that 60% of Australian adults aged over 25 years were overweight or obese in 2000 and that the incidence of obesity increased 2.5 fold over the twenty years from 1980 to 2000 (7% of those aged 25-64 years in 1980, 18.4% in 2000 (Cameron et al, 2003). The ABS National Health Survey also reports that Australians aged 15 years and over are becoming increasingly overweight or obese with the proportion increasing from 36% in 1989-90 to 39% in 1995 and 44% in 2001. The survey also reports that close to half of all those who were overweight or obese also were physically inactive.

It can be difficult to determine the reasons for non-participation because they are highly individualistic and variable. Different reasons can apply at different times and those reasons may change due to changing personal circumstances. However, a typical list of commonly cited barriers was used in the Alberta Recreation Survey (Alberta Community Development, 2004) and this includes cost factors, availability of time due to work or family pressures, access to facilities, and physical or social skills that inhibit participation. Other research has

attempted to classify lists of reasons in a hierarchy of intra-personal, interpersonal and structural barriers (Alexandris and Carroll, 1997).

There have been several studies that have examined reasons for participation/non-participation as they apply to specific populations - the aged, mothers and different socio-economic groups (Booth et al 2000, Brown et al 2000, Burton et al. 2003). Identifying those 'target groups' with low levels of participation has been seen as the first step in developing policy responses such as social marketing campaigns to promote physical activity (Maibach, 2003). This paper will use available data to describe the characteristics of non-participants and so help to better understand the reasons for non-participation, in the hope that this will be useful information for the design of policies and programs to enhance participation.

METHODOLOGY

The General Social Survey

The GSS was conducted in 2002 to provide information on a range of social dimensions and aspects of life important to wellbeing. A number of modules of questions covering aspects of community involvement, social inclusion and familial and social networks were included in the survey and the information from these questions may be used collectively to provide measures of social capital.

A separate module of questions was also included to cover participation in sport and recreational physical activities. These were designed primarily to provide information on the types and frequency of participation undertaken by people aged 18 years and over. The survey results can be used to provide a wide range of social information linking participation in sport and physical activity with measures of community involvement and wellbeing. This information, together with the demographic information available from the survey provides a rich data source and enables sport participants and non-participants to be described in much more detail.

The survey was conducted during the period March to July 2002 in face-to-face interviews using computer assisted interviewing. Most of the information for the survey was obtained from a randomly selected person aged 18 years or over in the selected household, however some information, eg on household income, might have also required other household members to be consulted.

Dwellings included in the survey were selected at random using a multi-stage area sample that was designed to provide reliable information at the national level and for each state and territory. The effective sample size was about 17,000 and of these, responses were obtained from an adult in 91% (15,500) of the selected dwellings.

The GSS identified non-participants in sport or recreational physical activity through the following question:

> *"The next few questions are about any physical activities or sports that you have participated in as a either a participant, coach, official, umpire or administrator in the last 12 months"*
>
> *"In the last 12 months did you participate in any physical activities for recreation, exercise or sport?"*

For those who participated, subsequent questions included the type of activity or sport, whether participation was organised, non-organised or both and the frequency of participation over the previous twelve months. Further information on the sport and physical activity questions can be found in the ABS publication Participation in Sport and Physical Activities (cat no 4177.0).

Participation included all forms of participation in sport and recreational physical activity (including coaching, refereeing, administrating, and other involvements). While the total persons involved in all forms of participation numbered 9,283,200 or 64.0% of the population aged 18 years and over, persons who participated as players in these activities numbered 9,056,300 or 62.4%. The difference between these are relatively small and while in some previous analyses, those involved in non-playing roles were included as sport participants (because of the physically active nature of some roles), in this analysis, those who were involved only in a non-playing role have been excluded.

Multivariate analytical method
A multiple logistic regression analysis has been used. This estimates the odds of an event occurring given a set of explanatory variables. In this case, the odds of adults participating in sport or physical activity, given a range of socio-economic variables, is modelled.

The dependent variable
The dependent variable was participation in 'sport and recreational physical activity', as described above. In using logistic regression analysis, the dependent variable may have only two categories and in this model was specified as:

> *participation if the respondent participated at least once in the 12 month period; and non-participation otherwise.*

The explanatory variables
A univariate analysis of GSS data was first conducted to identify variables where there was some association with participation in sport. A number of the items were chosen because of their relation to commonly cited reasons for non-participation, eg frequency of contact with family and friends may be related to not participating because of no one to participate with; and difficulty in getting to places/access to transport may be related to access to facilities. Some variables that might have been considered to have some association with participation were tested and subsequently excluded from the final model because both the univariate analysis and/or the multivariate analysis did not indicate a strong relationship. Consequently, the final variables included in the model do not represent an exhaustive list of those with some relationship to participation. Examples of variables that have been excluded from the final model include:

- Hours of work and travelling time to work;
- Participation in other community activities, eg church groups, clubs and volunteering, including type of organisation volunteered with and
- Personal stressors, eg divorce, family bereavement, illness, loss of job.

The reference case
The model expresses results relative to a reference case. The specifications for this sought to identify an average or typical situation and also considered the likely significance of other items relative to this. It should be noted that using a different reference case does not change any fundamental conclusions, only what the explanatory variables are relative to and the value of the estimates.

The reference case was specified as:

- A male aged 35 to 44 years;
- Living in NSW in a major city;
- In the middle or third quintile of the socio-economic index for areas (SEIFA) index of relative disadvantage;
- In a couple family with children;
- Who speaks only English;
- Where self-assessed health status is excellent;

- Highest year of education is Year 12 or equivalent;
- Occupation grouping is Service and Clerical;
- Equivalised household income is $700 to $999 per week;
- Who has weekly contact with family or friends;
- Who has no difficulty accessing transport and
- Who feels very safe in the community.

The explanatory variables

The explanatory variables included in the model are all expressed as categorical variables or grouped variables. The groups were selected to provide the best fit in the multivariate model.

The Socio-Economic Index for Areas (SEIFA) index of relative disadvantage and the Accessibility/Remoteness Index of Australia (ARIA) were also used in the model. These are spatial indexes compiled from a range of socio-economic information collected in the 2001 Population Census. The index values of the geographic area for each household selected in the survey was identified; the ARIA index was expressed in remoteness categories and the SEIFA index was expressed in quintiles, ie the index values were arranged into five classes; the 1st being the most disadvantaged and the 5th being the least disadvantaged. The variables included in the model are shown in table 1 and the participation rates for these are included in the appendix.

Table 1: Explanatory variables and their reference categories

VARIABLE
Age-Sex
18-24 Male
25-34 Male
35-44 Male (reference case)
45-54 Male
55-64 Male
65-105 Male
18-24 Female
25-34 Female
35-44 Female
45-54 Female
55-64 Female
65-105 Female
State
New South Wales (reference case)
Victoria
Queensland
South Australia
Western Australia
Tasmania
Northern Territory
Australian Capital Territory
Remoteness
Major City (reference case)
Inner Regional
Outer Regional
Remote

Table 1 (cont): Explanatory variables and their reference categories

VARIABLE
Occupation
Manager & Administrator
Professional & Advanced Services
Service and Clerical (reference case)
Labour, Transport & Trade
Not Working
Equivalised Household Income (weekly)
Less than $300
$300 - $499
$500 - $699
$700-$999 (reference case)
More than $1,000
SEIFA (index of relative socio-economic disadvantage)
Lowest 20%
2nd Quintile
3rd Quintile (reference case)
4th Quintile
Highest 20%
Family Type
Single Parent with Children
Couple with Children (reference case)
Other Couple
Lone Person
Other Household
Education
Year 11 or Below
Year 12 (reference case)
Certificate
Degree/Diploma
Proficiency in English
Only English (reference case)
Some English
No English
Health Status (self assessed)
Excellent (reference case)
Very Good
Good
Fair
Poor
Difficulty Accessing Transport
Ease (reference case)
Some Difficulty
Extreme difficulty
Frequency of Contact with Family or Friends
Weekly (reference case)
Monthly
Quarterly
No Contact
Feelings of Safety
Very Safe (reference case)
Not Very Safe

Interpretation
The model identifies some key associations between participation/non-participation in sport or recreational physical activity (the dependent variable) and a range of demographic and social characteristics (the explanatory variables), with the output being a table showing the odds of participating compared to the reference case. For example, table 2, below, shows that a female aged 35-44 years has an odds ratio of 0.77. This means that the odds of participation for a female aged 35-44 is 0.77 times that of a person with the reference case characteristics - in this model, a male aged 35-44 years (taking into account the other variables included in the model). Values of less than one are associated with lower levels of participation - adults in these categories are less likely to participate than adults in the reference category (all other things being equal); and odds ratios of more than one likewise imply being more likely to participate than the reference category. If the odds ratio of a category is not statistically significantly different from one, then respondents in that category are not significantly more or less likely to participate than those in the reference category.

The odds ratio for the categories of each explanatory variable describe the effect of being in that category, taking into account the effects of all the other explanatory variables included in the model. For example, the association between sport participation and equivalised household income (one indicator of socio-economic status) given by the odds ratio for this variable already accounts for the effects of other included socio-economic indicators, eg the SEIFA quintiles.

RESULTS

The results of the model are summarised in table 2, on the next page, which shows the odds ratio for each of the categories of each of the explanatory variables. More detailed data from the model, including the confidence limits for the odds ratios, are included in the appendix.

Proficiency in English
A range of diversity indicators covering birthplace, whether a language other than English was spoken at home and proficiency in spoken English were collected in the GSS. In the descriptive analysis, only proficiency in English had a relationship with participation in sport or physical activity and of the proficiency categories "no English, "not well", "well," "very well," and "speaks English only", only the first two had a noticeable relationship with participation. Thus, the original proficiency categories were aggregated to produce the categories: "no English"; "some English" and "speaks English only".

The participation rates for people in the categories "no English" and some English were 17.5% and 53.2% respectively. These low rates of participation are reflected in the model where these categories have a significant association with non-participation - odds ratio of 0.24 for those with no spoken English and 0.66 for those with some English.

This finding might be partly a reflection of the difficulties facing people with less English speaking ability to establish networks that might facilitate participation in sport or physical activity. Alternatively, people who are likely to have poorer English speaking ability, such as recent or older migrants, may have good networks within their communities, but may be less inclined to participate for other reasons. Perhaps some forms of physical activity or sport are not relevant or of interest for some migrant groups.

Whatever the reasons for this finding, these reasons are not likely to be socio-economic factors (ie: lower incomes amongst migrants with less English speaking ability) since these factors are already accounted for separately in the multivariate analysis. Further research would be needed to ascertain the reasons for this finding.

Table 2: Odds ratios for participating in sport or physical activity

Explanatory variable	Category	Base category	Odds ratio
Age-Sex	18-24 Male	35-44 Male	1.68
	25-34 Male		1.23
	65-105 Male		0.70
	45-54 Male		0.68
	55-64 Male		0.64
	18-24 Female		not significant
	25-34 Female		not significant
	55-64 Female		0.77
	35-44 Female		0.77
	45-54 Female		0.70
	65-105 Female		0.54
State	Western Australia	New South Wales	2.26
	Tasmania		1.55
	Australian Capital Territory		1.48
	Victoria		1.26
	Queensland		1.21
	Northern Territory		not significant
	South Australia		not significant
Remoteness	Remote	Major City	not significant
	Inner Regional		1.14
	Outer Regional		not significant
Occupation	Professional & Advanced Services	Service and Clerical	1.20
	Not Working		not significant
	Manager & Administrator		not significant
	Labour, Transport & Trade		0.74
Equivalised Household Income (weekly)	More than $1,000	$700-$999	1.50
	$500 - $699		0.84
	$300 - $499		0.78
	Less than $300		0.66
SEIFA	Highest 20%	3rd Quintile	1.32
	4th Quintile		1.16
	2nd Quintile		not significant
	Lowest 20%		0.88
Family Type	Other Couple	Couple with Children	1.29
	Lone Person		1.26
	Other Household		not significant
	Single Parent with Children		not significant
Education	Degree/Diploma	Year 12	1.37
	Certificate		not significant
	Year 11 or Below		0.66
Proficiency in English	Some English	Only English	0.66
	No English		0.24
Health Status (self assessed)	Very Good	Excellent	0.88
	Good		0.69
	Fair		0.46
	Poor		0.30
Difficulty Accessing Transport	Some Difficulty	Ease	not significant
	Extreme difficulty		0.65
Frequency of Contact with Family or Friends	Monthly	Weekly	0.75
	Quarterly		0.62
	No Contact		0.47
Feelings of Safety	Not Very Safe	Very Safe	0.89

Health status
There is a clear association between self-assessed health status and participation with over three quarters (75.8%) of those reporting their status to be 'excellent' participating, decreasing to 69.4% for those who assessed their health as being very good, 59.7% for good, 45.5% for fair health and 27.6% for those who reported their health status as being poor.

This relationship is supported by the model where the odds ratio decreases from 0.88 for those in very good health to 0.69 for those in good health, 0.46 for those whose health is fair and to 0.30 for those in poor health. This shows that those in fair or poor health are much less likely to participate than those in excellent health (the reference category). This result also takes into account the other factors included in the model, and in particular age, where older people may report lower health status as well as having lower rates of participation in sport or recreational physical activities.

Contact with family and friends
Social and familial contact is a factor in understanding wellbeing and is also related to participation in sport. The GSS collected information on whether this contact was weekly, monthly, quarterly or no recent contact and whether it was face-to-face contact or by other means, ie by telephone, email or letter.

The participation rates for face-to face and other contact (telephone, email etc) are similar and there is a steady decrease in participation as the frequency of contact decreases. Of those with weekly contact, 65.2% participated, decreasing to 42.6% for monthly contact, 25.6% for quarterly and slightly increasing to 32.5% for no recent contact.

The results from the model indicate that those with less frequent contact are less likely to participate - those having no recent contact with family or friends having a low odds ratio of 0.47; those with quarterly contact an odds ratio of 0.62 and those with monthly contact with an odds ratio of 0.75 still being less likely to participate than those with weekly contact (the reference category).

Age-Sex
The survey results show the relationship between age, sex and participation with the participation rate declining from 77.8% for males aged 18-24 years to 50.8% for males aged 65 years and over; and, for females, from 68.0% to 41.5%.

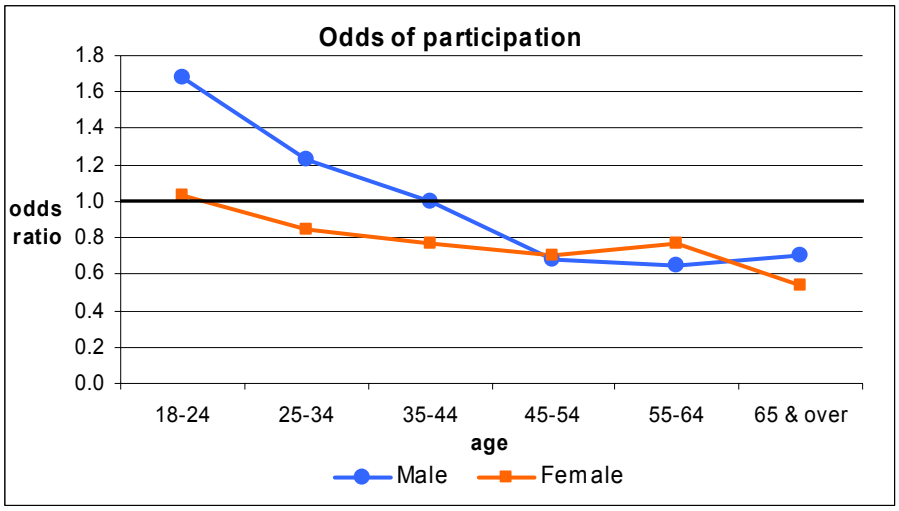
The logistic regression model results show that the odds ratios generally decline with age (for both males and females), and that males in almost all age groups are more likely to participate than females. The effect though, is not entirely consistent as females aged 55-64 years have slightly higher odds ratios than males, although this is not significantly higher. For both makes and females there is less likelihood of participation when aged over 45.

It is also a concern that younger females are less likely to participate in any sport or recreational physical activity compared to young males. While the relatively high likelihood of participation amongst young males may not necessarily be a benchmark against which females should be judged, it is still a concern that many young females are not participating. It would be important to further research and compare the type of activities being undertaken by young males and females and the health benefit gained from these activities.

The dependent variable 'participation in sport and physical recreation' includes both sport activities, such as tennis or golf, as well as recreational physical activities such as walking and aerobics. It is worth noting that the participation rate in "walking for exercise" by females is almost double that of males (32.9% and 17.5% respectively) and that this activity is more likely to be undertaken by those aged over 45 years.

The effect of the age-sex variable is shown graphically in figure 1.

Figure 1: Participation in sport or recreational physical activity - odds ratios by age and sex.



Access to transport

Access to transport is an important indicator of the ability to engage with the community and society at large. On its own it is also a simple indicator of the ability to access services, including sport and recreation facilities. The GSS collected information on difficulty "in getting to places needed" and found that 2.3 million adults have some degree of difficulty with 557,000 of these saying that they often have difficulty or are unable to get to places needed. Of these, 39.9% participated in sport and physical recreation.

The model shows that those who have 'extreme' difficulty getting to places are less likely to participate (odds ratio of 0.65) than those with no difficulty accessing transport (the reference category). The category of "some difficulty accessing transport" however has an odds ratio that is not statistically significant; thus those in this category are no more or less likely to participate.

Education

Information was collected in the GSS on the highest level of education achieved - degree/diploma, certificate, Year 12 (or equivalent) or Year 11. All of those whose educational status was Year 12 or higher had rates of participation in sport or physical activity above the average (64%) with those with a degree or diploma having the highest rate (79.2%). Those who finished school at Year 11 or below numbered 5.7 million or 40% of the adult population and had the lowest rate of participation at 51.3%.

The results from the model show that those with a degree or diploma were significantly more likely to participate than those whose highest qualification was year 12 - the reference category (odds ratio of 1.37) and those who left school at Year 11 or lower being significantly less likely to participate (odds ratio of 0.66).

Household income
The level of equivalised household weekly income shows some relationship with participation, especially for those on very low and very high incomes. Those with a weekly income of less than $300 per week had a participation rate of 46.2% compared to 72.3% for high income earners earning more than $1,000 per week. The logistic regression model supports this relationship with the odds ratios for those groups being 0.66 and 1.05 respectively. The odds ratios for those in middle income ranges were similar (0.78 for those with incomes of $300-$499 and 0.84 for those with $500-$799 per week).

Occupation
There is some relationship between participation in sport and recreational physical activity and occupation groupings with professionals and advanced services workers having the highest rate of participation 79.5%. This ranged down to 71.1% for managers and administrators, 69.2% for trade and transport workers and labourers and 61.1% for those employed in service or clerical occupations. Of those not working, 51.6% participated.

The model shows that professionals and those employed in advanced service occupation are more likely to participate (odds ratio of 1.20) than those employed in a clerical or service related occupation (the reference category); and those in trade, transport or labouring occupations are less likely to participate (odds ratio of 0.74). However, the other occupational groupings have odds ratios which are not statistically significant; thus people in those occupations are no more or less likely to participate.

SEIFA
There is a direct relationship between participation and the socio-economic index for areas (SEIFA) - an index of relative disadvantage - with participation rates for each of the quintiles increasing from 50.7% for the lowest quintile to 58.7%, 63.7%, 68.3% for each of the successive quintiles and 75.3% for the highest quintile.

Similarly, in the model, as the socioeconomic index decreases (to lower socio-economic status), then so does the likelihood of participation. The highest quintile has a very noticeable association with higher rates of participation - those in this group having an odds ratio of 1.32 and being more likely to participate than those in the third quintile (the reference category). Those in the fourth quintile are also more likely to participate (odds ratio of 1.16) whereas those in the lowest quintile are less likely to participate (odds ratio of 0.88).

Feelings of safety
Feelings of safety in the community may impact on individual willingness to use recreational facilities and to participate in social activities away from home. The survey indicated that 44.3% of the adult population had some concerns for their safety in the community and that these also had a lower than average rate of participation in sport or physical activity (56.2%). The model also showed that this was associated with lower participation; with those who did not feel very safe being less likely to participate (odds ratio of 0.89) than those who did (the reference category).

Remoteness
Remoteness is another factor that may be considered to be related to participation. Those living in less densely settled areas may not have access to the same range of recreational or sporting facilities or to the multitude of sporting activities and teams that may result from a larger population base. Alternatively, opportunities to participate in sport could be particularly valued and contribute as a social driver to assist in sustaining regional and remote communities.

The data in the model shows that those living in an inner regional area are more likely to participate (odds ratio of 1.14) relative to major city dwellers. However the odds ratios for those in outer regional or remote areas are not statistically significant meaning that people

living in these areas are neither more than nor less as likely to participate as those living in major cities.

Family type
There is little difference in the participation rates according to family and household type although the survey shows that those in couple families where there are dependent children present have the highest rate of participation at 67.8%. Lone person households are an interesting category where there is a slightly lower participation rate of 61.7% and this might be expected given that aged persons represent a substantial proportion of those living alone. However this category also includes many younger people and single or divorced people and any analysis of this population needs to consider the diversity of this group.

Accounting for the age-sex differences and the other variables in the model, those in couple families (without dependent children) and those in lone person households are more likely to participate in sport or physical activity than those in couple families with dependent children (the reference category), with odds ratios of 1.29 and 1.26 respectively. However, the odds ratios for one parent families and other households is not statistically significant, meaning that people in such households are no more or less likely to participate than those in the reference category of a couple family with dependent children.

State
The raw data shows varying rates of participation in the states - NSW 61.3%, Vic 64.3%, Qld 62.7%, SA 59.4%, WA 76.2%, Tas 62.2%, NT 72.5%, and ACT 77.6%. The results from the multivariate model generally mirror these rates with residents of WA being more likely to participate than those in NSW (the reference category) with an odds ratio of 2.26 followed by Tasmania (1.55), ACT (1.48), Vic (1.26) and Qld (1.22).

SUMMARY

Arising from these results it is possible to define a number of socio-demographic characteristics of non-participants, which taken together could form the basis for defining target groups to assist the development of targeted policies and programs that aim to increase participation in sport and physical recreation. These groups include:

- those with poor proficiency in English;
- those with below average self-assessed health status;
- younger females, aged 25 - 44
- those aged over 45, whether male or female;
- those who may have little social contact or access to transport; and
- those with characteristics associated with lower socio-economic status.

Proficiency in English has a very significant association with a low rate of participation. This group is likely to include recent migrants as well older or long-term migrants whose first language may not be English. While this is a smaller population group, it may nonetheless be important to explore reasons for non-participation in sport and physical activity, and research further the health status of this group.

One larger population group who were found to be less likely to participate were those whose self-assessed health status was poor or fair and those aged 45 years and over (whether male or female). It is also a concern that younger females are less likely to participate in any sport or recreational physical activity compared to young males. There are gender differences in the types of activities that men and women undertake, as well as age differences. Younger males may be more likely to be involved in sporting activities (where there is risk of injury), while older females are perhaps more likely to be walking for exercise. What recreational physical activities to males and females do, and what is the health benefit? This may require further research.

A common theme cited in the literature on barriers is that other activities compete for a persons time, so that lack of time is commonly given as a reason for non-participation. These activities include working hours and travelling time, family and domestic time and competing or substitute recreational activities such as socialising with friends, hobbies and television and other electronic entertainment. While these have not all been tested comprehensively, hours of work and travelling time to work were excluded from the model because of a poor relationship and the analysis found little empirical evidence that "lack of time" is related to non-participation.

Social barriers may be a constraint on participation and may be difficult to overcome, particularly for those who feel isolated, for those who lack confidence, do not feel safe and for those who lack of a sense of belonging in the community. The literature on barrier's provides some evidence that one of the reasons offered for non-participation in sport is that a person does not know anyone to participate with, lives alone or has no support. Other reasons include feelings of social isolation, due to poor access to transport or limited contact with family or friends. Such reasons can represent real barriers to participation and the data from this analysis suggest that social contact and access to transport are important barriers, whereas living alone is not.

A range of socio-economic and socio-demographic factors are related to participation in sport and physical activity, eg family type, occupation, educational status and household income. With the latter, this may be due to costs associated with sports equipment, clothing and club membership fees. Lower levels of awareness and knowledge of what constitutes a healthy lifestyle, including diet and exercise, may also be factors associated with some socio-economic factors, eg educational achievement.

There is a noticeably higher likelihood of participation for people residing in Western Australia, Tasmania and the Australian Capital Territory. These differences can not be explained by expected socio-demographics (age, income, health status etc) that may be related to participation since these are included in the model. Further research is therefore required to understand the higher rates of participation and what other factors may explain the higher propensity to participate in these states.

This analysis provides some insights into a range of factors associated with participation in sport or recreational physical activity and provides information to identify the characteristics of people with high and low levels of participation. Proficiency in English (no English) and contact with family and friends (no contact) are important issues for policy makers to consider, as are self assessed health status and age (persons aged 45 years and over, and younger females). Policies and programs may need to be developed and delivered with a variety of approaches to address the specific barriers that exist for those people identified as having lower likelihood of participation in this analysis. A "one size fits all" approach to the promotion of sport and recreational physical activity might not work.

APPENDIX

Table 1: Odds ratios and confidence limits for participation and non-participation

Variables	Odds ratios	95% confidence limits	
		Lower	Upper
Age-Sex			
18-24 Male	1.68	1.32	2.13
25-34 Male	1.23	1.03	1.47
35-44 Male (reference case)	--	--	--
45-54 Male	0.68	0.57	0.81
55-64 Male	0.64	0.53	0.78
65-105 Male	0.70	0.57	0.85
18-24 Female	1.03*	0.83	1.28
25-34 Female	0.85*	0.71	1.01
35-44 Female	0.77	0.65	0.91
45-54 Female	0.70	0.60	0.85
55-64 Female	0.77	0.64	0.95
65-105 Female	0.54	0.45	0.66
State			
New South Wales (reference case)	--	--	--
Victoria	1.26	1.10	1.44
Queensland	1.21	1.06	1.40
South Australia	1.05*	0.91	1.21
Western Australia	2.26	1.95	2.61
Tasmania	1.55	1.27	1.89
Northern Territory	1.13*	0.97	1.32
Australian Capital Territory	1.48	1.27	1.73
Remoteness			
Major City (reference case)	--	--	--
Inner Regional	1.14	1.02	1.28
Outer Regional	0.92*	0.81	1.05
Remote	1.18*	0.93	1.50
Occupation			
Manager & Administrator	0.93*	0.77	1.14
Professional & Advanced Services	1.20	1.05	1.37
Service and Clerical (reference case)	--	--	--
Labour, Transport & Trade	0.74	0.64	0.85
Not Working	1.06*	0.93	1.21
Equivalised Household Income (weekly)			
Less than $300	0.66	0.57	0.76
$300 - $499	0.78	0.68	0.89
$500 - $699	0.84	0.74	0.96
$700-$999 (reference case)	--	--	--
More than $1,000	1.50	1.29	1.73
SEIFA			
Lowest 20%	0.88	0.78	0.99
2nd Quintile	1.02*	0.91	1.15
3rd Quintile (reference case)	--	--	--
4th Quintile	1.16	1.03	1.31
Highest 20%	1.32	1.17	1.49

* indicates odds ratio is <u>not</u> significantly different to the reference case

Table 1 (cont): Odds ratios and confidence limits for participation and non-participation

Variables	Participation		
		95% confidence limits	
Variables	Odds ratios	Lower	Upper
Family Type			
Single Parent with Children	1.03*	0.89	1.20
Couple with Children (reference case)	--	--	--
Other Couple	1.29	1.13	1.45
Lone Person	1.26	1.12	1.42
Other Household	1.10*	0.93	1.30
Education			
Year 11 or Below	0.66	0.59	0.74
Year 12 (reference case)	--	--	--
Certificate	0.92*	0.80	1.05
Degree/Diploma	1.37	1.19	1.56
Proficiency in English			
Only English (reference case)	--	--	--
Some English	0.66	0.59	0.75
No English	0.24	0.09	0.66
Health Status (self assessed)			
Excellent (reference case)	--	--	--
Very Good	0.88	0.79	0.97
Good	0.69	0.62	0.77
Fair	0.46	0.40	0.53
Poor	0.30	0.25	0.37
Difficulty Accessing Transport			
Ease (reference case)	--	--	--
Some Difficulty	0.91*	0.81	1.03
Extreme difficulty	0.65	0.53	0.79
Frequency of Contact with Family or Friends			
Weekly (reference case)	--	--	--
Monthly	0.75	0.64	0.87
Quarterly	0.62	0.43	0.88
No Contact	0.47	0.36	0.59
Feelings of Safety			
Very Safe (reference case)	--	--	--
Not Very Safe	0.89	0.82	0.96

* indicates Odds ratio is not significantly different to the reference case

Table 2: Size of the estimate for each variable - participation in sport and physical activity

Variable	Any participation	No participation	Total	Participation rate
	('000s)			%
Age-Sex				
18-24 Male	753.8	215.3	969.1	77.8
25-34 Male	1,115.2	339.7	1,454.9	76.7
35-44 Male	1,036.0	423.5	1,459.5	71.0
45-54 Male	834.2	488.4	1,322.6	63.1
55-64 Male	548.8	402.3	951.1	57.7
65-105 Male	518.0	501.1	1,019.1	50.8
18-24 Female	636.1	299.7	935.8	68.0
25-34 Female	995.2	457.0	1,452.2	68.5
35-44 Female	961.8	511.4	1,473.2	65.3
45-54 Female	815.9	506.1	1,322.0	61.7
55-64 Female	566.1	366.9	933.0	60.7
65-105 Female	501.9	708.6	1,210.5	41.5
State				
New South Wales	3,003.3	1,894.0	4,897.3	61.3
Victoria	2,356.0	1,306.9	3,662.9	64.3
Queensland	1,695.5	1,007.4	2,702.9	62.7
South Australia	672.9	460.8	1,133.7	59.4
Western Australia	1,085.1	339.8	1,424.9	76.2
Tasmania	214.5	130.4	344.9	62.2
Northern Territory	76.5	29.0	105.5	72.5
Australian Capital Territory	179.3	51.8	231.1	77.6
Remoteness				
Major City	6,454.0	3,476.3	9,930.3	65.0
Inner Regional	1,823.7	995.4	2,819.1	64.7
Outer Regional	865.1	681.7	1,546.8	55.9
Remote	140.4	66.8	207.2	67.8
Occupation				
Manager & Administrator	619.7	251.9	871.6	71.1
Professional & Advanced Services	2,716.9	700.6	3,417.5	79.5
Service and Clerical	1,652.5	1,025.9	2,678.4	61.7
Labour, Transport & Trade	1,597.7	711.4	2,309.1	69.2
Not Working	2,696.4	2,530.3	5,226.7	51.6
Equivalised Household Income (weekly)				
Less than $300	573.6	667.7	1,241.3	46.2
$300 - $499	960.5	999.5	1,960.0	49.0
$500 - $699	819.9	565.2	1,385.2	59.2
$700-$999	1,232.3	803.4	2,035.6	60.5
More than $1,000	5,696.9	2,184.3	7,881.2	72.3
SEIFA				
Lowest 20%	1,271.8	1,238.9	2,510.7	50.7
2nd Quintile	1,573.8	1,108.3	2,682.1	58.7
3rd Quintile	1,982.6	1,131.5	3,114.1	63.7
4th Quintile	2,050.9	952.5	3,003.4	68.3
Highest 20%	2,404.0	788.9	3,192.9	75.3

Table 2 (cont): Size of the estimate for each variable - participation in sport and physical activity

Variable	Any participation	No participation	Total	Participation rate
	('000s)			%
Family Type				
Single Parent with Children	447.6	299.7	47.3	59.9
Couple with Children	3,329.5	1,581.5	4,911.0	67.8
Other Couple	3,569.9	2,070.2	5,640.1	63.3
Lone Person	1,551.8	962.6	2,514.4	61.7
Other Household	384.5	306.2	690.7	55.7
Education				
Year 11 or Below	2950.0	2802.0	5752.0	51.3
Year 12	1869.2	794.4	2663.6	70.2
Certificate	1637.3	880.4	2517.7	65.0
Degree/Diploma	2826.7	743.2	3569.9	79.2
Proficiency in English				
Only English	8,062.3	4,115.9	2,178.2	66.2
Some English	1,213.0	1,067.0	2,280.0	53.2
No English	7.9	37.2	45.1	17.5
Health Status (self assessed)				
Excellent	2,816.2	896.8	3,713.0	75.8
Very Good	3,381.5	1,492.3	4,873.8	69.4
Good	2,156.4	1,456.3	3,612.7	59.7
Fair	745.0	891.8	1,636.8	45.5
Poor	184.1	482.9	667.0	27.6
Difficulty Accessing Transport				
Ease	8,105.3	4,124.6	12,229.9	66.3
Some Difficulty	955.7	760.9	1,716.6	55.7
Extreme difficulty	222.2	334.6	556.8	39.9
Frequency of Contact with Family or Friends				
Weekly	9,021.2	4,820.9	13,842.1	65.2
Monthly	217.3	292.6	509.9	42.6
Quarterly	16.4	47.7	64.1	25.6
No Contact	28.3	58.9	87.2	32.5
Feelings of Safety				
Very Safe	2,410.1	5,674.1	8,084.2	70.2
Not Very Safe	2,810.0	3,609.0	6,419.0	56.2
Total	**5,220.1**	**9,283.2**	**14,503.3**	**64.0**

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