Quantitative Analysis of Event Legacy: Beyond Economics and Tourism to Sport Development

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Quantitative Analysis of Sport Development Event Legacy: an examination of the Australian Surf Life Saving Championships

Abstract

1. Research question: This study explores whether the conduct of an unleveraged major event, the Australian Surf Life Saving Championships, leaves a legacy in terms of making a contribution towards the ongoing sport development of surf lifesaving. This is an area of event legacy research that has received little empirical research.

2. Research methods: Secondary data sources from the event host organisation were used as indicators of sport development. Regression analysis, adjusting for changes in the outcome variable outside of the host location (Perth, Western Australia), was used to identify if hosting the event was associated with changes in indicators of attracting, retention and nurturing of sport members in the host location.

3. Results and Findings: The only significant adjusted results were a decrease in membership for the host club and an increase in competitor numbers for Western Australia and the Perth metropolitan area, suggesting hosting the event offered some retention and nurturing opportunities for sport development.

4. Implications: This study contributes to sport event legacy literature through examining a non-mega, single sport event and its effects on sport development and suggests that hosting the event only had a limited effect on indicators of sport development. The study uses a regression analysis method used that has broader applicability to the examination of event legacy from other events.

Keywords

major event; event legacy; event leverage; sport development; surf lifesaving

Introduction

It is generally assumed that hosting sporting events provide ongoing benefits in the community. Short term benefits are termed impacts and longer term benefits are referred to as legacies (Dimanche, 1996). These benefits may occur in economic, sport, infrastructure and social categories (Allen, O'Toole, & Harris, 2011; Cashman, 2002). Events are often used as the rationale to drive economic development with financial support from the governments of host cities and countries (Chalip & Leyns, 2002; Westerbeek, Turner, & Ingerson, 2002). This focus on the cost of government financial contribution to events has led to the majority of events being evaluated using economic impact assessment, despite persistent findings that the measurement of economic impact is flawed and can provide misleading or variable results (Crompton & McKay, 1994; Owen, 2005; Siegfried & Zimbalist, 2006; Taks, Kesenne, Chalip, Green, & Martyn, 2011). Due to the desire to generate positive health and community outcomes, research in recent times has focussed on the influence events can have on physical activity and sport participation levels (Campbell, 2012). While there is a long held belief, particularly by government, that sport events generate positive health outcomes (Grix & Carmichael, 2012), there are no empirical studies that support or refute this effect (McCartney, Hanlon, & Bond, 2013; McCartney et al., 2010; Weed, Coren, & Fiore, 2009). The mechanism by which sport events cause people to take up physical activity is referred to as the trickle down effect (Hindson, Gidlow, & Peebles, 1994), or the festival effect (Weed, 2009). Of more interest to sporting organisations is the demonstration effect, which relates specifically to sport participation, as opposed to more general physical activity (Weed, Mansfield, & Dowse, 2010).

Compared to the extensive examination of economic and tourism event outcomes, there have been few studies that have examined the legacy from sporting events specifically on sport itself, such as participation in the sport or the membership of clubs (Preuss, 2007). The majority of studies examining sport and participation legacies tend to focus on mega, multi sport events and the general community's physical activity levels, with no sustained change in physical activity reported (Bauman, Bellew, & Craig, 2014; Feng & Hong, 2013; Pappous, 2013; Veal & Toohey, 2005; Veal, Toohey, & Frawley, 2012). Similarly, evaluation of the 2006 Melbourne Commonwealth Games in Victoria showed that hosting the event had no influence on adults' level of physical activity in the host state of Victoria (Veal et al., 2012). After the London 2012 Olympic Games there were an additional 1.5 million people participating in sport, however the indicator of participation changed from three times per week before the event to once per week after the event. (House of Commons: Committee of Public Accounts, 2013). effects for sport development showed increases in Australian Rugby Union membership were identified following the 2003 Rugby World Cup. However these changes were attributed to population growth, and an ongoing trend of membership increases prior and after the 2003 Rugby World Cup event (Frawley & Cush, 2011).

Although mega events have dominated much of the literature to date, smaller events may offer similar benefits, but on a reduced scale and with less complexity than mega events (Gratton, Dobson, & Shibli, 2000). Studies suggest that small-scale events require less financial investment for communities (Gibson, Kaplanidou, & Kang, 2012; Higham, 1999) and can potentially provide more durable legacies (Taks, 2013). The increased likelihood of success from smaller events could be explained by market segmentation, where mega events are too generic to

provide benefits but smaller events may provide greater opportunities local community participation or recognition of the sport (Bullough, 2012). Further, a single sport event may offer more opportunities due a more specific audience (Hindson et al., 1994). Taks, Green, Misener, and Chalip (2014) identified some benefits for the sport of Athletics from the (unleveraged) 2005 Pan American Junior Athletics Championship, with the creation of a new facility and increased competition opportunities for existing local athletics club members.

Chalip (2004) suggests that legacy outcomes do not occur automatically, that they must be leveraged; that is, using strategies that capitalise on an event's assets to deliver lasting value. The leveraging model focused initially on tourism (Chalip, 2004; Gardiner & Chalip, 2006), with extensions of the leveraging model applied to the generation of social and business legacies (Chalip, 2006; O'Brien, 2006). While leveraging seems intuitively logical and has widespread applicability, it has not been empirically tested (O'Brien, 2007). Additionally, the leveraging framework has not been used to examine the potential benefits for the sport itself, meaning that a sport event might be used as a stimulus to achieve sport development outcomes, such as increased membership.

As previously outlined, sport legacy can be considered in the context of sport development. The term sport development itself is a ubiquitous term, with a number of definitions offered in the literature (Collins, 1995; Girginov, 2008; Hylton & Bramham, 2008). Green (2005) succinctly defines it as increasing the number of participants in sport and to enhance the quality of sport performance. Sport development is often explained and visualised using the pyramid model (Eady, 1993).The base of the pyramid represents the large numbers of

novice participants. Progression towards the apex of the pyramid signifies both elite levels of sport and a decrease in the number of participants who attain these levels. While the pyramid model has popular appeal, there has been no empirical testing that confirms its veracity. While the notion of sequential progression through the pyramid seems logical, it does not reflect reality (Green, 2005; Gulbin, Weimar, & Oldenziel, 2013), nor does it offer guidance for organisations in facilitating movement through the pyramid (Sotiriadou, Shilbury, & Quick, 2008).

Using a major event that does not explicitly attempt to leverage the event as a case study, this study will examine the effect of hosting a major event on indicators of sport development. The study will quantify if a non-mega sporting event can generate benefits for sport without leveraging, providing a baseline for future reference. Regression analysis will be used to adjust for broader trends in the sport nationally to more accurately identify the effect of hosting the event. Given the emerging research on non-mega events, this research will provide insight in this area and a methodology that can be applied in future studies.

Case study

The event being studied is the Australian Surf Life Saving Championships (ASLSC). The ASLSC lends itself well to examining sport development legacies due to a change in the event's location. The event was held in only one location from 1995-2006 (Kurrawa, Gold Coast, Queensland) and moved to a new location from 2007-2009 (Scarborough, Perth, Western Australia, 3,600 km away). This provided a unique opportunity to examine the interactions around a major event in a geographically discrete location, before, during and after

Scarborough's hosting period. The ASLSC meets Emery's (2002) definition of a major sports event: a championship generating national coverage and having at least 1,000 spectators. The ASLSC has a dual purpose: it is the national championship for surf lifesaving, but is also a mass participation sport event; anyone who is a financial member of Surf Life Saving Australia (SLSA) membership and completes 16 hours of voluntary surf patrols is able to compete. This is similar to marathon running events described by Coleman and Ramchandani (2010), where there are both elite and 'fun runners'. The event could also be described as a 'celebration of a subculture' (Green & Chalip, 1998); it is an annual opportunity for surf lifesavers to revel in their shared identity (Jaggard & Galton, 2006).

Surf lifesaving plays an important role in Australian society at both a national and community level. Eighty five percent of the Australian population live within 50km of the coastline (Australian Bureau of Statistics, 2011) and there are an estimated 100 million beach visits each year (Surf Life Saving Australia, 2011). As the peak body responsible for the delivery of aquatic safety in Australia, SLSA provides an estimated the economic value of AUD$3.4 billion per annum to Australian communities (PricewaterhouseCoopers, 2011). Additionally, surf lifesaving makes an important contribution to the culture and social capital within Australian communities (Darcy, Maxwell, Edwards, Onyx, & Sherker, 2014; Saunders, 1998). Surf Life Saving Western Australia, a key organisation in this study has the vision of 'Saving lives and building great communities', which shows the scope of the organisation's influence (Surf Life Saving Western Australia, 2009). Not long after the peak body was founded in 1907, competition became an integral way to hone surf skills and fitness, with the first Australian Championships held in 1915 (Galton, 1994). Competition and surf lifesaving have a symbiotic relationship: all

competitors at the ASLSC must complete a minimum of 16 hours of volunteer surf patrols in order to be eligible to compete, and competition provides motivation for undertaking volunteer surf life saving duties (Jaggard & Galton, 2006).

At the 2006 ASLSC, there were 146 individual events conducted over six days with 8,573 competitors (Surf Life Saving Australia, 2006). The 2009 ASLSC was conducted over six days, had 157 individual events, 5,563 competitors and an estimated accumulated total of 81,000 spectators (Surf Life Saving Australia, 2009a; 2012). The event attracts national media and a five city metropolitan average broadcast audience of 260,000 (Surf Life Saving Australia, 2009a). As the key funding body, the Western Australian Government conducted an economic impact study in 2007, with a reported economic impact of AUD$23.8 million (Government of Western Australia, 2007).

Conceptual Framework

Sotiriadou et al.'s (2008) three models for sport development processes offers a substantive theory that can be used to examine if the ASLSC benefitted sport development. Advancing the sport pyramid model, Sotiriadou et al. (2008) investigated sport development among 35 Australian National Sport Organisations to generate three processes that describe the developmental levels of athletes: attraction, retention/transition and nurturing. The attraction process involves recruiting sport members, participants, supporters and spectators. This can be influenced by external encouragement and accessibility to the activity (Green, 2005). It aims to increase awareness, participation and membership while nourishing junior members (Sotiriadou et al., 2008). Retention/transition can involve the progression of all participants, for example

officials and coaches, but the focus is primarily on juniors and identifying sporting talent. The retention of members is influenced by the perceived benefits of membership and the value of those benefits to the athlete (Green, 2005). In addition to the retention of members, Green discusses (2005) the transition to new levels, with a successful move to a new level requiring nurturing. This nurturing process requires the provision of support to athletes and their sporting success (Sotiriadou et al., 2008). Variables from the ASLSC will be applied to the three models of attraction, retention/transition and nurturing. Some of the variables could be considered in more than one process, as shown by Table 1.

Insert Table 1 here.

SLSA has 15 separate membership categories in its Annual Reports (Surf Life Saving Australia, 2009a), with not all categories being useful indicators of sport development (such as honorary members). The current study is limited to three membership categories: total, active and junior. Total membership is the sum of all 15 categories, and was included to ensure the broad consideration of all membership categories. Active members are defined as those who hold a Bronze Medallion and complete voluntary beach patrols. Active members contribute directly to the organisation's mission of providing "a safe beach and aquatic environment throughout Australia" (Surf Life Saving Australia, 2009a, p. 9). The junior category of members aged five to 13 years was examined because they are a large proportion of surf lifesaving's membership and are important for the future of the organisation. In 2009, 20.8% of the SLSA membership consisted of Active members and 40.1% consisted of junior members (Surf Life Saving Australia, 2009a). Junior membership has increased at an average annual rate of 9.2% since

2004, while active membership increased by 3.5% in the corresponding period (Surf Life Saving Australia, 2004; 2009a). The juniors are particularly important in Sotiriadou et al.'s (2008) attraction process: to enable large numbers of youth participants to be nourished and guided through to the entry point for the retention/transition process. Junior membership contributes to active membership through the retention/transition process, with juniors graduating into the senior active member ranks, and also through parents becoming active members (Booth, 2006). Northern Territory was excluded from all analyses due to a comparatively smaller membership and having few or no ASLSC competitors in analysis period. South Australia did not collect breakdowns within their membership for the entire analysis period, so were excluded from the analysis of Active and Junior membership. South Australia was included in the total membership analysis and all other analyses.

Coaches and officials (the volunteer event staff who conduct and referee surf lifesaving competitions) are essential to the sport development processes. The coaching and officiating qualifications give an indication of how healthy the sport and event support numbers are within the organisation. For example, the 2009 ASLC required a workforce of 430 officials for its conduct (Surf Life Saving Australia, 2009b). A coach or official becomes qualified after attending a course and meeting competency standards. Both coaches and officials have three levels of accreditation. Examining progression between levels would show retention and nurturing, however a breakdown of levels was not available so only overall figures were examined.

The other two indictors used to examine the attraction process were Bronze Medallion and Surf Rescue Certificates. The Surf Rescue Certificate and Bronze Medallion numbers provide an indication of the attraction process, as these are the minimum pre-requisite qualifications to becoming an active surf lifesaver (Surf Life Saving Australia, 2009c). The Surf Rescue Certificate is for surf lifesavers aged 13-15 years and the Bronze Medallion is for surf lifesavers aged 15 years and over. The Surf Rescue Certificate could also be considered as part of the transition process, because it can either indicate new members, or members who are transitioning from the junior to the active membership category, and the senior ranks within the sport.

Competitor entries are an indication of the retention/transition process, to allow for the development of skills and achieving high standards of performance (Sotiriadou et al., 2008). Competitor entries could also be considered as contributing to the nurturing process, contributing to the success of elite athletes. The ASLSC point score is a tally of results from each event and provides an indication of competitor performance and the nurturing process. A first placing in a final gets 6 points, second place gets 5 points and so on to sixth place receiving one point (Surf Life Saving Australia, 2010). There were several increases in the number of events conducted during the analysis period, causing an increased availability of points for the point score. To allow for valid comparison, this ratio of points-per-event was calculated. Due to a fatality at the 2010 ASLC, and all water events (approximately 66% of total events) were cancelled. The point score data from this year have been excluded.

Methods

Data sources

The membership, Bronze Medallion and Surf Rescue Certificate statistics were accessed from the annual reports of Surf Life Saving Australia (SLSA) and Surf Life Saving Western Australia (SLSWA). These documents contain detailed statistics, which provide a time series that indicates growth or decline. Coach and official statistics were provided by the SLSA directly from organisation's membership database. Competitor entries and results were manually compiled from a publicly available results archive (Surf Life Saving Australia, 2014).

To examine any possible geographical proximity effects within the host state of Western Australia (Ritchie, 2000; Smith, 2009) these outcome measures were also collated by the urbanisation of the clubs (Perth metropolitan vs. non metropolitan) and at the host club level (Scarborough Surf Life Saving Club). The definition of metropolitan surf lifesaving clubs used in this analysis is as defined by SLSWA (Surf Life Saving Western Australia, n.d.). There are 14 clubs in the greater Perth metropolitan area, covering approximately 125km of coastline from Yanchep (52 km North of Scarborough) to Secret Harbour (73 km South of Scarborough). The values for this analysis are an aggregate of these 14 clubs' totals.

Each variable was examined for the longest period which data were available, up to a period of 23 years, to establish a long-term pattern and examine the relationship between event location and sport development. Where the availability of records precluded a complete 23 year data set, the data were collected as far back as possible in a continuous manner. While the ideal scenario would be to have the same duration included in all analyses, all data sets still had a

sufficient number of cases available to provide adequate statistical power (Ho, 2006). A summary of the years available for the variables and explanatory notes are shown in Table 2. As there has been little research examining gender differences in event legacy when data were available the current study examined membership categories stratified by gender (Downward, Lumsdon, & Ralston, 2005). Data were only available by gender for the following membership categories active membership, junior membership, total membership, Bronze Medallion and Surf Rescue Certificate.

Insert Table 2 here

Analysis

To test if the event location in 2007-2009 impacted on sport development measures in Western Australia, regression analysis was used. This process allows for the comparison of outcomes before and after an intervention. The statistics were analysed using Predictive Analytics Software (PASW, SPSS, Version 20.0.0) and an alpha level of 0.05. To conduct the analysis, each of the variables, were regressed against a dichotomous dummy variable that represented a "0" for the years prior to 2007, and a "1" for the years the ASLSC was held at Scarborough (i.e. 2007, 2008 and 2009), and a "1" for subsequent years until 2013 to test for ongoing legacy. This required a series of separate linear regression analyses for each variable. For example, when examining total membership, three separate linear regression analyses were conducted to examine the effects at the Scarborough, Metropolitan and Western Australian level. This process provided unadjusted results, suggesting if the variable had a significant change during 2007-2013 from the ASLSC being held at Scarborough, and tests the intervention effects

of the ASLSC (Hanbury et al., 2013). Results are reported as both sunstandardised values (B) providing the result in its original unit (which in this study is the number of people) and the standardised values (β), which are standard deviation units allowing comparison between different outcomes in a standardised metric. The F value is the test of the overall model effect.

However, to examine the true effect of hosting the ASLSC, the changes in 2007-2013 need to be examined when adjusting for variations in the equivalent variables in the other states. This will determine if the ASLSC has a greater effect on sport development measures than broader trends observed within the sport (Ramsay, Matowe, Grilli, Grimshaw, & Thomas, 2003). Adding covariates in this way strengthens the model and improves the test of intervention effects (Tabachnick & Fidell, 2012). To account for potential influence of the broader trends a series of adjusted analyses were undertaken. These analyses used the same approach as the unadjusted analysis using the dichotomous variable as an indicator of event location and including the equivalent membership data from other Australian states as covariates. Examination of the resulting regression coefficients allows the testing of the intervention effect, while considering broader trends that may have affected the figures nationally.

Results

Insert Table 3 here

The results for the analysis on membership can be seen in Table 3. Analyses stratified by gender revealed no significant gender differences in outcomes so detailed reporting of results by gender will be not be included.

In unadjusted analyses of membership in Western Australia significant intervention effects were observed suggesting statistically significant increases of 1,362 in Active membership (β=0.89, $F_{(1,21)}$=76.37, p=<.001), an increase of 3413 in junior membership (β=0.88, $F_{(1,21)}$=71.69, p=<.001) and an increase in the total membership of 9166 (β=.90, $F_{(1,21)}$=93.24, p=<.001). Table 3 shows that there were statistically significant increases in all other membership categories in every state. When adjusted for the covariates, in Western Australia only the junior membership remained significant, with an increase of 783 members (β=0.20, $F_{(5,17)}$=184.61, p=.044). Following adjustment the following variables remained significant: Queensland junior membership having an increase of 2286 members (β=0.48, $F_{(5,17)}$=49.87, p=<.007); New South Wales had a significant decrease of 4884 junior members (β=-0.33, $F_{(5,17)}$=81.95, p=.025); and, Tasmania had a significant increase of 523 total members (β=0.55, $F_{(6,16)}$=42.00, p=.003). After adjustment, the Western Australia metropolitan clubs had a significant increase of 452 active members (β=0.38, $F_{(5,17)}$=117.10, p=.002), and the host club Scarborough experienced a significant decrease of 223 total membership (β=-0.45, $F_{(6,16)}$=56.43, p=.024).

Insert Table 4 here

In Western Australia the unadjusted coach, official, Bronze Medallion and Surf Rescue Certificates issued during the intervention all had significant increases (Table 4). All of the other states had a significant increase of at least one variable, with New South Wales having four. This again reflects the increased rate of growth within surf lifesaving nationally. The unadjusted analysis of Surf Rescue Certificates issued for Western Australia during the intervention period found a significant increase of 379 (β=0.58, $F_{(1,22)}$=10.84, p=.003). Unadjusted analyses of Bronze Medallions for Western Australia showed a significant increase of 233 (β=0.64, $F_{(1, 22)}$=15.53, p=.001). There was a significant unadjusted increase of 100 coaches and 61 officials (β=0.72, $F_{(1, 13)}$=13.92, p=.003 and β=0.62, $F_{(1, 13)}$=7.90, p=.004 respectively). When adjusted for covariates, these variables were no longer significant.

Insert Table 5 here

Examining the number of competitors from each state at the ASLSC from the period of 1996 to 2013 showed that in unadjusted analyses, competitor numbers for Western Australia significantly increased by 242.35 during the intervention period (β=0.58, $F_{(1,13)}$=7.95, p=.012) (Table 5). New South Wales, Queensland and Victoria all had significant decreases in competitor numbers during this period. When adjusting for the covariates, there was no significant change in competitor attendance for any of the states.

The point score per event ratio allows for a relative comparison over time, to allow for the increases in events during the analysis period (Table 5). Showing a significant unadjusted increase in points per event during the intervention period was Queensland with a decrease of

1.96 points per event (β=-0.74, $F_{(1,11)}$=6.12, p=<.030), New South Wales with a loss of 2.39 points per event (β=-0.64, $F_{(1,11)}$=10.11, p=.019) and Tasmania with an increase of 0.12 points per event (β=0.64, $F_{(1,11)}$=6.25, p=.019). However, following adjustment for variations in other states the intervention effect was no longer significant for any of the states.

Discussion

This study sought to examine the effect of hosting a major event, the Australian Surf Life Saving Championships, on measures of sport development for the sport of surf lifesaving in the host location of Western Australia. Analysis of unadjusted measures suggests that indicators of sport development from each of the three sport development processes examined increased in the host location following hosting the event. Whilst this is encouraging on face value, when adjusting for broader membership growth outside of the host location these relationships were no longer statistically significant.

It is difficult to identify a single factor that has contributed to this overall national membership growth. A contributing factor may have been 2007 being designated as the Year of the Surf Lifesaver, which was accompanied by a number of broader leveraging initiatives many of which were not specifically linked to the ASLSC (Australian Government, 2004; Surf Life Saving Australia, 2007). In addition to this, SLSA established a nationwide marketing and brand campaign in 2002, evidenced by a 77% (AUD$11.697 million) increase in sponsorship revenue between 2002 to 2009 (Surf Life Saving Australia, 2002; 2009a).

Western Australia had a significant increase in junior membership during 2007-2013 when adjusted for the membership changes in other states, showing that the event may have contributed to the attraction process. While causality cannot be assumed with Western Australia's increase in junior membership, the literature does suggest that children might be more receptive to joining a sport club as the result of a sporting event (Feddersen, Jacobsen, & Maennig, 2009; Frawley & Cush, 2011). Another factor apart from the ASLSC, could be SLSA's junior surf lifesaver program, which was introduced to reduce the barriers to participation for children (Surf Life Saving Australia, 2008). This strategy suggests the organisation is offering opportunities for 'people to become involved and stay motivated in consuming sport' (Sotiriadou et al. 2008, p. 261). Both the location of ASLSC and the improved program offering to juniors might have been influencing factors. Significant increases were observed in junior members in Western Australia yet the increases could have been larger as during the ASLSC hosting period, with two of the fourteen metropolitan clubs reporting that they were at full capacity and not able to accept new junior members (Cottesloe Surf Life Saving Club, 2008; Trigg Island Surf Life Saving Club, 2008). Increased accessibility to the activity is also a part of the attraction process (Sotiriadou et al., 2008), so if increased membership is a desired outcome of the ASLSC, clubs need to have the infrastructure to meet increased demand. Active membership is an indicator of attraction, and it showed significant adjusted increases in the Metropolitan Western Australia area. Unexpectedly, analysis focussing on the host club of Scarborough revealed an adjusted significant decrease of 223 active members in total over the ASLSC period. This is difficult to explain, but perhaps the club was focussed on supporting and hosting the ASLSC, rather than attracting nurturing and retaining members. This concurs with findings by Taks et al. (2014), who found that the conduct of the event was the main priority for a host organisation. If

increased membership is a desired legacy, this is best addressed by recruiting members in the pre-event "pregnancy" period (Minnaert, 2012; Weed & Ladkin, 2008).

The analysis of the accreditation of coach and officials showed one significant increase in adjusted analyses, with coaches in Queensland increasing in 2007-2013. The coach and official accreditation possibly had so few identifiable trends because of the fluctuation from year to year. Variation can be due to interest in participating in the course (which dictates if the course is run in some instances) and the frequency that the courses are offered by state organisations. It was beyond the scope of the current study to examine how these impacted accreditation rates. It does indicate that if future event hosts would like to leverage the event to increase accreditation, that strategies for coaches and officials should be incorporated this into the pre event strategic plans (O'Brien & Chalip, 2007). Targeting specific increases in official (event volunteer) numbers in pre event planning is important from a sport development perspective as it contributes to better quality and more available officials; furthermore increases in the number of better trained volunteers after events is a commonly identified outcomes of event hosting (Auld, Cuskelly, & Harrington, 2009; Cashman & Adair, 2009; Getz, 2007). Additionally, training opportunities or accreditation processes can provide learning or personal development experiences for volunteers which can increase satisfaction and the likelihood of ongoing volunteering (Downward & Ralston, 2006; Green & Chalip, 2004; Kemp, 2002). The SLSA strategies of 'extend coach development programs' and 'support and develop officials' (Surf Life Saving Australia, 2009a), could have been leveraged in Western Australia prior to the 2007-09 period, using ASLSC preparations as a focus. While specific levels of accreditation were not measured due to the unavailability of data, the organisations could have conducted higher level courses for both

coaches and officials and mentored them into higher order roles during the ASLSC. This leveraging could have been used as an attraction process for new coaches/officials, a retention/transition for developing coaches/officials and a nurturing process to elevate skills and knowledge of the higher level coaches/officials.

When looking at ASLSC competitor numbers, Queensland, New South Wales and Victoria all had significant unadjusted decreases. Western Australia was the only state that had an significant increase in competitor numbers. The Western Australia competitor numbers during 2007-2009 showed large, significant unadjusted increases during this event, but the variable was not significant when adjusted. Significant increases in active members, without increases in Bronze Medallion or Surf Rescue Certificates suggests that inactive or lapsed members were resuming participation in surf lifesaving. This is a similar finding to the literature that suggests events may be more effective at targeting those who are already active or reengaging former participants; the demonstration effect, rather than a festival effect (Bowles, Rissel, & Bauman, 2006; MORI, 2004; Weed, 2009). This shows evidence of the retention/transition and nurturing process, where the ASLSC being held locally, provided an impetus and focus on competing and performance for Western Australian surf lifesavers. While the Western Australian competitor numbers for the ASLSC declined in 2010 when the event moved back to Queensland, there may have been an increase in other events held locally, which were not identified in this study.

The current study did not show any sustained change in sport performance through the event's pointscore. While on-field success in sporting organisations may not seem relevant or important when considering sport development, Green (2005) defines sport development systems

as having the dual objectives of increasing both participation in sport and the quality of sport performance. Improved sport performance allows athletes to progress through the sport development processes and pathways identified by Sotiriadou et al. (2008). UK Sport (2009) found a 25% improvement in performance for event hosts, where environmental conditions are a factor, such as a beach. The reasons for the lack of increase in performance by the hosts is difficult to explain and may be related to differences in the measure of performance used in the current study compared to previous studies or it may be that the current event did not have an effect on performance for the hosts.

This study has some limitations, primarily that the data have all been collected from secondary sources. The accuracy and reliability of the data cannot be verified, although every attempt was made to source the most accurate data by using annual reports of the organisation. SLSA and its predecessor organisations have been systematically collecting member, education and rescue statistics continuously since 1908 for government and safety reporting purposes, therefore we are confident in the accuracy of the data used in this study (Surf Bathing Association of New South Wales, 1909). Additionally, this study sought to adjust for broader changes in the organisation, however other unmeasured factors could have affected the study outcomes. Analysing change in measures of sport development in the host organisation location while considering broader changes within the organisation is a strength of the current study.

Conclusion

This analysis examined a range of variables derived from Sotiriadou et al.'s (2008) sport development processes to determine if the 2007-2009 ASLSC had a positive impact on surf lifesaving in Western Australia. There were significant adjusted increases in Western Australia for Active junior state membership, Active metropolitan membership, and a decrease in Scarborough's Active membership. This represents positive changes for event hosts in 2 of 15 measures examined. The increases in junior membership observed cannot be directly attributed to hosting of the 2007-2009 ASLSC, due to broader junior development strategies implemented by the organisation during this period. Lapsed members re-engaging due to the ASLSC may explain the increase in Active metropolitan membership. Therefore this study provides limited support for sport development legacies occurring from an unleveraged major event.

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Tables

Table 1: The relationship between sport development processes (Sotiriadou et al., 2008) and surf lifesaving variables

Variable	Attraction	Retention/transition	Nurture
Active membership, junior membership, total membership. All categories stratified by gender	✓	✓ (Junior)	
Coach and official accreditation	✓		
Surf Rescue Certificate and Bronze Medallion	✓	✓ (Surf Rescue Certificate)	
Competitor entry numbers in ASLSC		✓	✓
ASLSC Point score per event			✓

Table 2: Geographic area and period of data available for measured indicators of sport development

Variable	Geographic area and period of analysis		
	Scarborough	**Western Australia Metropolitan**	**Western Australia and covariate states**
Membership: Active, Junior, Total	1991-2013	1991-2013	1991-2013
Membership stratified by gender	1997-2013	1997-2013	1991-2009
Competitor entries in ASLSC	2001-2013	2001-2013	1996-2013
ASLSC Point score per event	2001-2013	2001-2013	2001-2013
Coach and Official Accreditation	Data not available at this level	Data not available at this level	1999-2013
Surf Rescue Certificate and Bronze Medallion	Continuous data set not available	Continuous data set not available	1991-2013

Table 3: Analysis of unadjusted and adjusted changes in Active, Junior and Total Memberships associated with hosting the event

Geographic area	Category	Unadjusted Regression†			Adjusted Regression‡		
		β	B	p	β	B	p
Western Australia	Active	0.89	1361.76	<.001***	0.07	107.78	.433
	Junior	0.88	3412.83	<.001***	0.20	783.35	.044*
	Total	0.90	9165.66	<.001***	0.05	468.12	.735
Queensland	Active	0.53	658.01	.010*	-0.50	-618.59	.140
	Junior	0.89	4216.68	<.001***	0.48	2285.81	.007*
	Total	0.87	10799.45	<.001***	0.26	3269.20	.164
New South Wales	Active	0.88	4940.90	<.001***	0.02	88.68	.914
	Junior	0.79	11807.26	<.001***	-0.33	-4883.74	.025*
	Total	0.86	24909.38	<.001***	-0.16	-4614.59	.260
Victoria	Active	0.87	2276.50	<.001***	0.04	105.92	.708
	Junior	0.86	4644.06	<.001***	-0.08	-435.33	.479
	Total	0.87	12740.32	<.001***	-0.05	-662.22	.673
Tasmania	Active	0.84	155.46	<.001***	0.41	76.48	.103
	Junior	0.90	359.00	<.001***	0.40	161.35	.162
	Total	0.94	896.79	<.001***	0.55	522.86	.003**
SA§	Total	0.91	3279.08	<.001***	0.16	568.72	.375
Metropolitan	Active	0.90	1086.00	<.001***	0.38	452.47	.002**
	Junior	0.89	2349.04	<.001***	0.19	506.81	.071
	Total	0.89	6814.48	<.001***	0.01	40.99	.958
Scarborough	Active	0.78	50.51	<.001***	0.52	33.64	.150
	Junior	0.74	144.61	<.001***	0.16	30.29	.338
	Total	0.77	380.20	<.001***	-0.45	-223.12	.024*

* p<.05, ** p<.01, *** p<.001

† Unadjusted values regressed against a variable indicating an intervention in 2007, 2008, and 2009.

‡Adjusted for equivalent variables in the other states (where available) and intervention variable.

§ SA denotes South Australia

Table 4: Analysis of unadjusted and adjusted changes in Education Awards associated with hosting the event

Geographic area	Accreditation type	Unadjusted Regression †			Adjusted Regression ‡		
		β	B	p	β	B	p
Western Australia	Coach	0.72	100.14	.003**	-0.19	-26.32	.747
	Official	0.62	60.54	.015*	0.125	13.26	.515
	Surf Rescue	0.58	379.34	.003**	0.15	102.10	.348
	Bronze	0.64	232.82	.001**	-0.57	-205.22	.108
Queensland	Coach	0.88	342.96	<.001***	0.35	137.50	.001**
	Official	0.77	387.79	.001**	0.32	159.39	.370
	Surf Rescue	0.63	242.40	.001**	0.01	3.18	.956
	Bronze	.05	24.17	.806	-1.12	-510.96	.029*
New South Wales	Coach	0.72	476.02	.003**	0.26	170.49	.090
	Official	0.70	412.18	.004**	0.25	14.90	.932
	Surf Rescue	0.77	801.78	<.001***	0.37	388.54	.027*
	Bronze	0.83	953.87	<.001***	0.64	735.65	.005*
Victoria	Coach	0.76	110.02	.001**	-0.34	-48.76	.184
	Official	0.48	53.14	.072	0.05	5.55	.884
	Surf Rescue	0.70	474.44	<.001***	-0.07	-47.77	.600
	Bronze	0.79	570.98	<.001***	0.55	401.57	.027*
Tasmania	Coach	0.66	42.96	.008**	-0.52	-34.07	.004*
	Official	0.14	2.91	.629	-0.59	-12.68	.031*
	Surf Rescue	0.00	0.31	.990	0.10	10.64	.647
	Bronze	-0.13	-16.24	.541	-1.28	-158.47	.008*
South Australia	Coach	0.77	107.91	.001**	-0.28	-39.36	.215
	Official	0.67	126.79	.006**	0.27	50.06	.296
	Surf Rescue	0.19	81.77	.368	0.03	15.15	.864
	Bronze	0.56	113.29	.003**	1.06	204.18	.010*

* p<.05, ** p<.01, *** p<.001

† Unadjusted values regressed against a variable indicating an intervention in 2007, 2008, and 2009.

‡Adjusted against the equivalent state variables and the intervention variable.

Table 5: Analysis of unadjusted and adjusted changes in Competitor Numbers and Pointscore associated with hosting the event

Geographic area	Accreditation type	Unadjusted Regression †			Adjusted Regression ‡		
		β	B	p	β	B	p
Western Australia	Competitors	0.58	242.35	.012*	0.23	98.16	.689
	Pointscore	0.39	0.64	.188	0.54	0.89	.227
Queensland	Competitors	-0.84	-917.66	<.001***	-0.21	-229.83	.520
	Pointscore	-0.60	-1.96	.030*	0.12	0.40	.687
New South Wales	Competitors	-0.87	-1118.79	<.001***	-0.33	-420.28	.102
	Pointscore	-0.64	-2.39	.019*	-0.24	-0.90	.349
Victoria	Competitors	-0.81	-108.35	<.001***	-0.17	-22.64	.667
	Pointscore	-0.38	-0.24	.207	-0.59	-0.37	.284
Tasmania	Competitors	-0.38	-29.46	.125	-0.76	-59.70	.103
	Pointscore	0.64	0.12	.019*	0.78	-0.04	.125
South Australia	Competitors	-0.32	-34.48	.196	0.65	69.68	.084
	Pointscore	0.27	0.15	.369	-0.27	-0.15	.623
Metropolitan	Competitors	0.55	237.81	.052	0.45	195.02	.551
	Pointscore	0.26	0.38	.391	0.30	0.44	.445
Scarborough	Competitors	0.42	29.12	.151	0.63	43.40	.486
	Pointscore	0.13	0.04	.677	-0.12	-0.03	.839

* p<.05, ** p<.01, *** p<.001

† Unadjusted values regressed against a variable indicating an intervention in 2007, 2008, and 2009.

‡Adjusted against the equivalent variables in the other states and the intervention variable.