Valuing Sport and Recreation in New Zealand

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Abstract

Sport and recreation are highly valued in New Zealand, indicated by the time and financial resources devoted to sport and recreation activities. This paper reports on a study of the value of sport and recreation, commissioned by Sport and Recreation New Zealand (SPARC). It has produced value-added estimates consistent with New Zealand's System of National Accounts to suggest that in 2008/09 the contribution of the sector to gross domestic product was between 2.1 and 2.8 per cent (depending on the sector's definition) and the total value to New Zealanders (including personal benefits from participation) was $12.2 billion.

Keywords: Sport, Recreation, Economic Impact Analysis

JEL Code: L83 - Sports; Gambling; Recreation; Tourism

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Valuing Sport and Recreation in New Zealand

Sport and recreation are highly valued in New Zealand, indicated by the time and financial resources that individuals and communities devote to sport and recreation activities. The first investigation of the economic significance of sport and recreation in New Zealand was sponsored in 1993 by the former Hillary Commission. That report included estimates measuring the value of what was then called the physical leisure sector; it particular, it estimated that the physical leisure sector in 1991, conservatively estimated, provided a direct contribution of 1.2 per cent to New Zealand's gross domestic product (GDP) (Jensen *et al*, 1993). The Hillary Commission sponsored two subsequent research reports to update the economic analysis (Frater *et al*, 1998, and Goodchild *et al*, 2000). The first report estimated that the sector contributed 1 per cent to GDP (acknowledging that it had not been able to include estimates for the non-profit sector; Frater *et al*, 1998, p. 5). The second report did not include an estimate of GDP, but calculated that in 1999 the real value of the sector had grown by 0.4 per cent per annum since 1996 (Goodchild *et al*, 2000, p. 1).

More recently, Sport and Recreation New Zealand (SPARC) commissioned four research projects in 2010. The first was a case study of the role played by a sports club in its local community (Research New Zealand, 2010). The second was a comprehensive stocktake of research on outdoor recreation (Booth and Lynch, 2010). This included a chapter on the benefits of outdoor recreation, which quoted Kaval and Yao's (2007) conclusion that non-market benefits from outdoor recreation are over $5 billion annually, exceeding market benefits of approximately $4 billion. The third project was a preliminary economic analysis by the New Zealand Institute of Economic Research (NZIER). On the basis of that analysis, SPARC commissioned the fourth project, asking the AERU to build on the previous projects to estimate the economic and social value of sport and recreation to New Zealand. This resulted in a substantial report by Dalziel (2011), which has provided the data for this paper.

Internationally, there has been considerable work to measure the economic contribution of sport and recreation. Progress has been made, for example, on methods and standards for Sport Satellite Accounts (SSAs) in the European Union (Gratton, 2009; SIRC, 2010; MSE and SpEA, 2010). An SSA uses a country's System of National Accounts to construct "a robust statistical framework to measure the economic importance of a specific industry (here: the sports sector) in the national economy" (MSE and SpEA, 2010, p. 2; see Gratton and Taylor, 2000, chapter 2 for an explanation and justification of this approach to measuring the value of sport). It is generally recognised that "the implementation of sport satellite accounts (SSA) is a costly and time-consuming project" (MSE and SpEA, 2010, p. 1) and there are no plans to introduce an SSA for New Zealand. Nevertheless, within the limits of available official data, this study has sought to produce value-added estimates that are consistent with New Zealand's System of National Accounts.

The European project is also useful for the way in which it recognises two definitions of the sector. The narrow definition aims to encompass all industries which produce goods and services that are necessary to perform sport, while the broad definition aims to also include relevant parts of the industries for which sport is an important input for their production processes; for example, television broadcasting. This study similarly presents estimates of the size of the sport and recreation sector that is first defined narrowly (section 3) and then defined more broadly (section 4 with a further but unmeasured extension in section 5).

The analytical framework constructed for this study is based on 'six Ps': (1) *participation* in sport and recreation; (2) *professionals and volunteers* in the sport and recreation sector; (3) *producers* of sport and recreation goods and services; (4) *providers* of sport and recreation infrastructure; (5) *promoters* of sport and recreation to spectators and supporters; and (6) *personal net benefits* from participation in sport and recreation. These six Ps provide the paper's structure.

Section 1 summarises levels of participation by New Zealanders (including as volunteers) in sport and recreation. Section 2 uses Census data to record the number of New Zealanders employed either in sport and recreation occupations or in sport and recreation industries; it also presents estimates of average personal incomes earned by people employed in sport and recreation occupations and provides an estimate of the economic value of the contributions by volunteers working in the sector.

Section 3 estimates the size of the sport and recreation sector involved in producing goods and services within the sport and recreation sector (narrowly defined). Section 4 broadens that estimate by considering investment by New Zealand in physical and human infrastructure necessary for the sport and recreation sector, including the substantial investment that takes place in New Zealand schools as part of *The National Curriculum*. Section 5 considers a wider range of businesses that promote sport and recreation to spectators and supporters, although it hasn't been possible to quantify these contributions.

Section 6 offers an estimate of the value New Zealanders place on the direct net benefits of participation in sport and recreation. Within a revealed preference paradigm, this estimate is based on a conservative estimate (using the statutory minimum wage) of the opportunity cost of their time in sport and recreation activities. The author and SPARC are not aware of any previous study that has done this in New Zealand or elsewhere.

The analysis in the study produces four headline bullet points, all of which are conservatively estimated:

- The contribution of the sport and recreation sector (narrowly defined) to gross domestic product in 2008/09 is estimated to have been $3.8 billion, or 2.1 per cent.
- The contribution of the sport and recreation sector (broadly defined) to gross domestic product in 2008/09 is estimated to have been $4.5 billion, or 2.4 per cent.
- The contribution of sport and recreation to gross domestic product including volunteer services in 2008/09 is estimated to have been $5.2 billion, or 2.8 per cent.

- The total value of sport and recreation to New Zealanders in 2008/09 is estimated to have been $12.2 billion.

Even the smallest of these values is much higher than found in previous New Zealand studies. This reflects the more comprehensive framework adopted for this study and improvements over time in New Zealand data sources available for research. The paper concludes by suggesting that the size of the sector supports the recent call by Gratton (2009) for New Zealand to prepare a formal satellite account for sport and recreation.

1. Participation in Sport and Recreation

The best source of data for adult participation in sport and recreation in New Zealand is SPARC's *2007/08 Active New Zealand* survey (Active NZ). This surveyed adults aged 16 and over, with its core results published by SPARC online (www.activenzsurvey.org.nz) and in a report (SPARC, 2008a). For this present study, SPARC reanalysed the results excluding 16 and 17-year-olds in order to allow valid comparisons with the earlier New Zealand Sport and Physical Activity surveys.

Results from Active NZ show that almost all adults take part in sport and recreation activities – over 12 months, more than nineteen out of twenty adults (96 per cent) reported they had taken part in at least one activity (from a list of over 100 activities). This provides a measure of total participation. Participation rates decreased when people were asked about what they did in a shorter timeframe, but even when asked about the previous week, eight out of ten adults (79 per cent) still said they take part in at least one activity.

On average, over 12 months, adults participated in 4.4 sport and recreation activities. Walking and gardening were the two most popular activities; over 12 months, six out of ten adults (66 per cent) reported going for walks and four out ten (45 per cent) did some gardening. When walking and gardening are excluded, the data still show that eight out of ten adults (83 per cent) took part in at least one activity over 12 months, while during any week the figure was five out of ten (52 per cent). The survey also revealed participation rates over 12 months were slightly lower for women (80 per cent) than men (86 per cent) and for older age groups (the figures over 12 months were: 18-24 years, 92 per cent; 25-34 years, 91 per cent; 35-49 years, 88 per cent; 50-64 years, 79 per cent and 65+ years, 65 per cent).

People take part in these activities in different ways. Active NZ found that over one-third (35 per cent) of adults participated in at least one organised competition or event. Men (43 per cent) were more likely to participate in this way than women (28 per cent) and participation in competitions and events decreased as age increased (from 45 per cent for 18 to 24-year-olds to 25 per cent for those aged 65 years and over). Three out of ten adults (30 per cent) belonged to a club or gym/fitness centre to take part in sport and recreation activities (this included sport and physical activity clubs, social clubs and other types of club). Around one-sixth (16 per cent) belonged to a sport or physical activity club. Almost four out of ten adults (37 per cent) received some instruction or coaching from a coach, instructor, teacher or trainer for one or more of the activities in which they took part.

On average, adults spent around 5 hours a week (304 minutes) taking part in all sport and recreation activities, widely defined to include walking and gardening; see Table 1. Men spent more time taking part in sport and recreation activities than women (on average, men spent 5 hours and 24 minutes and women spent 4 hours and 45 minutes taking part in sport and recreation activities).

Table 1: Time Spent in Sport and Recreation Activities, Adults by Age, 2007/08

Average minutes per week spent on:	18-24 Years	25-34 Years	35-49 Years	50-64 Years	65+ Years	All Adults
Sport and Recreation Activities	222	169	149	121	112	149
Gardening	6	29	44	79	113	56
Walking	50	82	83	90	110	85
Total: All Activities	**279**	**293**	**290**	**308**	**353**	**304**

Note: Sport and Recreation activities exclude walking and gardening. Adults are 18 years and older.

Source: Active NZ survey.

There are three sources of quantitative data on participation by young New Zealanders. The former Hillary Commission undertook three national Sport and Physical Activity Surveys, in 1997, 1998 and 2000, which involved in total 12,500 adults (people aged 18 and over) and 4,000 young people (5-17-year-olds). In 2003, SPARC published an analysis of the combined results from the three surveys (SPARC, 2003). This showed that almost all young people (92 per cent overall; 93 per cent for boys and 91 per cent for girls) reported taking part in some sport or recreation activities during the previous two weeks. Around seven out of ten young people (69 per cent; 67 per cent for boys and 70 per cent for girls) reported taking part in sport and recreation at school in school hours, while three out of ten (33 per cent; 38 per cent for boys and 28 per cent for girls) took part with a club.

Second, the New Zealand Secondary Schools Sport Council (NZSSSC) regularly surveys the involvement of secondary school teachers and students in school sport (see its website www.nzsssc.org.nz/secondary_schools_sports_data). Data collected in 2009 show that just over half of secondary school students (51 per cent) were recorded as having a meaningful involvement with a school sports programme that year. Meaningful involvement includes representing the school in that sport or taking part in a sport provided in-school over a period of 6 weeks or more or playing for a club arranged by the school as the school had no teams in that sport or taking part in sport that was provided through the Kiwisport initiative. Male students were more likely to be involved than female students (55 per cent compared with 48 per cent) and there are some strong regional variations (from a low of 39 per cent in Waitakere to a high of 71 per cent in Wairarapa).

Finally, SPARC together with the Ministries of Health, Education and Youth Development commissioned a national survey of physical activity, sedentary behaviours and dietary habits in five to 24-year-olds in New Zealand (Clinical Trials Research Unit and Synovate, 2010). The survey involved face-to-face interviews with follow-up telephone calls with a nationally representative sample of 2,503 participants from September 2008 to May 2009. Table 2 draws on data from the survey analysing the time young people aged 5 to 24 years spend playing organised sport. It shows that, on average, children and young adults said they spent just under half an hour (29 minutes) per day in what was categorised as "organised" sport (as opposed to time spent in free play). Those aged 10 to 14 years spent the most time in organised sport (42 minutes per day). Young adults (aged 20 to 24 years) spent the least amount of time in organised sport (10 minutes per day). Females spent significantly less time playing organised sport than males (20 minutes compared with 38 minutes for males). This pattern occurred across all age groups.

Table 2: Time Spent in Sport and Recreation Activities, Young People by Age, 2008/09

Average minutes per day spent in organised sport:	**5-9 Years**	**10-14 Years**	**15-19 Years**	**20-24 Years**	**All Young People**
Males	28	50	40	18	38
Females	18	33	16	3	20
Total	**23**	**42**	**29**	**10**	**29**

Source: Clinical Trials Research Unit and Synovate (2010), Table 17, p. 56 and Figure 31, p. 57.

Volunteers play a key role in sport and recreation. Over 12 months, Active NZ found that one in four adults, more than 776,000 people, volunteered their time for one or more sport and recreation activities. The percentages of men and women volunteering are similar. Volunteering levels peak in the 35 to 49-year-old age group (at 35 per cent). Volunteers act as coaches/instructors/trainers (48 per cent of volunteers), referees/officials/judges/ umpires (31 per cent), as administrators/secretaries/committee members (29 per cent) and as parent helpers (42 per cent).

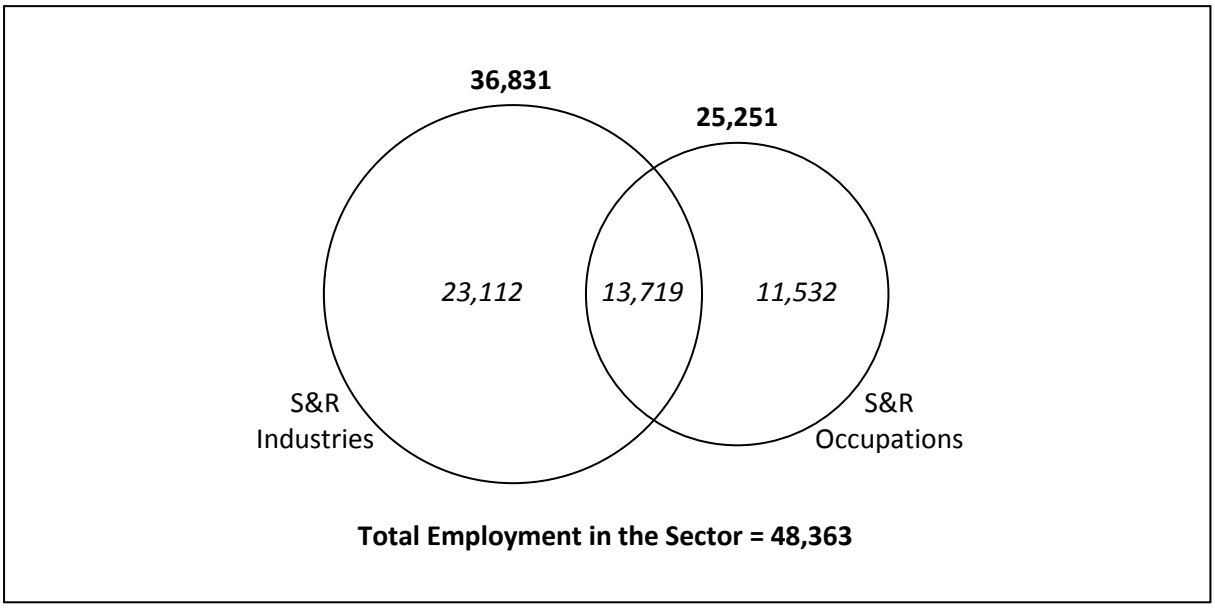
Overall, over the course of a year, SPARC analysis of the *2007/08 Active NZ* survey estimates that volunteers of all types contribute 51.3 million hours to sport and recreation. Coaches/instructors contributed 16.6 million hours, referees and other officials contributed 6.6 million hours, and administrators and committee members contributed 10.6 million hours.

2. Professionals and Volunteers in Sport and Recreation

Data on sports and recreation employment can be obtained from the New Zealand Census of Population and Dwellings, which includes questions asking New Zealand adults about the industry in which they work and about their occupation where they work the most hours.

Figure 1 provides aggregate data from the 2006 Census. The analysis counted 36,831 people employed in sport and recreation industries and 25,251 people employed in sport and recreation occupations. There is some overlap between the two groups; Statistics New Zealand advises that 13,719 people were employed in sport and recreation occupations in sport and recreation industries. Allowing for this overlap, the total count of sport and recreation employment in 2006 was 48,363 (2.6 per cent of all employed people).

Figure 1: Employment in the Sport and Recreation Sector, 2006



Source: Statistics New Zealand, Census 2006 data.

The sport and recreation industries in Figure 1 are comprised of 17 industries selected for this study in consultation with SPARC. Table 3 presents employment data for these 17 industries. The total of 36,831 represents 2.0 per cent of all people employed (excluding those whose responses were 'don't know, refused to answer, response unidentifiable, response outside scope or not stated').

It should be noted that the list in Table 3 is conservative. There are other industries that include a large sport and recreation component (consider, for example, the people employed to broadcast sport events on free-to-air or subscription television). This list will be used to define the "narrow" sport and recreation sector analysed in the paper's section 3.

Table 4 provides an indication of the significance of the combined sport and recreation industries by comparing it with other similar sized industries in New Zealand, based on the 2006 Census database. The table lists the top ten industries ranked by employment including the composite 'Sport and Recreation' industry defined in Table 3. This composite industry is fifth in the Top Ten list, lying between the 'House Construction' industry (36,093 employed) and the 'Cafés and Restaurants' industry (41,580).

Table 3: Employment in Sport and Recreation Industries, 2006

ANZSIC	Industry	Number
A011300	Turf Growing	48
A019100	Horse Farming	1,404
C239200	Boatbuilding and Repair Services	3,963
C259200	Toy, Sporting and Recreational Product Manufacturing	738
F373400	Toy and Sporting Goods Wholesaling	1,299
G424100	Sport and Camping Equipment Retailing	3,777
P821100	Sports and Physical Recreation Instruction	2,136
Q853300	Physiotherapy Services	2,175
R892200	Nature Reserves and Conservation Parks Operation	2,853
R911100	Health and Fitness Centres and Gymnasia Operation	3,054
R911200	Sport and Physical Recreation Clubs and Sports Professionals	4,320
R911300	Sports and Physical Recreation Venues, Grounds and Facilities Operation	4,377
R911400	Sport and Physical Recreation Administrative Service	1,698
R912100	Horse and Dog Racing Administration and Track Operation	702
R912900	Other Horse and Dog Racing Activities	1,392
R913900	Amusement and Other Recreation Activities (not elsewhere classified)	1,959
R913100	Amusement Parks and Centres Operation	936
	TOTAL	**36,831**

Source: Statistics New Zealand, Census 2006 data, ANZSIC06 V1.0.

Table 4: Top Ten Industries Ranked by Employment, 2006

Industry	Number
Supermarket and Grocery Stores	46,899
Primary Education	42,927
Hospitals (except Psychiatric Hospitals)	42,237
Cafes and Restaurants	41,580
Sport and Recreation	*36,831*
House Construction	36,093
Dairy Cattle Farming	33,510
Accommodation	30,744
Central Government Administration	27,309

Source: Statistics New Zealand, Census 2006 data, ANZSIC06 V1.0 and Table 3.

The sport and recreation occupations were similarly selected in consultation with SPARC. The list is comprised of 42 occupations, listed in Table 5. Again to be conservative, the list does not include people who may be employed for their sports and recreation expertise within a more general category (sports journalists, for example).

The overall number of New Zealanders engaged in sport and recreation occupations is significant. The total of 25,251 represents 1.3 per cent of all people employed (excluding those whose responses were 'unidentifiable, outside scope or not stated').

The occupations in Table 5 have been grouped together into five categories. The largest of the five groups is under the heading of sport and recreation support. This group includes occupations where a large part of the work is involved in sport and recreation but there are clearly other important aspects to the occupation. In these cases, Table 5 has counted only half the numbers recorded in the Census for the occupation (conference and event organisers, massage therapists and recreation coordinators). Even so, there were 8,394 people recorded in these positions, including 2,496 physiotherapists. Nearly 11,000 people were counted as employed as coaches, instructors, guides and teachers, either in sports (7,170 people) or recreation activities (3,738 people). Another 4,872 people were recorded as involved in sport and recreation administration and care of facilities, including 2,631 greenkeepers. Although the Census asks New Zealand residents about their occupation in the job where they worked the most hours, this does not mean that the job is full-time. This is evident when the income earned in each occupation is considered.

Census data can be used to provide an indication of the personal income earned by people whose main occupation is a sport and recreation occupation. The Census asked people to state their total personal income from all the sources of income, before tax, for the 12 months ending 31 March 2006. The form provided 14 options giving bands of income. Figure 2 shows the distribution of personal income in the sport and recreation occupations. Just over 35 per cent of the incomes are $20,000 or less, suggesting that these are not full-time positions. Half of the people (49.8 per cent) in these occupations reported personal incomes between $20,001 and $50,000. Smaller groups of people were earning above $50,000, with only 5.4 per cent earning above $70,000 from all sources of income.

To provide an aggregate estimate of income earned by people in sport and recreation occupations, it is necessary to make assumptions about the average income earned in each income band category. For the bands with fixed endpoints it is conventional to assume that the average income is halfway between the two endpoints. The 'loss' range, however, has no minimum value and the highest income range ($100,001 or more) has no maximum value. This last range will include a small number of sports people who earn substantial amounts in a year. Because the numbers of people in the bottom and top categories are relatively small, the assumed average in both cases is not critical; for this exercise the study assumed an average loss of $20,000 and an average income for the highest band of $120,000. Finally, the average income of those who did not state an income was assumed to be the average income of those who did.

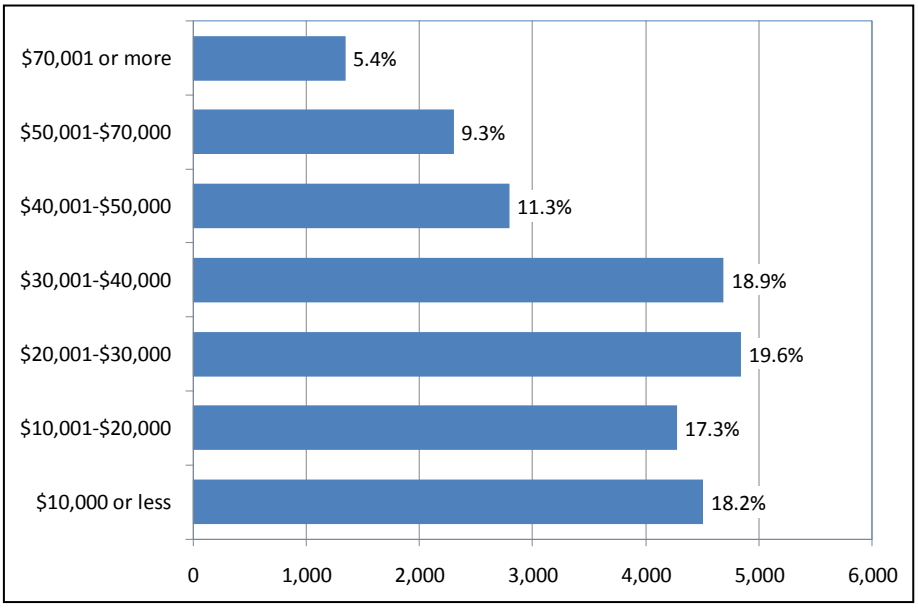
Table 5: Employment in Sport and Recreation Occupations, 2006

Category	Occupation	Number	Number
Sportspersons and Officials	Golfer	228	
	Footballer	204	
	Jockey	129	
	Other Sportspersons	249	
	Sports Umpire	159	
	Dog or Horse Racing Official	87	
	Other Sports Official	21	1,077
Sports Coaches and Instructors	Fitness Instructor	2,457	
	Swimming Coach or Instructor	1,152	
	Horse Trainer	870	
	Tennis Coach	264	
	Gymnastics Coach or Instructor	249	
	Horse Riding Coach or Instructor	249	
	Snowsport Instructor	72	
	Other Sports Coach or Instructor	1,857	7,170
Recreation Guides and Teachers	Lifeguard	1,179	
	Dance Teacher (Private Tuition)	765	
	Outdoor Adventure Instructor	423	
	Fishing Guide	147	
	Whitewater Rafting Guide	132	
	Diving Instructor (Open Water)	129	
	Mountain or Glacier Guide	99	
	Trekking Guide	72	
	Bungy Jump Master	57	
	Hunting Guide	36	
	Other Outdoor Adventure Guides	699	3,738
Administration and Facilities	Greenkeeper	2,631	
	Sports Administrator	1,116	
	Park Ranger	543	
	Sports Centre Manager	363	
	Fitness Centre Manager	153	
	Turf Grower	36	
	Sports Development Officer	30	4,872
Sport and Recreation Support	Physiotherapist	2,496	
	Boat Builder and Repairer	1,989	
	Conference and Event Organiser (1)	1,248	
	Stablehand	1,125	
	Massage Therapist (1)	636	
	Horse Breeder	402	
	Bicycle Mechanic	219	
	Recreation Coordinator (1)	150	
	Sail Maker	129	8,394
TOTAL			**25,251**

Note: (1) Only half the number in this occupation is included as sports and recreation.

Source: Statistics New Zealand, Census 2006 data, ANZSCO V1.0.

Figure 2: Income Distribution in Sport and Recreation Occupations, 2006



Source: Statistics New Zealand, Census 2006 data, ANZSCO V1.0.

Under these assumptions, the total annual personal income for people in the sport and recreation occupations in 2006 was $792.6 million. Using the Statistics New Zealand Labour Cost Index (all industries: all salary and wage rates: all sectors), this value is equivalent to $875 million in 2008/09 values.

Table 6 shows how this income was distributed among the 42 occupations identified in Table 5. The largest contributing occupation is physiotherapists ($108.7 million), followed by boat builders/repairers ($79.1 million) and greenkeepers ($78.2 million). The final column in Table 6 divides the total personal income earned in the occupation by the number of people in the occupation. This shows that the average personal income from all sources of people recorded in the 2006 Census as employed in sport and recreation occupations is estimated to have been $31,391. There is considerable variation in this statistic for different occupations. At the top, footballers are estimated to have earned $66,250 (and probably higher if the true average value of the top income band was known). At the other end of the scale, the average personal income of gymnastic coaches or instructors is estimated to have been $10,656 in 2006.

As introduced in section 1, about 25 per cent of the adult population serve as volunteers to support sport and recreation. Recognising the importance of volunteered services for the sector, SPARC has undertaken a programme of research on volunteers in sport and recreation. It commissioned, for example, a telephone survey of sport and recreation volunteers in 2007 (see Research New Zealand, 2008, and SPARC, 2008b) and it included questions on volunteers in its *2007/08 Active New Zealand* survey (SPARC, 2008a). As described in section 1 above, SPARC's analysis of the later survey estimates that volunteers contributed 51.3 million hours to sport and recreation in 2007/08.

Table 6: Estimated Average Incomes in Sport and Recreation Occupations, 2006

Category	Occupation	Total ($millions)	Per Person ($)
Sportspersons and Officials	Golfer	$9.2	$40,333
	Footballer	$13.3	$66,250
	Jockey	$5.0	$39,012
	Other Sportspersons	$13.7	$54,938
	Sports Umpire	$2.4	$15,288
	Dog or Horse Racing Official	$3.1	$36,083
	Other Sports Official	$0.5	$22,000
Sports Coaches and Instructors	Fitness Instructor	$62.5	$25,425
	Swimming Coach or Instructor	$18.1	$15,791
	Horse Trainer	$27.3	$31,354
	Tennis Coach	$6.3	$23,920
	Gymnastics Coach or Instructor	$2.7	$10,656
	Horse Riding Coach or Instructor	$5.1	$20,406
	Snowsport Instructor	$2.2	$30,217
	Other Sports Coach or Instructor	$67.8	$36,495
Recreation Guides and Teachers	Lifeguard	$15.6	$13,201
	Dance Teacher (Private Tuition)	$16.2	$21,175
	Outdoor Adventure Instructor	$10.5	$24,858
	Fishing Guide	$4.9	$32,344
	Whitewater Rafting Guide	$3.1	$23,372
	Diving Instructor (Open Water)	$3.9	$30,988
	Mountain or Glacier Guide	$3.4	$33,819
	Trekking Guide	$2.4	$33,750
	Bungy Jump Master	$1.6	$28,382
	Hunting Guide	$1.2	$32,045
	Other Outdoor Adventure Guides	$20.1	$28,816
Administration and Facilities	Greenkeeper	$78.2	$29,704
	Sports Administrator	$41.2	$36,880
	Park Ranger	$20.6	$37,924
	Sports Centre Manager	$16.1	$44,628
	Fitness Centre Manager	$6.9	$44,796
	Turf Grower	$1.2	$37,250
	Sports Development Officer	$1.6	$48,409
Sport and Recreation Support	Physiotherapist	$108.7	$43,512
	Boat Builder and Repairer	$79.1	$39,818
	Conference and Event Organiser (1)	$49.7	$39,802
	Stablehand	$24.2	$21,508
	Massage Therapist (1)	$13.8	$21,627
	Horse Breeder	$15.2	$38,212
	Bicycle Mechanic	$5.2	$23,785
	Recreation Coordinator (1)	$4.1	$27,057
	Sail Maker	$4.8	$36,512
TOTAL		**$792.6**	**$31,391**

Note: (1) Only half the number in this occupation is included as sports and recreation.

Source: Statistics New Zealand, Census 2006 data, ANZSCO V1.0.

It is possible to estimate the market value of those volunteered services. In 2007, Statistics New Zealand published a Non-profit Institutions Satellite Account for 2004, which used Time Use Survey activity data to assign volunteer activities undertaken by New Zealanders to similar paid occupations. Based on that analysis, the agency calculated "an overall average 'volunteer wage rate' of $12.15 an hour as at 31 March 2004" (Statistics New Zealand, 2007, p. 38). Allowing for wage increases over six years (using the 'LCI: All Industries: All Salaries and Wage Rates: All Sectors' labour cost index) $12.15 an hour in March 2004 is equivalent to $14.19 per hour in March 2009. If each of the 51.3 million hours of volunteer services to sport and recreation is valued at $14.19 per hour, then the total value to recipients of these services was $728 million.

Recall from Table 6 that the estimated total annual income earned by people employed in the sport and recreation sector in 2005/06 was $793 million, or $875 million in 2008/09 values. Thus the estimated value of volunteered services is 83.2 per cent of the estimated salaries paid for employed services. This is low by international standards where estimates greater than 150 per cent are typical (see, for example, Leisure Industries Research Centre, 2003, p. 14). In part this may be explained by being able to use survey data in New Zealand to calculate the value of the volunteer time, whereas other studies may use average wage rates (see Gratton and Taylor, 2000, p. 132). It is also recognised, however, that the amount of time that individual New Zealanders donate to sport and recreation organisations is low; in the telephone survey of sport and recreation volunteers in 2007, for example, half of the sports volunteers reported that they volunteer for four hours or less per week, leading to a recommendation that "the sports sector should consider strategies and policies that are focused on the retention of existing volunteers (through enhancement of the volunteering experience) rather than on the acquisition of new volunteers, and also identify ways to compete for potential volunteers' available time" (SPARC, 2008b, p. 7).

3. Producers of Sport and Recreation Goods and Services

This section estimates the contribution of the narrow sport and recreation sector to New Zealand's gross domestic product (GDP). The narrow sector is defined to encompass the industries listed in Table 3. Statistics New Zealand publishes an analysis of contributions to gross domestic product by industry, although with a lag so that the latest available data at the time of preparing this study was for the year ending March 2007. The data are published at a more highly aggregated level than the five-digit level for which employment data are available, so that an assumption is needed to produce disaggregated estimates. The standard approach is to assume that total output within each of the aggregate sectors is distributed proportionately to employment in its component sub-sectors.

Table 7 presents the results of using this approach for all of the industries defined in Table 3 above (Dalziel, 2011, contains more details of the employment ratios for each industry). It estimates that the total contribution of sport and recreation industries (narrowly defined) in 2006/07 was $3,337 million. That year, total gross domestic product was $160,573 million. Hence the estimated share of these sport and recreation industries in 2006/07 was 2.1 per cent.

Table 7: Contribution to GDP of Sport and Recreation Industries, 2006/07

Industry	Contribution to GDP ($ millions)
Turf Growing	2.2
Horse Farming	35.6
Boatbuilding and Repair Services	297.8
Toy, Sporting and Recreational Product Manufacturing	46.6
Toy and Sporting Goods Wholesaling	144.8
Sport and Camping Equipment Retailing	185.0
Sports and Physical Recreation Instruction	103.3
Physiotherapy Services	129.9
Nature Reserves and Conservation Parks Operation	320.7
Health and Fitness Centres and Gymnasia Operation	343.1
Sport and Physical Recreation Clubs and Sports Professionals	485.2
Sports and Physical Recreation Venues, Grounds and Facilities Operation	491.8
Sport and Physical Recreation Administrative Service	190.6
Horse and Dog Racing Administration and Track Operation	79.0
Other Horse and Dog Racing Activities	156.5
Amusement and Other Recreation Activities (not elsewhere classified)	220.0
Amusement Parks and Centres Operation	105.0
TOTAL (measured in 2006/07 values)	**3,337**
TOTAL (measured in 2008/09 values)	**3,844**
Contribution to GDP (per cent)	**2.1%**

Source: Statistics New Zealand, National Accounts data and Census 2006 data as explained in the text.

This contribution of the sport and recreation industries was very close to that of the machinery and equipment manufacturing sector ($3,339 million) and larger than the contribution of the accommodation, restaurants and bars sector ($3,085 million) that year. Further, the analysis in this section has concentrated on the narrow definition of the sport and recreation sector; the following section will consider contributions from a wider range of industries that are directly connected to sport and recreation in New Zealand. Nevertheless it is clear that the size of the sector, even narrowly defined, is considerably larger than has been previously estimated for New Zealand.

The final two rows of Table 7 updates the calculation to 2008/09 values (to be consistent with the estimates produced in the following section) and expresses the total as a percentage of gross domestic product. This was achieved using the nominal expenditure on gross domestic product series of Statistics New Zealand, which was 160,573 million in 2006/07 and 184,987 in 2008/09.

4. Providers of Sport and Recreation Physical and Human Infrastructure

The ultimate intention of SPARC's 'Value of Sport and Recreation' research programme would be to record the contribution to GDP of all activities clearly related to sport and recreation. Section 3 estimated the contributions of the industries that are most easily identified as producing goods and services for sport and recreation, but other industries are also relevant. Internationally, researchers have adopted diverse methods to estimate the value of these other industries, with a notable example being a report prepared for Sport England by the Sport Industry Research Centre at Sheffield Hallam University (SIRC, 2007). That report aimed to measure the economic importance of sport in London, using official statistics data (apart from some primary data collection on volunteer contributions) within a national income accounting framework. The SIRC report identified seven sectors: consumers; commercial sport; commercial non-sport (such as a beer company sponsoring a football club); local government; central government; and sectors outside London.

This present study has not had the resources to replicate the SIRC (2007) level of detail, but it has sought to follow its example in identifying a broader range of activities related to sport and recreation outside the narrow definition adopted in section 3, paying attention to core contributions by central and local government. In identifying these activities, the study was guided by three principles:

- It needed to be possible to use official data sources to identify the value-added contribution to GDP by the selected activity.
- It needed to be clear that the identified value-added contribution had not already been included in the estimates produced in section 3 of this paper.
- The identified activity needed to make a material contribution to the sport and recreation sector in New Zealand.

Three items were selected for this analysis: (1) the income earned in sport and recreation occupations *outside* the sport and recreation industries; (2) the investment by central government in the sport and recreation components of the national curriculum; and (3) the investment by local government in constructing new sport and recreation facilities. These items are reported in the following three sub-sections before sub-section 4.4 brings them together to estimate the broader sport and recreation sector's contribution to GDP.

4.1 Sport and Recreation Incomes outside the Sport and Recreation Industries

Section 2 of this paper used Census data to calculate the number of people employed in the sport and recreation sector, defined to include those who reported working either in one of 17 sport and recreation industries or in one of 42 sport and recreation occupations. This revealed that 36,831 people worked in sport and recreation industries and that a further 11,532 people worked in sport and recreation occupations outside of these 17 industries (see Figure 1). The income earned by the first set of people is included in the value-added calculations of section 3, but to be consistent with the definition of the sector adopted in this study, the income earned by the second set of people should also be included.

Table 6 reported this study's estimate that the total income earned by people employed in sport and recreation occupations in 2005/06 was $792.6 million. From Figure 1, 13,719 out of 25,251 people in the sport and recreation sector were employed in sport and recreation industries, or 54.3 per cent; this income is already included in the GDP calculations of section 3. Assuming that average incomes are the same for these occupations inside and outside of the sport and recreation industries, 45.7 per cent of $792.6 million should also be included; that is, $362.2 million.

This figure is for the year ending March 2006. The estimate was updated from 2006 to 2009 using the Statistics New Zealand Labour Cost Index (all industries: all salary and wage rates: all sectors). The value of this index for the year ending March 2006 was 894 and for the year ending March 2009 was 987 so that the 2009 estimate is $400 million.

4.2 Central Government Investment in Sport and Recreation Education

Reports for the former Hillary Commission on the value of sport and recreation all identified the importance of the New Zealand education system as part of the government's support for sport and recreation (Jensen *et al*, 1993, p. 39; Frater *et al*, 1998, p. 28; and Goodchild *et al*, 2000, p. 20). This includes substantial investment in sport and recreation facilities. The School Property Guide, for example, states that public secondary schools (teaching Year 9 to 13+ students) with a roll of more than 200 students are entitled to a gymnasium no smaller than the size of an international basketball court. All public schools are also entitled to a multiple-purpose hall whose size depends on the school roll and level.

Further, New Zealand has 2,143 state schools with 16,981 buildings on more than 19,000 hectares of land, with a total capital value of $10,537 million (Ministry of Education, 2010, p. 20). As well as multi-purpose halls and gymnasiums, this property includes outdoor facilities such as playing fields and swimming pools. To give an idea of the scale of this investment, the 2009 Annual Report stated that the *depreciation* on the value of swimming pools was $11.1 million for that financial year (Ministry of Education, 2009, p. 67).

The National Curriculum (Ministry of Education, 2007) specifies eight learning areas: English, the arts, health and physical education, learning languages, mathematics and statistics, science, social sciences, and technology. The third of the eight learning areas, 'health and physical education', covers seven key areas of learning – mental health, sexuality education, food and nutrition, body care and physical safety, physical activity, sport studies, and outdoor education – all seven of which must be included in teaching and learning programmes at both primary and secondary levels. In summary, 'health and physical education' is one of eight learning areas in *The National Curriculum*, and three of the seven key areas of learning under that learning area are specifically related to sport and recreation: physical activity, sport studies, and outdoor education. Hence three-sevenths of one-eighth of the National Curriculum is related to sport and recreation. Total public spending for curriculum delivery in 2009/10 was estimated to be $2,551.7 million for Year 0 to Year 8 students and $1,907.0 for Year 9 to Year 13 students (Treasury, 2010a, p. 103). Three-sevenths of one-eighth of the curriculum would account for $136.7 million of the total primary education budget and $102.2 million of the total secondary education budget.

To be consistent with the national income accounting framework adopted in this study, these expenditure items must be converted to value-added measures. This is achieved by including only the salary component of the expenditure. The Treasury's (2010b, p. 116) *Performance Information for Appropriations 2010/11* advises that salaries funding in 2009/10 was estimated to be $1,912 million for primary education and $1,382 million for secondary education. Multiplying these salaries by 3/56 for an estimate of the share for delivery of the sport and recreation components of the national curriculum, and using the Statistics New Zealand Labour Cost Index (all industries: all salary and wage rates: central government sector) to scale the figures to 2008/09 values, this produces 2008/09 estimates of $100 million for primary school education and $72 million for secondary school education.

4.3 Local Government Construction of New Sport and Recreation Facilities

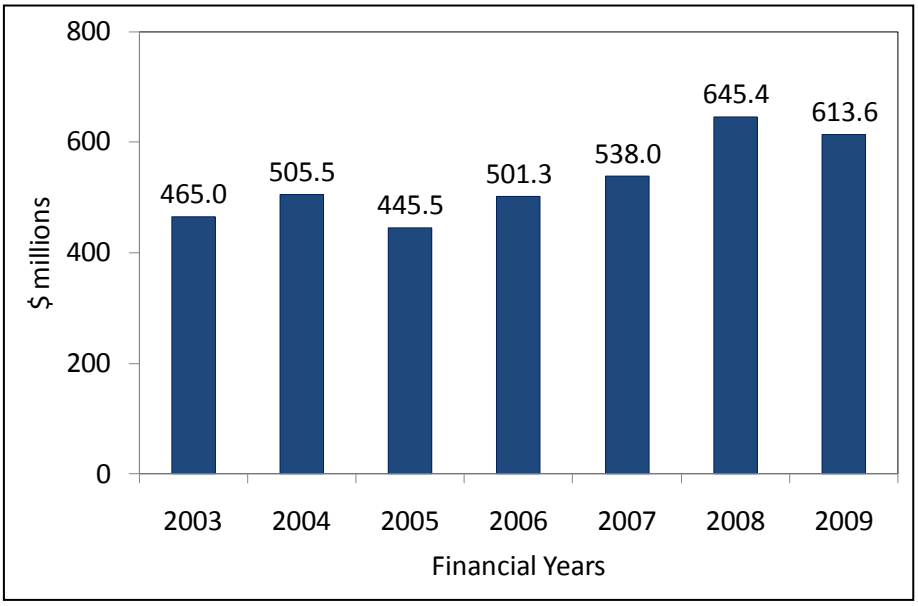
Local government in New Zealand is made up of 67 territorial authorities (city councils, district councils and the Auckland Council, created by a merger of 8 former councils on 1 November 2010) and 11 regional councils. These care for and maintain lakes, rivers, beaches, parks, camping grounds, sports fields, stadiums, swimming pools, recreation centres, gymnasiums, cycle-ways, walkways, playgrounds, picnic areas and botanic gardens. The new Auckland Council, for example, reports that the region has more than 4,219 parks covering 83,164 hectares (16.6 per cent of the Auckland land area).

Statistics New Zealand undertakes an annual Local Authority Census to collect financial information on the activities of all New Zealand's regional councils and territorial authorities. The published tables from this source include an analysis of total operating income and expenditure by sixteen activities. One of the activities is 'recreation and sport', which includes aquatic and sports facilities, zoological and botanical gardens, parks, reserves and playgrounds (such as bike and walking tracks, and parks and trails), and marine recreational facilities (such as berths, moorings, and access ways to water for sport and recreation activities). Figure 3 shows total local government operating expenditure on recreation and sport for the financial years 2003 to 2009. These data have not been adjusted for inflation, but even allowing for rising prices there was a significant increase after 2007. In the last financial year, the amount was $613.6 million.

The value-added by this expenditure is already included in the calculations of section 3 (under industries such as 'Nature Reserves and Conservation Parks Operation' and 'Sports and Physical Recreation Venues, Grounds and Facilities Operation'). But each year, local government invests in constructing new sport and recreation facilities. SPARC obtained unpublished data from the Local Authority Census recording net additions to local government fixed assets for recreation and sport (see Figure 4). In the 2009 financial year, this was $345.4 million, a substantial increase on previous years (due in part to increased spending on stadiums in preparation for the 2011 Rugby World Cup).

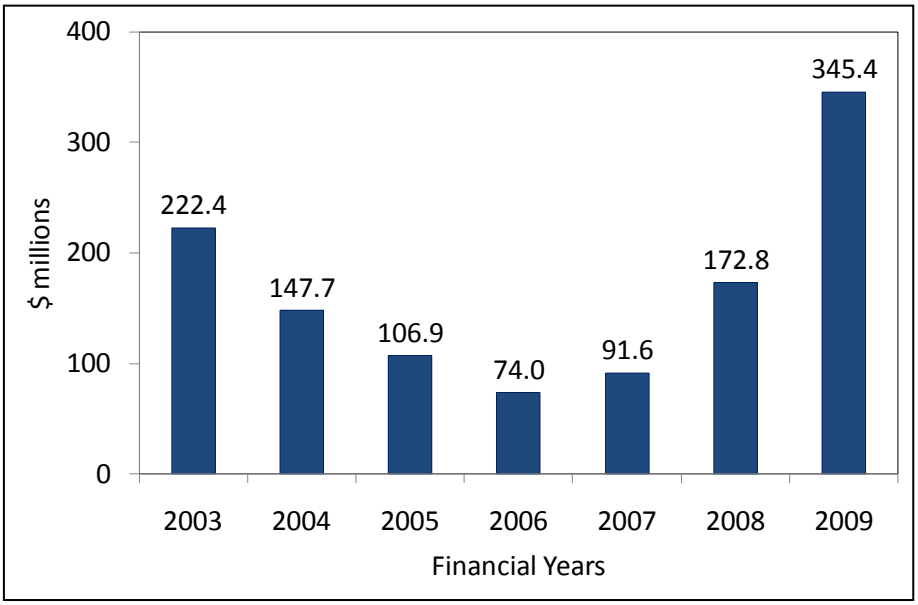
This item needs to be converted from expenditure to value added. Geoff Butcher of Butcher Partners Ltd, Christchurch, has used Statistics New Zealand input-output tables to produce ratios at the sector level for this purpose. The conversion ratio for the construction sector is 0.29. Multiplying $345 million by 0.29 produces a value-added estimate of $100 million.

Figure 3: Local Government Operating Expenditure on Recreation and Sport, 2003-2009



Source: Statistics New Zealand Local Government Census.

Figure 4: Local Government Net Additions to Fixed Assets for Recreation and Sport, 2003-2009



Source: Statistics New Zealand Local Government Census.

4.4 Summary

Table 8 summarises the calculations of this and the previous section. Including the three additional items from this section, the contribution to GDP in 2008/09 of the broad sport and recreation sector was $4,516 million. Expenditure on gross domestic product that year is estimated to have been $184,987 million. Based on that estimate, the share of the broad sport and recreation sector in 2008/09 was 2.4 per cent of gross domestic product.

Table 8: Contribution to GDP of the Broad Sport and Recreation Sector, 2008/09

Industry	Contribution to GDP ($ millions)
Contribution of the Narrow Sport and Recreation Sector	3,844
Sport and Recreation Incomes outside the Sport and Recreation Industries	400
Central Government Investment in Sport and Recreation Education	172
Local Government Construction of New Sport and Recreation Facilities	100
TOTAL ($ millions)	**4,516**
Gross Domestic Production (2008/09)	184,987
TOTAL (percentage of GDP)	**2.4%**

Source: Statistics New Zealand, National Accounts data and Census 2006 data as explained in the text.

Table 9 presents the implications of including the contribution of volunteers, analysed in section 2. Starting with the contribution of the broad sport and recreation sector ($4,516 million from Table 8), the addition of volunteered services brings this value to $5,244 million. To calculate this as a percentage of GDP, the analysis needs to include in GDP the estimated contribution of *all* volunteers. Statistics New Zealand (2007, p. 41) estimated that the value of that contribution in 2003/04 was $3,312 million. Converting that value into 2009 values using the Labour Cost Index (all industries: all salary and wage rates: all sectors) implies a value of $3,867 million. Thus the extended definition of GDP in 2008/09 was $188,854 million. This implies a share of gross domestic product equal to 2.8 per cent.

Table 9: GDP Including the Value of Volunteered Services, 2008/09

	Gross Domestic Product	Volunteered Services	Extended GDP
Sport and Recreation ($m)	4,516	728	5,244
Totals ($m)	184,987	3,867	188,854
Per Cent	2.4%	18.8%	2.8%

Source: Table 8, Section 2, Statistics New Zealand (2007) and author's calculations.

5. Promoters of Sport and Recreation to Spectators and Supporters

The previous two sections have estimated that the total contribution of commercial sport and recreation activities in 2008/09 was 2.4 per cent of gross domestic product. This is twice the size of the estimate first made for the Hillary Commission by Jensen *et al*. (1993), reflecting in part the wider coverage adopted by the present study. Nevertheless, it should be recognised that the present study does not cover all of the economic activity that could be included in a fully comprehensive estimate. In particular, it has not been possible to provide robust estimates of the value-added arising from commercial activities promoting

sport and recreation to patrons and supporters, such as broadcasting, merchandising, international tourism, accommodation, hospitality and designer clothing. This is discussed in more detail in Dalziel (2011), but some examples can be presented to illustrate the potential significance of this economic activity.

Data purchased from Nielsen Media Research provide two indicators to measure the audience and reach of sport television broadcast programmes. The first is the average television audiences (that is, the average number of people who were watching the programme per minute over the whole programme) for the seven most popular sports plus a residual 'other sports' category. Netball had the highest average audience (82,950) for the year ending June 2010, followed by rugby (74,010). The second indicator is the average daily 'reach' of each sport, defined as the number of people who tune in for at least one minute of the broadcast. Rugby, netball and tennis all had an average daily reach of around 200,000 people in 2009/10.

International visitors fill in an arrival card that includes a question on their main reason for coming to New Zealand. Approximately half of the responses are for holiday/vacation: the number of tourists in this category has stabilised in recent years at around 1.2 million per annum. The Tourism Strategy Group in the Ministry of Economic Development is responsible for the International Visitors Survey (IVS), which is an annual sample survey of approximately 5,200 international visitors to New Zealand aged 15 years or older. A question in the survey asks: "For each overnight stop during your visit, what attractions and activities did you see and do?" Of those who said their main purpose was holiday/vacation, 85.4 per cent included walking and trekking, and 46.7 per cent included boating. More generally, the survey indicates that land-based and water-based sport and recreation activities are an important part of the holiday itineraries of international visitors.

An important study by Covec explored ways in which events contributed to the wellbeing of Auckland residents and businesses in 2008 (Vuletich and Trent, 2009). The analysis identified 1,674 events that calendar year, of which 664 were classified as related to sports and recreation. Around 14 per cent of all the attendances at these events came from visitors to Auckland (although not all of the visitors came to the city specifically for that purpose). The study found that at least $479 million of consumption could be attributed to events held in the Auckland region. This included $80 million of discretionary consumption covering items such as food and beverage purchases at the event, merchandise and other consumption within the confines of the event, in addition to mandatory expenses such as ticket purchases, as well as a further $150 million of consumption by visitors on items such as accommodation, food and beverage, transport, entertainment and retail purchases.

New Zealand's prominent profile as a country with a strong sport and recreation sector creates commercial opportunities, including sales of fashion garments designed with sport or outdoor recreation themes. Dalziel (2011, Table 6-4) includes a list of eleven prominent examples of New Zealand exporters who are creating and building on these opportunities: Canterbury New Zealand, Earth Sea Sky, Ground Effect, Icebreaker, Kathmandu, Line 7, LM Clothing, Macpac, Swazi, Untouched World and Wild South. One quote from that table, originally drawn from www.earthseasky.co.nz, illustrates this general point:

> Performance outdoor clothing. 100% made in New Zealand for adrenaline junkies, multi-sporters, adventure travelers and urban prisoners. Created by experienced outdoor enthusiasts from the world's best high tech fabrics.

It isn't possible to quantify the value of New Zealand's sport and recreation heritage for companies such as these exporters, but the examples in Dalziel (2011, Table 6-4) illustrate the wide reach that sport and recreation have into the country's commercial landscape.

6. Personal Net Benefits of Participation

Participation in sport and recreation produces a range of personal benefits that can be analysed under headings such as health, family well-being, social cohesion and economic productivity. Dalziel (2011), for example, estimates that participation in sport and recreation resulted in 2009 in improved health outcomes valued at $3.95 billion, offset by accidental premature deaths and sport injuries that imposed costs of $3.19 billion. That report also used data provided in an Australia study (Medibank, 2008) to estimate that the increased output produced by people who met New Zealand's physical activity guidelines through sport and recreation activities amounted to $0.28 billion in 2009.

At the aggregate level, if a person chooses to spend time participating in sport and recreation, then the total personal benefits from those activities must outweigh the costs of participation. This offers an alternative way for estimating the personal net benefits of participation. Gratton and Taylor (2000, pp. 50-51) categorise the fixed and variable costs under six headings:

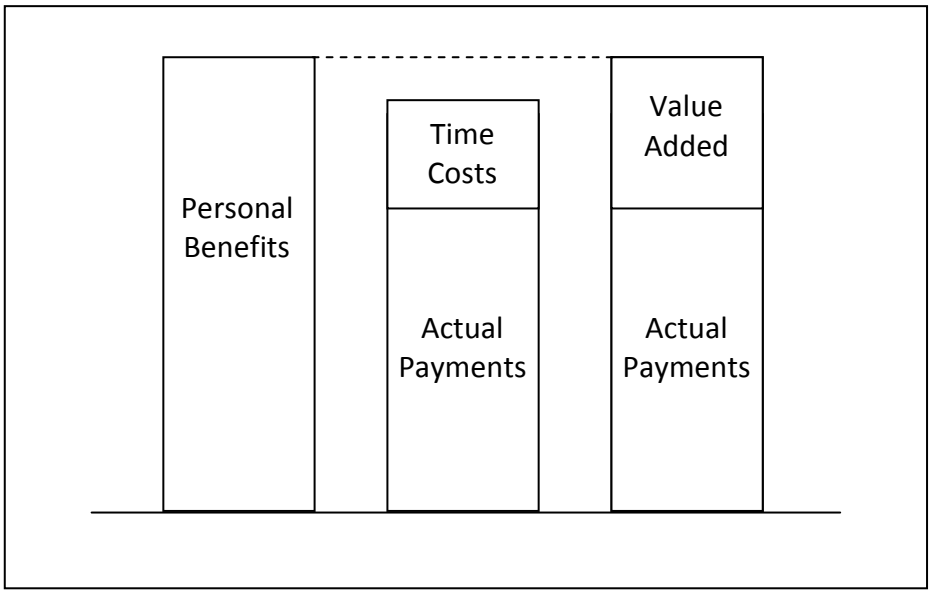
1. Membership and subscription fees
2. Cost of equipment, clothing, and footwear
3. Entrance charges to sports facilities
4. Travel costs
5. Costs of participation-related food and drink consumption, equipment hire and so on
6. Time costs

Categories 1 to 5 represent actual payments by the participant to sectors of the economy considered in previous sections of this paper. The sixth category ('time costs') is an opportunity cost, reflecting that the participant could have spent the time in alternative activities that would have also generated personal benefits. This opportunity cost is a conservative estimate of the *value added* to the individual by his or her participation in sport and recreation. This is illustrated in Figure 5. To participate, the personal benefits (column 1) must be greater than total costs comprising actual payments and time costs (column 2). The actual payments are revenue to industries in the economy, so that the value added is personal benefits minus these actual payments (column 3). By construction, the value added must therefore be greater than the time costs.

The next step is to use a credible method for valuing the opportunity cost of time spent in sport and recreation. The paper uses the idea of 'revealed preference' for this purpose. An adult's time spent in a non-market activity such as sport or recreation could have been spent

in the marketplace earning income. An average adult aged 25 to 34, for example, spends about 146 hours per year engaged in sport and recreation (see Table 1). Assuming 8 hours per working day, this is equivalent to just over 18 working days. At the beginning of the year, the person *could* have chosen to spend this time in a secondary job (or in a primary job if not currently employed). The fact that the person did not make that choice, but chose instead to participate in sport and recreation, indicates that the person obtains more value from the sport and recreation than would have been obtained from the secondary job.

Figure 5: Personal Benefits and Costs of Participation



It seems reasonable to assume that items such as transport costs, clothing costs and equipment costs are likely, on average, to be not significantly greater participating in sport than participating in employment. Thus it is reasonable to take the income earned in employment as the opportunity cost value. To be conservative, the analysis in this study uses the statutory minimum wage ($12.75) to measure this income earning potential, even though most people are able to earn a higher hourly rate than this figure.

This approach is suitable for adults, but is not readily applicable for young people. Ideally, the analysis would want to estimate the wide range of educational and socialisation benefits that have been identified in the literature as produced by young people's participation in sport, but the necessary data are not available. Consequently, the analysis adopts an approach based on an idea in the Conference Board of Canada's Sport Participation Impact Analysis Household Survey (Bloom *et al*, 2005) that children's participation in sport produces benefits enjoyed by their parents especially by "bringing families together". To quantify this effect, the analysis makes the assumption that for every two children participating in organised sport, there is on average at least one adult per child watching that participation. This assumption means that the opportunity cost of the *adult spectator's time* can be used as an indicator of the benefit of the children playing sport.

Tables 1 and 2 of section 1 presented data on time spent participating in sport and recreation by young people and adults respectively. These data are easily converted into hours of participation per person per year for the relevant age groups (note that the calculation of adult data does not include walking and gardening for this part of the study). Given these average figures, it is then possible to calculate the total number of hours of participation using mean population data for each age group for 2009.

A further consideration is the role played by volunteers in sport and recreation. Section 4 estimated the value of volunteer services to the *recipients* of those services (amounting to 51.3 million hours over the full year), but it is important to estimate also the value to the *providers* of those services. The same idea applied to the active participants applies to the volunteers; the value they themselves obtain from their activity must cover the opportunity cost of their time, which they could have spent on other activities such as secondary employment. Again the statutory minimum wage can be used for a conservative valuation.[1]

Table 10: Value of Time Spent in Sport Participation and Volunteering for Adults

Group	Total Hours (per person)	Population	Total Hours (millions)	Total Value ($ millions)
5-9 years	70	287,990	20.1	$256
10-14 years	128	297,520	38.2	$487
15-17 years	87	191,000	16.7	$213
Young people (5-17 years)			**75.0**	**$956**
18-24 years	192	437,320	84.1	$1,072
25-34 years	146	550,390	80.5	$1,026
35-49 years	129	942,600	121.8	$1,553
50-64 years	105	752,890	79.0	$1,007
65+ years	97	552,560	53.3	$680
Adults (18 years and over)			**418.7**	**$5,338**
Volunteers (18 years and over)			**51.3**	**$654**
TOTAL			**544.9**	**$6,948**

Note: Only half of the total hours of young people (5-17 years) from Table 2 are included on the assumption that on average one adult is a spectator for every two young people participating.

Source: Total hours are calculated from Tables 1 and 2. Population data are for the mean population for the year ended December 2009, obtained from Statistics New Zealand.

[1] Note that including volunteers in this section does not involve double counting. The measure in Table 9 estimated the benefits received by the *recipients* of the services; the measure in Table 10 estimates the benefits received by the *providers* of the services.

Consequently, Table 10 summarises the total number of hours per person in three groups: young people (divided into three age bands); adults (divided into five age bands); and volunteers. The hours for young people are halved from the values implied in Table 2 to reflect the assumption that there is on average one adult spectator for every two young people participating in organised sport.

The second data column of Table 10 records the number of New Zealanders in each age band in order to calculate the total hours in the third column. This sums to 544.9 million hours. The final column uses the statutory minimum wage value of $12.75 to calculate the value of time associated with participation in sport and recreation. The largest value is the active participation of adults, calculated at $5.3 billion, followed by the watching of young people's active participation at $1.0 billion. The total value is $6.9 billion. This is a substantial figure, more than doubling the estimate produced at the section 4. It produces the result that the total value of sport and recreation to New Zealanders in 2008/09 was $12.2 billion.[2]

Conclusion

Previous studies of the size of the sport and recreation sector in New Zealand have reported estimates of around 1.2 per cent of gross domestic product. The analysis in this paper has revealed that the sector is much larger than that figure. The analysis produced four headline bullet points, all of which are conservatively estimated:

- The contribution of the sport and recreation sector (narrowly defined) to gross domestic product in 2008/09 is estimated to have been $3.8 billion, or 2.1 per cent.
- The contribution of the sport and recreation sector (broadly defined) to gross domestic product in 2008/09 is estimated to have been $4.5 billion, or 2.4 per cent.
- The contribution of sport and recreation to gross domestic product including volunteer services in 2008/09 is estimated to have been $5.2 billion, or 2.8 per cent.
- The total value of sport and recreation to New Zealanders in 2008/09 is estimated to have been $12.2 billion.

These figures are comparable to the size of the non-profit sector (2.6 per cent of GDP in 2003/04) for which Statistics New Zealand (2007) has already produced a satellite account. This comparison adds weight to Chris Gratton's (2009) recommendation that Australia and New Zealand should follow the European Union's example of working towards creating satellite accounts (attached to their official national accounts) to provide a comprehensive measure of the contribution of the sport and recreation sector. The sector involves a significant share of New Zealand's economic resources, so that robust information is required to assist the efficient use of these resources.

[2] Note that it would be meaningless to express this total figure as a percentage of GDP, since the definition of GDP does not include value-added obtained for oneself from personal activities. Work related to family care within the household is also defined to be out of scope in the same way; see Waring's (1988) influential critique of this practice.

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