



## National Centre for Culture and Recreation Statistics

### Children's Participation in Sport and Leisure Time Activities, 2006

This paper presents the findings of a statistical analysis of the characteristics of children and their participation in organised sport. The analysis describes the output from a model of participation that takes into account participation in other activities undertaken by children out of school together with a range of social and demographic characteristics.

The data source for the model is the survey of Children's Participation in Selected Culture and Leisure Activities. This survey, conducted in April 2006, collected information on participation in organised sport undertaken outside school, participation in cultural activities (music, singing, dancing and drama lessons) and in a range of leisure activities (arts and crafts, reading, watching television, playing electronic and computer games, bike riding and skateboarding or rollerblading). Information on the family type of the household (one parent, couple etc), labour force status of the parent(s) and the socio-economic index of advantage/disadvantage was also compiled in the survey.

The model is similar to one developed previously using data collected in the 2003 survey. The results of this were presented and disseminated as two conference papers - The Young and the Restful - The Effects of Recreational Choices and Demographic Factors on Children's Participation in Sport (Australian Social Policy Conference, Sydney July 2005) and The Young and the Restful (Re-Visited) - The Effects of Recreational Choices and Demographic Factors on Children's Participation in Sport (National Physical Activity Conference, Melbourne, Oct 2005). The latter may be accessed at:

[http://www.ausport.gov.au/information/scors/other\\_related\\_reports](http://www.ausport.gov.au/information/scors/other_related_reports)

#### The model

The model uses a multi-variate logistic regression technique with the output being a set of odds ratios that may be used to identify the characteristics of children who are more and less likely to participate in organised sport.

Odds ratios indicate the odds or likelihood of an event occurring given a set of explanatory variables. In this case, the likelihood of children participating in organised out-of-school sport, given their participation in selected leisure activities and their socio-demographic characteristics. The odds ratios are expressed against a base case so that the relative likelihood of participation for each variable can be assessed. For example, a child aged six years is less likely to participate than a child aged twelve.

The odds ratios are also expressed as log odds and so it is not possible to make quantitative comparisons of these. Rather, they are relative with the higher the ratio (above one) the more likely is the characteristic to be associated with participation. Conversely, lower ratios (values below one) are less likely to be associated with participation (or more likely to be associated with non-participation).

The odds ratios also are not an indicator of the probability of participation since the probability of participation for the base case is not known.

### The dependent variable

The dependent variable in the model is participation in organised sport. As with the previous model, dancing has been added to sport in recognition of the fact that dancing is a physical activity that is more commonly undertaken by girls and may be considered to be a substitute for sport. Dancing is collected in the survey as a cultural activity and with this excluded from sport, the rates of participation by boys and girls are 69% and 58% respectively. With the addition of dancing, the participation rates are 69% and 66% respectively.

**Table 1: Participation of children(a)(b) in organised sport and/or dancing by sex. April 2006**

	Sport		Sport and/or dancing	
	Number ('000)		%	
<b>Boys</b>	941.3	948.5	68.9	69.4
<b>Girls</b>	749.8	861.8	57.8	66.4
<b>Total</b>	1691.1	1810.3	63.5	67.9

(a) children aged 5-14 years

(b) outside of school hours during the 12 months prior to interview

The other leisure activities in the survey also include "active" components. For example, bike riding and skateboarding or rollerblading. However these have not been included in the dependent variable due to their non-organised nature which did not fit with the overall construct being assessed. The relationship of these variables to participation in organised sport was tested in the model as explanatory variables.

References in this report to "participation in organised sport" consequently include participation in organised dancing but exclude participation in other active leisure recreation and in non-organised or unstructured physical activities.

### The base case

The specifications for the base case sought to identify an average or typical situation while also considering the likely significance of other items relative to this. Results from the model are all expressed relative to this base case. It should be noted however that a different base case does not change any results but only changes what the explanatory variables are relative to.

The base case was specified as:

- A male child aged eight to eleven years;
- Living in NSW;
- In the middle or third SEIFA (Socio-Economic Index For Areas) quintile;
- In a couple family where one parent was employed;
- Where the child and the parents were born in Australia;
- The child did not participate in any cultural activities (music, singing or drama lessons, performances etc);
- Did not participate in bike riding, skateboarding or rollerblading;
- Did not play any computer games;
- Used a computer or the Internet at home and
- Spent less than twenty hours in the previous two weeks watching television or videos.

The last three variables were specified as such so as to assess any effect of screen-based activities on participation in sport.

### **The explanatory variables**

All the data items collected in the survey were tested in the model to examine their association with participation in organised sport. Only those variables that had a significant effect were included in the final model and as a result "reading for pleasure" and "arts and crafts" were excluded." The explanatory variables were:

#### Socio-demographic variables

- 5-7 years
- 12-14 years
- Female
- State or Territory (Vic, Qld, SA, WA, Tas, NT, ACT)

#### Family type and employment status of parents

- Couple family, both parents employed
- Couple family, neither parent employed
- Single parent family, employed
- Single parent family, not employed

#### Birthplace of child

- Child born overseas

#### Birthplace of parents

- Parents born in non-English Speaking Countries

#### Socio-Economic Indicator for Areas (SEIFA)

- SEIFA 1st (lowest) quintile
- SEIFA 2nd quintile
- SEIFA 4th quintile
- SEIFA 5th (highest) quintile

#### Physical recreation and leisure activities

##### Playing computer games, hours in last 2 weeks

- Played computer games for 1-4 hours
- Played computer games for 5 hours or more

##### Use of computer or Internet at home in last 12 months

- Did not use a computer or Internet at home

##### Watching television or videos, hours in last 2 weeks

- Watched TV for 20-39 hours
- Watched TV for 40 hours or more

##### Skateboarding and rollerblading, hours in last 2 weeks

- Skateboarding for 1-4 hours
- Skateboarding for 5 hours or more

##### Bike riding, hours in last 2 weeks

- Bike riding for 1-4 hours
- Bike riding 5 hours or more

##### Cultural activities, hours in last 2 weeks

- Cultural activities for 1-4 hours
- Cultural activities for 5 hours or more

### **Changes to the model**

A question on homework was added to the 2006 survey. While not being related to leisure, it was a definable activity that was considered might be able to be used to further explain different levels of participation, i.e. children who spend many hours on homework might not be frequent participants in after-school sport.

The impact of including this activity in the 2006 model was assessed. It was found that homework did not change the results, that is, homework had no significant effect with the odds ratios being very similar with and without homework being included. For example, the odds ratio for participation in sport for children aged 12-14 years and with homework included was 0.79 compared to 0.76 with homework excluded.

Homework however, did have a significant association with sport. For example children doing 10 hours or more of homework per fortnight were less likely to participate. The impact of homework is discussed further below.

Homework (5-9 hours a fortnight) was subsequently added to the base case in the model and with the explanatory variables being

- No homework
- Homework for 1-4 hours
- Homework for 10 hours or more

## **Results**

The results of the model are shown in table 2.

The model generates similar results from both the 2006 and 2003 data. In particular, the relationship between the socio-economic characteristics of children and the likelihood of participating in organised sport remains clear. That is, children with lower socio-economic characteristics - as indicated by parental employment, family type (single parent family), being born in an overseas non-English speaking country or having a parent born in an overseas non-English speaking country - are less likely to participate in organised sport.

Some differences however relate to the employment status of parents in that in all families (single parent and couple families) where the parent or parents are unemployed, the likelihood of participation has improved. Children in these families are still less likely to participate in sport but the association is not as marked as was the case in 2003. In addition, a child in a single parent family where the parent is employed is now neither more nor less likely to participate in sport - there is no significant association with the likelihood of participating in sport.

There is also a more general indicator of an improvement in the likelihood of participation according to socio-economic index in that the fourth highest quintile is now significantly associated with sport. The second quintile however remains insignificant.

Girls also continue to be less likely to participate but the odds ratio has increased from 0.69 to 0.83 indicating a narrowing of the gap between the likelihood of participation by girls compared to boys.

Information for the states and territories shows that there are no significant differences between the states with the exception of children in Queensland and in the Australian Capital Territory where they are less likely to participate. This is consistent with the data from both the 2003 and 2006 surveys. Children in Western Australia are also neither more nor less likely to participate in 2006 compared to 2003 when they were more likely to be participants in organised sport.

The apparent anomalous situation in the ACT is a result of the socio-economic status of families when compared to Australia as a whole. This was discussed in the previous paper that described the 2003 data. When the SEIFA variable is removed from the model, children in the ACT are neither more nor less likely to participate in sport, but otherwise the high SEIFA values indicate higher rates of participation. Children in the ACT do in fact have a high rate of

participation, but not as high as the SEIFA values indicate. Consequently, the odds of participation are lower.

The results of the model also provide information about the range of leisure and other activities undertaken by children and their preferential behaviour towards these.

Children involved in bike riding, skateboarding and cultural activities for modest amounts of time (1-4 hours per fortnight) were consistently more likely to participate in sport. This also applied to children who played computer and electronic games for 1-4 hours. On the other hand, children who play computer games for more than five hours per fortnight are just as likely to participate in sport as those who do not have access to these games at all.

Time spent watching television and videos, in comparison with time spent playing computer games is the major component of total "screen-time". In 2003, children who spent more than 40 hours per week watching television, as did those who spent from 20 to 39 hours on this activity were less likely participate in organised sport. But in a further indicator of improvement, the number of hours spent watching television now no longer appears to have a significant relationship with participation in sport.

Finally, the amount of time spent on homework is associated with participation in sport. Children doing 10 hours of homework per fortnight are less likely to participate (odds of participation of 0.83). At the other extreme, children who did no homework at all were also less likely to participate (0.60) whereas children doing 1-4 hours of homework per fortnight were neither more nor less likely to participate (not significantly associated with sport).

**Table 2: Odds ratio estimates(a)**

		<b>2003</b>	<b>2006</b>
Age	5-7 Years	0.61	0.57
	12-14 Years	0.79	0.79
Sex	Female	0.69	0.83
Family type and parental employment	Couple, both parents employed	1.52	1.48
	Couple, neither parent employed	0.39	0.64
	Single parent family, parent family not employed	0.51	0.70
	Single parent family, parent family employed	0.84	not significant
Socio-economic index	1st (lowest) quintile	0.61	0.70
	2nd quintile	not significant	not significant
	4th quintile	not significant	1.31
	5th (highest) quintile	1.74	1.83
Country of birth	Born overseas in non-English speaking country	0.58	0.71
Parents country of birth	Born overseas in non-English speaking country	0.60	0.58
Played computer and electronic games	1-4 hours(b)	1.28	1.29
	5 hours or more	not significant	not significant
Use a computer or the Internet at home	Did not use a computer or the Internet at home	0.55	0.47
Watching television or videos	20-39 hours(b)	0.89	not significant
	40 hours or more	0.78	not significant
Homework	1-4 hours(b)	not available	not significant
	10 hours or more	not available	0.83
	No homework	not available	0.60
Cultural activities	1-4 hours(b)	1.59	1.40
	5 hours or more	1.24	1.26
Bike riding	1-4 hours(b)	1.30	1.54
	5 hours or more	not significant	not significant
Skateboarding/rollerblading	1-4 hours(b)	1.50	1.33
	5 hours or more	not significant	not significant
State	Victoria	not significant	not significant
	Queensland	0.72	0.83
	South Australia	not significant	not significant
	Western Australia	1.19	not significant
	Tasmania	not significant	not significant
	Northern Territory	not significant	not significant
	Australian Capital Territory	0.73	0.75

(a) the data with the confidence limits are shown in appendix 1

(b) hours in the previous two weeks

### Summary and discussion

From both sets of data, 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 and be used in the development of targeted policies and programs that aim to increase participation in organised sport. These groups are:

- Children aged 5-7 years, 12-14 years and girls;
- Children born overseas or having a parent born in an overseas non-English speaking country;
- Children in families with unemployed parents;
- Children in a single parent family with an unemployed parent and
- Children from households with a lower overall socio-economic status (as measured by the SEIFA)

On the other hand, children who participate in moderate levels of different leisure activities are more likely to participate in sport. For example, participation in bike riding or skateboarding for up to five hours in the previous two weeks is positively related to participation in sport. Similarly, children who are involved in organised cultural activities (drama, singing and music lessons or performances) are more likely to participate in sport.

These factors are ranked and shown in tables 3a and 3b.

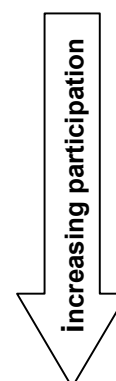
**Table 3a: Odds ratios associated with a lower likelihood of participation**

Factors ranked in order of association with participation	Odds ratios	
	2003	2006
Did not use a computer or the Internet at home	0.55	0.47
Age 5 - 7	0.61	0.57
Child born overseas	0.58	0.71
No homework	not available	0.60
Couple family, neither parent employed	0.39	0.64
Single parent family, parent unemployed	0.51	0.70
1st (lowest) quintile	0.61	0.70
Parent(s) born in non-English speaking country	0.60	0.58
Age 12-14	0.79	0.79
Homework 10 hours or more	not available	0.83
Female	0.69	0.83
Single parent family, parent employed	0.84	not significant
Television or videos 40 hours or more	0.78	not significant
Television or videos 20-39 hours	0.89	not significant



**Table 3b: Odds ratios associated with a higher likelihood of participation**

Factors ranked in order of association with participation	Odds ratios	
	2006	2003
Culture activities 5 hours or more	1.26	1.24
4th SEIFA quintile	1.31	not significant
Played computer 1-4 hours	1.29	1.28
Skateboarding / rollerblading 1 - 4 hours	1.33	1.50
Culture activities 1 - 4 hours	1.40	1.59
Couple family both parents employed	1.48	1.52
Bike riding 1 - 4 hours	1.54	1.30
5th (Highest) SEIFA quintile	1.83	1.74



The relationship between the socio-economic indicators and the likelihood of participation in sport are clear. This might not be surprising given that this is defined as organised sport and for which there are usually associated costs - membership fees, uniform, equipment and transport related costs. There is also a group of children who do not participate in sport as well as not having access to a computer or the Internet at home. These children have been previously identified as being in the lowest SEIFA quintile and so this may be indicative of a socially disadvantaged group who do not participate in sport or in other common children's recreational activities. The fact that children who do not do any homework are less likely to participate may also be related to the strength of support mechanisms in the home and by inference, to encouraging participation in other extra-curricular activities.

On the other hand, there are busy, active children who participate in a range of leisure and other activities out of school hours - bike riding, skateboarding, computer games, music lessons, reading, homework etc. While those who specialise in one or two of these for large amounts of time may not have sufficient time to also participate in sport, the data shows that modest amount of time devoted to these other activities does not impact on the likelihood of participation. It may even facilitate participation through encouraging an active early-years lifestyle. Clearly, more research of a qualitative nature in this area is required.

The issue concerning the effect of screen-time on participation in sport is not clear. Excess TV hours (40 hours or more in a two week period) was significantly associated with a lower likelihood of participation in 2003 but is not significant in 2006. This is a challenging finding given the popular notion that children do not play sport because they watch too much television. Clearly, there is not a causal relationship, but rather an indication that children are showing a preference. It could be that total screen-time needs to be considered - television plus computer games plus Internet use (for homework as well as for entertainment). However it is noted that times of five hours or more spent on computer games has no significant association with participation in organised sport.

The majority of children are participating in some form of organised sport and those who participate in different leisure activities for modest amounts of time are also more likely to participate. This includes moderate amounts of time spent on screen-based activities. Even for those who spend more than 40 hours watching television, the sheer volume of hours could be used to explain low levels of participation in sport, simply because there would be little time left for involvement in other activities. Some of these children however do manage to find time for sport and there is no precise evidence of one-on-one activity or time trade-offs. These children may be simply choosing to spend their time on screen based activities as well as sport while sacrificing participation in a wider range of leisure activities.

The issue to debate may then be that while many children are participating in organised sport as well as in a range of other active leisure activities, they may not be undertaking sufficient or recommended levels of exercise. Additional data collection is required to assess this and to support programs that aim to increase more regular and frequent participation.

Conversely, there are groups of children who have no involvement in many of the defined recreational activities and it is these children who should also be the target for policies and programs that aim to encourage and facilitate participation.



### Appendix 1: Odds ratios with confidence limits

		2003			2006		
		Estimate	95% Wald Confidence Limits		Estimate	95% Wald Confidence Limits	
Age	5-7 Years	0.61	0.54	0.69	0.57	0.50	0.64
	12-14 Years	0.79	0.70	0.89	0.79	0.69	0.89
Sex	Female	0.69	0.62	0.76	0.83	0.75	0.93
Family type and parental employment	Couple, both parents employed	1.52	1.35	1.71	1.48	1.29	1.70
	Couple, neither parent employed	0.39	0.31	0.49	0.64	0.51	0.80
	Single parent family, parent family not employed	0.51	0.43	0.60	0.70	0.58	0.85
	Single parent family, parent family employed	0.84	0.71	1.00	*1.07	0.89	1.29
Socio-economic index	1st (lowest) quintile	0.61	0.53	0.71	0.70	0.60	0.82
	2nd quintile	*0.88	0.75	1.04	*0.99	0.85	1.16
	4th quintile	*0.94	0.79	1.12	1.31	1.12	1.54
	5th (highest) quintile	1.74	1.45	2.08	1.83	1.54	2.17
Country of birth	Born overseas in non-English speaking country	0.58	0.47	0.70	0.71	0.59	0.85
Parents country of birth	Born overseas in non-English speaking country	0.60	0.54	0.68	0.58	0.52	0.65
Played computer and electronic games	1-4 hours(a)	1.28	1.13	1.44	1.29	1.13	1.46
	5 hours or more	*1.00	0.89	1.14	*0.95	0.84	1.08
Use a computer or the Internet at home	Did not use a computer or the Internet at home	0.55	0.49	0.61	0.47	0.41	0.54
Watching television or videos	20-39 hours(a)	0.89	0.80	0.99	*0.99	0.88	1.10
	40 hours or more	0.78	0.68	0.90	*0.90	0.76	1.05
Homework	1-4 hours(a)	not available			*1.03	0.90	1.18
	10 hours or more	not available			0.83	0.72	0.96
	No homework	not available			0.60	0.52	0.70
Cultural activities	1-4 hours(a)	1.59	1.33	1.89	1.40	1.17	1.66
	5 hours or more	1.24	1.01	1.53	1.26	1.04	1.51
Bike riding	1-4 hours(a)	1.30	1.15	1.46	1.54	1.37	1.74
	5 hours or more	*0.90	0.79	1.02	*1.08	0.95	1.23
Skateboarding/rollerblading	1-4 hours(a)	1.50	1.29	1.73	1.33	1.15	1.55
	5 hours or more	*0.96	0.81	1.15	*0.98	0.81	1.17
State	Victoria	*1.09	0.94	1.26	*0.92	0.79	1.06
	Queensland	0.72	0.62	0.83	0.83	0.71	0.97
	South Australia	*1.02	0.86	1.22	*0.93	0.78	1.11
	Western Australia	1.19	1.00	1.40	*1.03	0.87	1.22
	Tasmania	*0.96	0.78	1.19	*0.91	0.73	1.13
	Northern Territory	*0.75	0.53	1.06	*1.04	0.69	1.57
	Australian Capital Territory	0.73	0.56	0.94	0.75	0.57	1.00

\* not significant

(a) hours in the previous two weeks