
Article:
Whittle, M, Lomax, N orcid.org/0000-0001-9504-7570, Heppenstall, A orcid.org/0000-0002-0663-3437 et al. (1 more author) (2017) Equitable or Elitist? The social impact of the 2014 Tour de France Grand Départ. Area, 49 (1). pp. 60-68. ISSN 0004-0894

https://doi.org/10.1111/area.12284

Equitable or Elitist? The social impact of the 2014 Tour de France Grand *Départ*

Matthew Whittle[1], Nik Lomax[1], Alison Heppenstall[1] and Simon Brerton[2]

[1] University of Leeds, LS2 9JT, UK
[2] Leeds City Council, Calverley St, Leeds, West Yorkshire, LS1 1UR, UK

Abstract
The Tour de France Grand Départ came to the UK in July 2014. It was heralded as a great success, drawing in an estimated 3.5 million visitors and generating over £128 million for the local economy, but there has been little research on assessing the geodemographics of who attended this event – did it reach out to all sections of society as hoped, or was it contained to the 'typical' cycling spectator? Using previously unpublished data, this research examines the demography of the crowd attending different sections of Le Grand Départ and explores whether the event was *equitable* i.e. accessible to all sections of the population or *elitist* with a demographic bias in who attended. The results show that overall, there was a bias towards a white, male, middle aged spectators, which is particularly prominent for the least accessible stages. Ethnic minorities and people with a disability were particularly underepresented for large parts of the route. Where there were interventions to improve access, the demographic profile of spectators was more in line with the national picture. Understanding who, and who does not, attend these events has wider implications for the planning of, and longer-term socio-economic impacts of these events and we recommend that further advanced planning would improve the equitability of future sporting events.

Key words: *Geodemographics; Tour de France; cycling; tourism; survey; United Kingdom*

Introduction
Le Tour de France is the largest annual sporting event in the world with an estimated 15 million spectators lining the route each year along with c3000 hours of live television footage broadcast to over 80 countries (Bull and Lovell, 2007). The first stages of the event are known as Le Grand Départ – usually held in nearby countries to boost the popularity of the event – with the first foray outside of France being staged in the Netherlands in 1954. In 2014 Le Grand Départ took place over three days; two days in Yorkshire, in the north of England (UK) and a third day of cycling between Cambridge and London in the south. The event attracted an estimated 3.6 million spectators, bringing in over £128 million in expenditure for the UK economy (Leeds City Council, 2014). While the event was hailed as a great success due to the positive economic outcome, there has been no detailed research on who attended Le Grand Départ: was it exclusively the typical cycling protagonist i.e. *elitist* (Aldred, 2012, Lovelace et al., 2015) or was the attraction of the world's largest sporting event more *equitable* in terms of the demographic profile of spectators? It is this key question we tackle in this paper, using a unique survey dataset collected during the 2014 event. Berridge (2012, p.43) highlights the wide-ranging 'economic, tourism, political, social, environmental and cultural impacts' of these large-scale events. After a review of the literature we focus upon the social and cultural: the short term accessibility of Le Grand Départ as a spectator event and the associated longer term benefits derived by those sections of society who we identify to be actively engaged with these types of event.

Sporting 'mega-events' (Horne and Manzenreiter 2006; Whiston *et al.* 2006) such as Le Grand Départ bring not only prestige but a range of positive socio-economic impacts to an area (Grix and Houlihan, 2014, Gratton et al., 2006, Bull and Lovell, 2007). For example, the 1992 Olympics in Barcelona was used as a catalyst for addressing the shortage of good quality housing for low income groups (Chen et al., 2013). This strategy is now known as the 'Barcelona model' and similar schemes have been used by subsequent Olympic events (Chen et al., 2013). The Olympic Games also played an important role in transforming Barcelona into one of the most attractive tourist destinations in Europe (Lee, 2013) thus producing a long-lasting legacy. While the benefits of hosting a mega-event can be considerable, hosting these events can also result in negative impacts with environmental damage, excessive spending and congestion cited as some of the biggest contributors (Preuss, 2005, Mills and Rosentraub, 2013). There are also questions around the equality of any benefits, social or cultural, for example Minnaert (2012) argues that there are few benefits for socially excluded groups arising from Olympic developments. Despite these reservations, there has been a notable growth in the impact of and bidding for major sporting events over the last 3 decades as many nations incorporate the hosting of mega events into their plans for economic development (Jones, 2001, Gratton et al., 2006, Bull and Lovell, 2007). Yorkshire and the Humber (the host region for stages one and two of Le Grand Départ) has historically been a region dependent on manufacturing, mining and heavy industry (Sadler, 2004), however these industries have become extinct or are becoming less significant in terms of their contribution to the local economy. Le Grand Départ was seen as a way for the region to transform its image and attract both new business and tourism. The third stage from Cambridge to London was added to the event to provide a link between the stages in Yorkshire and Northern France.

The social and economic impact of mega-events has been well documented. For example Hall (2006) assesses the urban and regional tourism generated from such events and the opportunity for place promotion; Jones (2001) argues that hosting the 1999 Rugby World Cup allowed Cardiff and Wales to showcase itself as a region that could 'put on a party', although long-term economic benefits were less clear; Collins et al. (2012) analyse the environmental impact of hosting the FIFA World Cup in 1998 and 2006 while Lee (2013) evaluates the effect on a city's brand and image after hosting a mega event. These studies demonstrate that it is important to weigh up a wide range of positive and negative impacts of a large scale sporting event. One consideration is ensuring that the event is accessible to a wide range of people, and there is little work that addresses in detail *who* attends these events as spectators, and how far they are prepared to travel. These are important considerations if the impact of an event is to be assessed beyond the headline economic and visitor number figures. If equitability in terms of access to the world's largest sporting event is important (and we argue that it is), then understanding the socio-demographic composition of the crowd can help in the planning future events of this nature.

The next section outlines what we mean by 'elitist' by reviewing the literature which focuses on those groups deemed to be 'typical' cycling spectators and participants. The paper then goes on to outline the dataset and methods used before some discussion of results. Finally, some conclusions and recommendations for future events are offered.

The typical cycling spectator

Lock et al. (2009) explains how the demography of professional athletes often mirrors that of the audience watching them compete. Cycling is often regarded as a Eurocentric, white, male dominated sport. Critics of the sport often indicated that the sport is extremely costly and, by default, elitist: Critchlow (2015) suggests that a year of racing could cost as much as £25,550. Attending a cycling event is also a costly exercise as prime locations are often situated on hills in rural landscapes with high transportation and accommodation costs limiting attendance to more affluent individuals.

The uptake of cycling in the UK has seen a recent boom. One of the reasons for this is arguably an enhanced profile and positive image, following success of British sports men and women at the professional level. For example, Lizzie Armitstead becoming cycling World Champion in 2015, Bradley Wiggins winning the Tour de France in 2012 and Chris Froome winning the event in 2013 and 2015. British Cycling (2012) indicated that 163,000 more people were cycling in the month after the 2012 Olympic Games compared to the 6 months before. Since 2012 there has been year on year growth in the number of British Cycling members, indicating that this trend is more than just a short term spike (British Cycling, 2014). One demographic group that has demonstrated the most substantial increase in uptake is white, middle aged men, often referred to as Middle Aged Men In Lycra (MAMILs) (Aldred, 2012), a trend also found by Ogilvie and Goodman (2012) in their assessment of the London 'Boris Bike' hire scheme. While uptake of the Boris Bike increased overall, female participation remained far below that of males and only 27.3% of all hire scheme users were female (Ogilvie and Goodman, 2012). Garrard et al. (2008) suggest that the difference between male and female uptake is partly due to women being put off by a lack of cycling infrastructure. Dirs (2014) identified a shift in sporting habits amongst the UK adult population between 2005/2006 and 2013/2014. In this period the number of people cycling at least once a week for over 30 minutes increased by 500,900 participants, while the number of people participating in golf decreased by 178,700. Whilst one could assume this is a shift in the preferences of the more affluent classes, it could also be attributed to increased popularity of cycling stemming from high profile events such as Le Grand Départ.

The engagement with mega-events by all sections of society has very important implications for increasing participation in sport and active lifestyles (Pringle et al., 2010). Several studies have attempted to quantify the impact of inactivity over different scales (Pringle et al., 2010) concluded that savings to the NHS would be between c£700 and c£4,000 over an average person's lifetime by moving from an inactive lifestyle to an active lifestyle whilst (Scarborough et al., 2011) estimated the cost of physical inactivity to the NHS was £0.9 billion between 2006 and 2007. Mega events have been proven to inspire people to either take up a new sport or to increase their levels of participation (Ramchandi et al., 2014).

Ethnicity is a focus for a number of studies which address cycling participation. Ogilvie and Goodman (2012) and Garrard et al. (2008) explain how cycling is not popular amongst ethnic minority groups because it is (i) not popular in their culture or (ii) goes against their cultural beliefs. A lack of ethnic diversity is apparent at the professional level of the sport as well (Lock et al., 2009), with the 2011 Tour de France being the first where a professional of black origin competed (Lock et al., 2009, Miller, 2011). In Yorkshire and the Humber 6.5% of the population are of non-white ethnicity (2011 Census), over half of this group identify as British Asian or Asian– it therefore follows that this group should be represented in crowds

attending to watch Le Grand Départ. This will be investigated later in the paper, however, in a study carried out in London (UK) by Steinbach et al. (2011) it was found that only 0.8% of Asian men cycled in comparison to a rate of 3.6% amongst White men. Similar trends were found when analysing female participation with less than 0.1% of Asian women cycling, compared to 1.6% of White women.

As has been alluded to previously, social class has a large impact on the demographic make-up of cyclists in the UK. In general, individuals from a higher social class have a higher propensity to cycle compared to those of a lower social class (Aldred and Jungnickel, 2014). The work of Aldred and Jungnickel (2014) uncovered a relationship between people of a lower social class being discouraged from cycling as they associated the activity with poor social status; in contrast to affluent areas where cycling was seen as an aspirational pastime. The next section outlines the dataset which allows us to investigate the spectator characteristics identified in this section, as well as providing an overview of methods.

Data and Methodology

Measuring the size and composition of crowds at non-ticketed events is difficult enough, especially where they are spread out over a large area. For example, Versichele et al. (2012) develop a Bluetooth censor to measure only the size of the crowd for a one-day tour of Flanders. This did not include demographic information – such information is particularly valuable for assessing the composition of crowds lining the route of Le Grand Départ.

A questionnaire was taken on each of the 3 days of the UK event. The data collected comprises of 4,193 individual responses to a questionnaire, asked at 132 sites on the route on each day (see Figure 1). Each person was asked if they were a resident or a visitor to the area (with results verified by postcode), how much they had spent and their opinions on cycling and tourism, as well as for their age, sex, ethnicity and disability. The questionnaires were conducted at various locations around the route that had been selected to reflect where people were likely to congregate to watch the event, this included cities, towns, villages and 'Hubs' (where people could watch the race via a large screen with access to other facilities such as food and drink and toilets). The questionnaire coverage was therefore not uniform, however each route was split into 6 equal distance sectors and the questionnaire data were then aggregated by sector for the 3 days. Figure 1 shows the route of each stage of Le Grand Départ, the 6 equal distance sectors and the questionnaire locations. Shading represents if the route passes through an urban or rural area as a proxy for accessibility, and we assume that urban areas are more accessible than rural areas. To determine if an area was urban or rural, the DEFRA (2013) urban rural classification was used.

To mitigate for potential sampling bias, only one questionnaire was taken per group. To ensure that this did not cause further bias the interviewer was asked to only take the response of the person whose birthday was first after the interview date. This means that there should be a range of attributes represented in the dataset (rather than the leader of each group answering all questions).

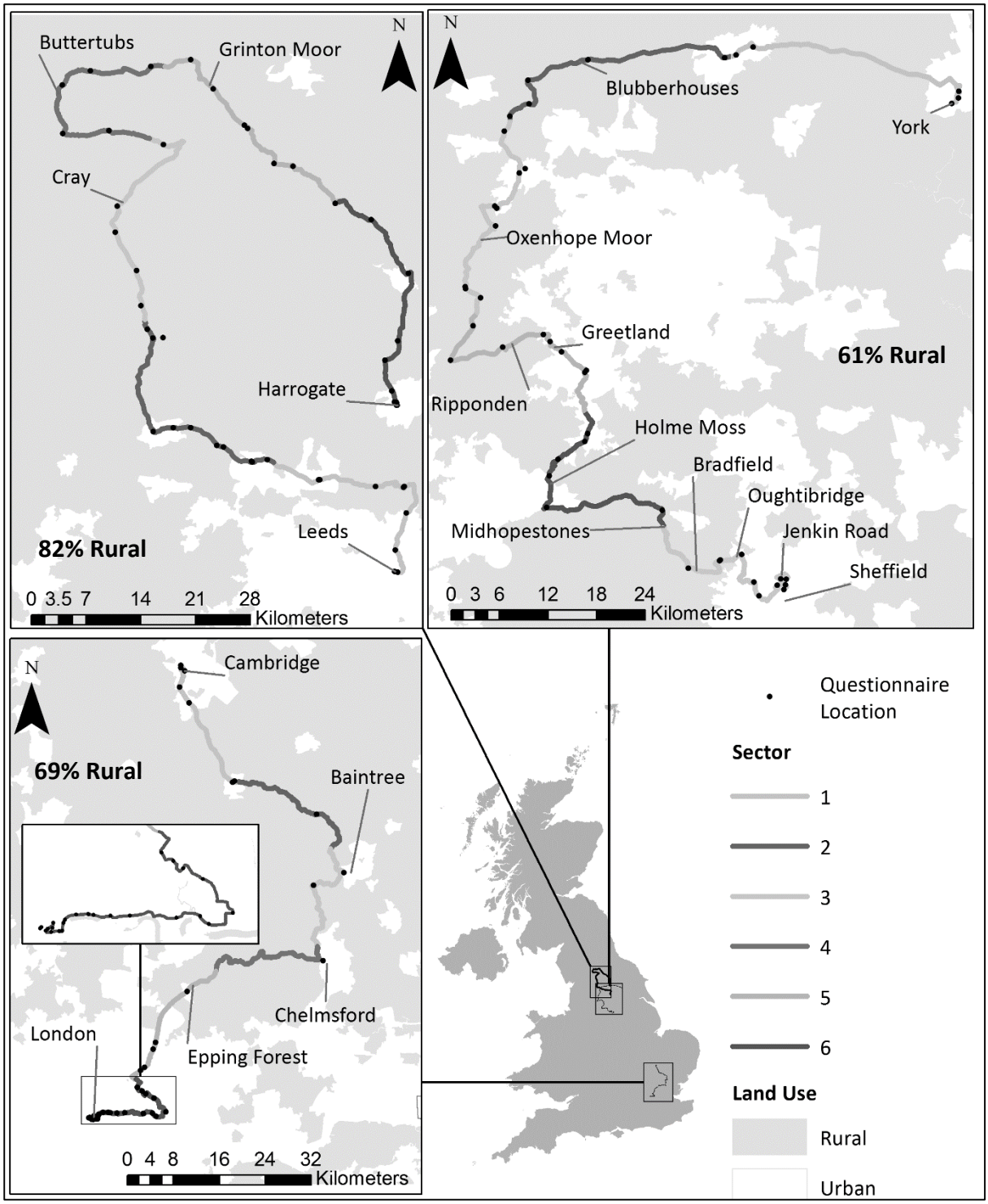


Figure 1. The profile of the route, questionnaire locations and percent Urban/Rural

In addition to the demographic and opinion data, we have added the socio-demographic classification of the respondent based upon their home postcode. For this, the Acorn geodemographic classification, created by CACI (2015) was used. The use of geodemographic classifications in the public and private sectors has existed for the last three decades (Birkin et al., 1996) and detailed characteristics for an area can be derived by drawing together multiple large-scale, attribute rich datasets (Webber et al., 2015). In this case, the Acorn profile is constructed from a range of survey and administrative data,

including Land Registry, Census of population and Department for Work and Pensions records. Geodemographic classifications are used widely to understand the composition of sub-groups of the population, for example in identifying those at risk of diabetes in the USA (Grubesic et al., 2014), analysis of retail patterns (O'Malley et al., 1995) and fire incidents in South Wales (Corcoran et al., 2013). For our analysis, each postcode in the survey is linked to a geodemographic profile, obtained from the CACI (2015) Postcode-Level Directory which describes the attributes of people who live within the Unit Postcode. As Unit Postcodes contain a small number of households (typically 15 but up to 100 (ONS, 2010)) the Acorn classification represents the best available small-area geodemographic information for households in the UK. Of the 4192 responses 76% were allocated an Acorn profile. The other 24% of responses did not have a valid postcode recorded (23.8%) or not enough data to provide a classification (0.2%).

Table 1 shows the five main classification groups along with all the subgroups that help to describe the socio-economic characteristics of an area in which people live. We will focus on the main classification groups in this paper.

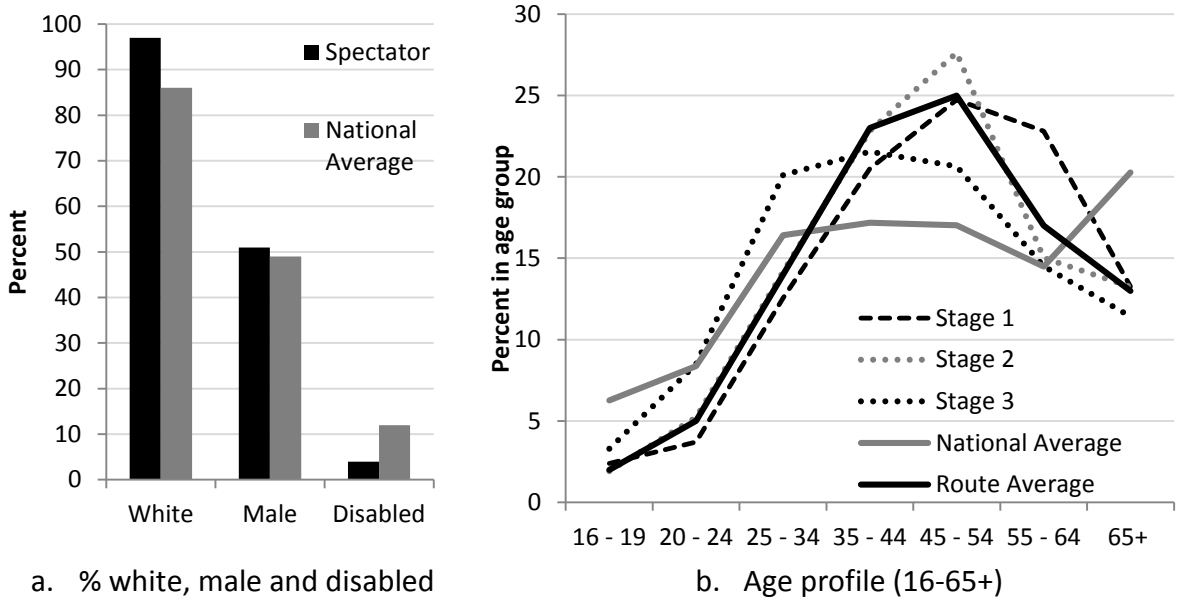
Table 1 CACI's ACORN geodemographic classification: main groups and sub groups

Main classification	Sub classification
1. **Affluent Achievers**	1a. Lavish lifestyle 1b. Executive wealth 1c. Mature money
2. Rising Prosperity	2a. City sophisticates 2b. Career climbers
3. Comfortable communities	3a. Countryside communities 3b. Successful suburbs 3c. Steady neighbourhoods 3d. Comfortable seniors 3e. Starting out
4. Financially stretched	4a. Student life 4b. Modest means 4c. Striving families 4d. Poor pensioners
5. Urban adversity	5a. Young hardship 5b. Struggling estates 5c. Difficult circumstances

In the next section, we look at the demographics of the spectators as reported in the survey dataset, before looking at their geodemographic classification in more detail.

The demography of the crowd

We first asses the demographic characteristics of the spectators surveyed during Le Grand Départ. Figure 2a shows the proportion who reported that they were of White ethnicity, male and had no disability. These figures are compared with the national average, as reported in the 2011 Census of population.



a. % white, male and disabled

b. Age profile (16-65+)

Figure 2. The demographic attributes of spectators compared to the UK average

Nationally, around 86% of the population reported in the 2011 Census are White, however the overwhelming majority of spectators (over 97%) who attended one of the three stages identified as White. The proportion of male spectators is slightly over the national average (51% compared with 49%) and while 12% of people nationally are identified as disabled, only 4% of spectators stated that they had a disability. These figures do not vary substantially by stage, although there is some variation at different parts of the route. In the least accessible (and arguably most exciting) 'King of the Mountains' sections of the race, usually staged in the most rural areas, the proportion of male spectators jumps to 56%. While the proportion of non-White spectators is between 97-100% for the majority of the route, the final two sectors of stage 3 which pass through central London are more representative of the national average (12.8% and 13.8% respectively).

Figure 2b reports the age profile of spectators (as a percent of total) for the route as a whole and for each of the three days, compared with the national average. There is clear over-representation of those aged 35 to 44 (23% of all spectators compared with 17% of the national population), 45 to 54 (25% compared with 17%) and 55 to 64 (17% compared with 14%). Other age groups are under-represented, with the most notable differences being in the youngest 16 to 19 age group (2% of the spectators compared with 6% of the national population) and the oldest 65+ group (13% compared with 20%). There is some variation by stage, with stage 3 (Cambridge to London) being more similar to the national age profile than stages 1 and 2.

Taken together, the headline results reported in Figure 2 suggest that the demographic profile of the spectators as a group is skewed: it is more white, male, and middle aged than the national profile. The spectator group is also less disabled than the national average: while this is likely due to a smaller proportion of spectators being aged 65+ it could also be attributed to the difficulty of access at many stages of the route. Generally, where the route is least accessible the demography of the spectators is more skewed away from the national average, suggesting that there may be barriers to access for certain groups in the least accessible places.

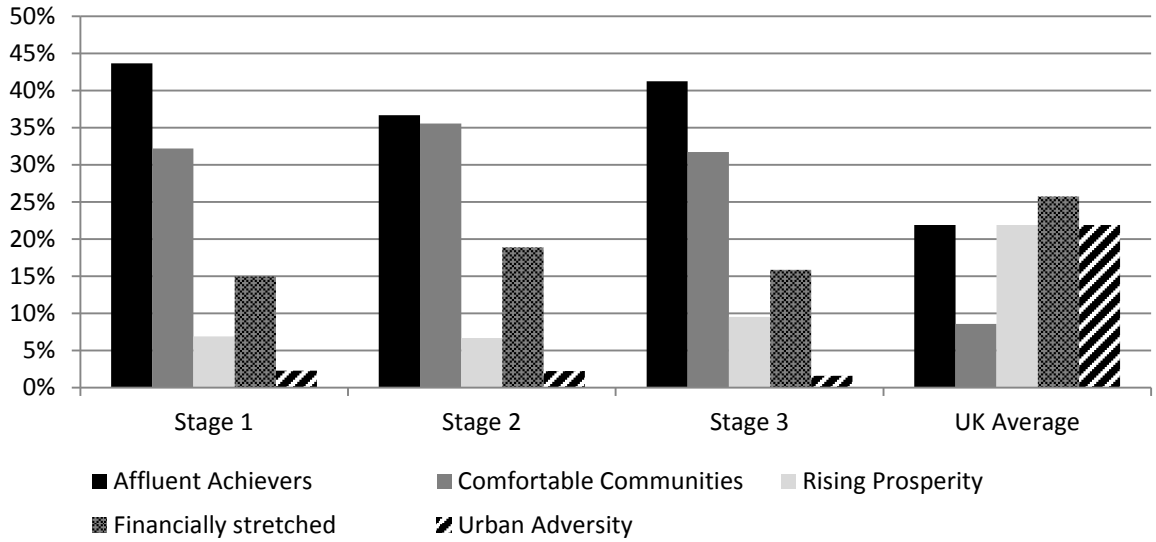


Figure 3. The ACORN geodemographic profile of the crowd by stage, compared with the national average

Having assessed the demographic attributes of the spectators, we now turn our attention to their geodemographic profile. If we take the UK average ACORN classification at a starting point, approximately 53% of households (based on their postcode) fall in to the three most affluent groups (22% affluent achievers, 9% Comfortable Communities, 22% rising prosperity) while 47% fall in to the less affluent groups (26% Financially Stretched and 22% Urban Adversity). Figure 3 shows clearly that the geodemographic composition of spectators for each of the three days of Le Grand Départ is unlike the national average: between 79% (stage 2) and 83% (stages 1 and 3) of spectators fall within one of the three most affluent categories while those classified as the most financially comfortable Affluent Achievers represent more than twice the national average in terms of their representation at stages 1 and 3. Again there is variation at different sections of the route: returning to the example of King of the Mountains sections, these inaccessible areas were primarily attended by Affluent Achievers (39%) and Comfortable Communities (37%) while the Urban Adversity group only account for 1% of the total crowd at these locations.

An assessment of distance travelled is important to determine if the skewed geodemographic profile of the crowd is a product of route planning (i.e. it may go through areas that have certain geodemographic profiles) or of a propensity and ability to travel to watch Le Grand Départ. Figure 4 shows the distances travelled to watch the event by each geodemographic group.

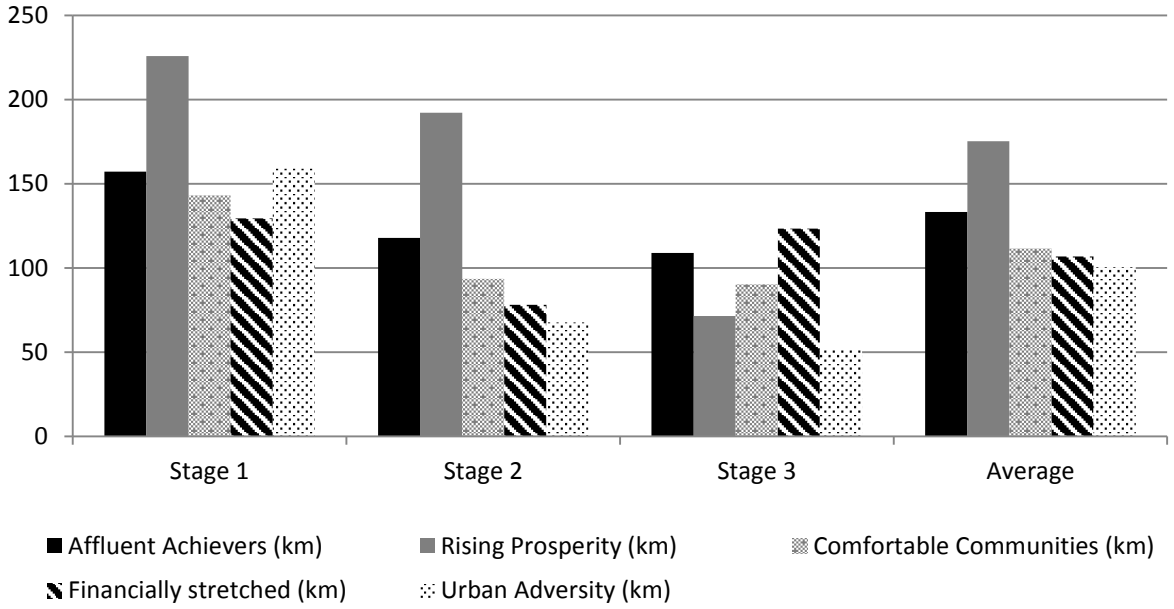


Figure 4. The average distance travelled by geodemographic group for the whole event and by stage

Taking the average distance travelled for the whole event as a baseline, it is clear that there is a propensity for those classified as Rising Prosperity to travel the furthest with an average distance of 173.3km. This result is a product of stages one and two (held in Yorkshire) where accessibility for some sectors was most difficult. The next most mobile spectator group is those classified as Affluent Achievers (with an average distance travelled of 133.2km). This distance is more uniform across the three days but with larger distances travelled on day one than for days two and three. Those classified as comfortable communities travelled, on average, substantially shorter distances (111.6km) and the least mobile groups are the less affluent Financially Stretched (travelling on average 106.8km) and Urban Adversity (travelling on average 100.5km). Interestingly, this final group was the second most mobile for stage 1 where they travelled, on average, 159km to participate as spectators. This is perhaps not surprising given that most people classified under Urban Adversity live within urban areas, meaning that those who did travel on day one had to travel further to access the rural stages. However, the affluent primarily urban group, Rising Prosperity, are more mobile and have travelled substantially further than those in Urban Adversity.

An argument for improved access?

Results presented so far suggest that where Le Grand Départ passed through more accessible areas, the demography of the spectators was more akin to the national average. The least accessible parts of the course arguably produce some of the most entertaining racing and these sections have been shown to attract affluent spectators who are prepared (or able) to travel further. So if there is appetite and demand for Le Grand Départ, and other cycle events, from a cross-section of society, how can the equitability of access be improved? Evidence that strategies for improving access have a positive effect can be found in the questionnaire responses. During stage 2 the race climbed Holme Moss, an iconic hill amongst local cyclists but also one of the most inaccessible areas of the route, as well as smaller climbs at Bradfield and Oughtibridge, which are situated near Sheffield (see Figure

1). Because of the attraction of this section of the race, Sheffield city council organised discounted tram and bus services to the Bradfield and Oughtibridge sites to attract spectators, and results show that the intervention does influence the geodemographics of the crowd. Compared with other similar sections during this stage, the proportion of the crowd at Bradfield and Oughtibridge who were in the Financially Stretched ACORN group was larger: 19% compared to an average 16% for the whole event. At Holme Moss, where there was no accessibility intervention, the percentage of Financially Stretched spectators was lower than the average at 12%.

Conclusions and observations

We set out with the aim of examining if the 2014 Grand Départ of the Tour de France was an equitable or elitist event when the demography of the spectators is assessed. Using a unique survey dataset we found that during three days of the event, the crowds were predominantly white, middle aged and middle class, i.e. in the higher earning geodemographic groups. They were also less likely to be disabled than the general population. These characteristics were especially prominent at the harder to access sections of the route where the composition of the crowds were also more heavily skewed towards male observers. In other words, where access was most difficult, and arguably where the most spectacular racing took place at rural hill climb spots, the typical spectator was a Middle Aged Man in Lycra (Aldred, 2012) from a privileged background.

The positive benefits of hosting large scale events like Le Grand Départ are compelling. Beyond short term economic impact and enhancement of the host region's image, the social capital delivered by these events should not be under-estimated as they bring communities together in celebration – the 'feel good factor' (Bull and Lovell, 2007, p.235). However, such high profile events, which necessitate public expenditure and good-will should be accessible to all, and we have demonstrated that that the crowd who turned out to watch Le Grand Départ was not representative of the wider population. In the longer term, evidence suggests that sporting mega-events have the potential to improve uptake of sport in the general population (Pringle et al., 2010, Ramchandi et al., 2014) with knock on health benefits associated with an active lifestyle. It is not a huge leap to make the connection between immediate engagement with an event (as we measure in our analysis) and longer term benefits for the population sub-group who are engaged. In the interest of both equity of access in the short term and longer term social justice, we could (and should) do more to ensure that cycling and other major sporting events are promoted to all sections of society. One of the surprising findings from our analysis was the relatively equal gender split at most locations (bar the King of the Mountains sites). As women are less likely to cycle than men – the Department for Transport (2014) reports that females made only a third as many trips as males in 2013 – then this is an encouraging finding: events like Le Grand Départ may have a role to play in reducing the gender imbalance in the sport.

We have shown that, where Le Grand Départ route intersected more accessible areas of the country the composition of the crowd was far more similar to the national average (albeit still with a bias for more affluent ACORN geodemographic type). This was particularly evident in the final sectors of stage 3, where Le Grand Départ progressed through central London. Where there were interventions which promoted access, as in the case where subsidised travel was offered to a hill climb site, the composition of the spectator base

became more diverse and arguably the equitability of the event was improved as a result. Access then is a logistic as well as a social issue and such initiatives might offer a relatively simple solution for improving access to certain sites.

Yorkshire is committed to hosting similar large scale cycle events in the future, including the World Triathlon Championships in 2016 and the ever popular and now annual Tour de Yorkshire, while elsewhere in the UK the Tour of Britain and other such events continue to attract spectators. The findings presented in this paper can help guide planners on how to make such events more inclusive. Increasing the promotion of these events amongst underrepresented groups, young adults, ethnic minorities and the lower social classes would help alleviate some of the bias identified, as would improving the access to more rural areas of the route. Longer term benefits for host regions might be a positive side effect of such promotion. A 2014 study found that only 3% of visitors to the Yorkshire Dales National Park were aged 16 to 24, and that 96% of all visitors were of white ethnic origin (Yorkshire Dales National Park Authority, 2014). An event like Le Grand Départ could act as the catalyst for broadening the demographic base of visitors to less accessible areas and open up the countryside to groups who might not otherwise make the journey.

References

Aldred, R 2012 Incompetent or Too Competent? Negotiating Everyday Cycling Identities in a Motor Dominated Society. *Mobilities* 8 252-71.

Aldred, R & Jungnickel, K 2014 Why culture matters for transport policy: the case of cycling in the UK. *Journal of Transport Geography* 34 78-87.

Berridge, G 2012 The promotion of cycling in London: The impact of the 2007 Tour de France Grand Depart on the image and provision of cycling in the capital, Journal of Sport & Tourism, 17 43-61.

Birkin, M, Clarke, G P, Clarke, M & Wilson, A G 1996 *Intelligent GIS: Location decisions and strategic planning* The Geoinformation Group.

British Cycling 2012 Cycling's legacy is already well underway (https://www.britishcycling.org.uk/about/article/bc20120817-about-bc-news-Cycling-s-legacy-is-already-well-underway-0) Accessed 17/12/15.

British Cycling 2014 British Cycling reaches 100,000 membership milestone (https://www.britishcycling.org.uk/about/article/20141006-about-bc-news-British-Cycling-reaches-100-000-membership-milestone-0) Accessed 17/12/15.

Bull, C & Lovell, J 2007 The Impact of Hosting Major Sporting Events on Local Residents: an Analysis of the Views and Perceptions of Canterbury Residents in Relation to theTour de France2007. *Journal of Sport & Tourism* 12 229-48.

Chen, Y, Qu, L & Spaans, M 2013 Framing the Long-Term Impact of Mega-Event Strategies on the Development of Olympic Host Cities. *Planning Practice & Research* 28 340-59.

CACI Limited 2015 Acorn Postcode-Level Directory for the United Kingdom, 2015. [data collection]. 2nd Edition. UK Data Service. SN: 7381 (http://dx.doi.org/10.5255/UKDA-SN-7381-2) Accessed 17/12/2015.

Collins, A, Munday, M & Roberts, A 2012 Environmental Consequences of Tourism Consumption at Major Events: An Analysis of the UK Stages of the 2007 Tour de France. *Journal of Travel Research* 51 577-90.

Corcoran, J, Higgs, G & Anderson, T 2013 Examining the use of a geodemographic classification in an exploratory analysis of variations in fire incidence in South Wales, UK. *Fire Safety Journal* 62, Part A 37-48.

Critchlow, A 2015 £25,550: the incredible annual cost of amateur bike racing - Telegraph (http://www.telegraph.co.uk/men/active/recreational-cycling/11559084/25550-the-incredible-annual-cost-of-amateur-bike-racing.html) Accessed 17/12/15.

DEFRA 2013 Urban and Rural Area Definitions for Policy Purposes in England and Wales: Methodolgy (v1.0) (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239477/RUC11methodologypaperaug_28_Aug.pdf) Accessed 17/12/15.

Department for Transport 2014 National Travel Survey: 2013 (https://www.gov.uk/government/collections/national-travel-survey-statistics) Accessed 17/12/15.

Dirs 2014 Is the newly 'cool' sport of cycling really the new golf? Accessed 17/12/15.

Garrard, J, Rose, G & Lo, S K 2008 Promoting transportation cycling for women: the role of bicycle infrastructure. *Prev Med* 46 55-9.

Gratton, C, Shibli, S & Coleman, R 2006 The economic impact of major sports events: a review of ten events in the UK.

Grix, J & Houlihan, B 2014 Sports Mega-Events as Part of a Nation's Soft Power Strategy: The Cases of Germany (2006) and the UK (2012). *The British Journal of Politics & International Relations* 16 572-96.

Grubesic, T H, Miller, J A & Murray, A T 2014 Geospatial and geodemographic insights for diabetes in the United States. *Applied Geography* 55 117-26.

Hall, C M 2006 Urban entrepreneurship, corporate interests and sports mega-events: the thin policies of competitiveness within the hard outcomes of neoliberalism. *The Sociological Review* 54 59-70.

Jones, C 2001 Mega-events and host-region impacts: determining the true worth of the 1999 Rugby World Cup. *International Journal of Tourism Research* 3 241-51.

Lee, C-J 2013 Effects of sport mega-events on city brand awareness and image: using the 2009 world games in Kaohsiung as an example. *Quality & Quantity* 48 1243-56.

Leeds City Council 2014 Tour De France: 3 Inspirational Days (http://www.leeds.gov.uk/docs/141203%20THREE%20INSPIRATIONAL%20DAYS%20FULL%20FINAL.PDF) Accessed 17/12/15.

Lock, D, Darcy, S & Taylor, T 2009 Starting with a clean slate: An analysis of member identification with a new sports team. *Sport Management Review* 12 15-25.

Lovelace, R, Roberts, H & Kellar, I 2015 Who, where, when: the demographic and geographic distribution of bicycle crashes in West Yorkshire. *Transportation Research Part F: Traffic Psychology and Behaviour*.

Miller, J W 2011 The Jackie Robinson of Cycling. *Wall Street Journal.*

Mills, B M & Rosentraub, M S 2013 Hosting mega-events: A guide to the evaluation of development effects in integrated metropolitan regions. *Tourism Management* 34 238-46.

Minnaert, L 2012 An Olympic legacy for all? The non-infrastructural outcomes of the Olympic Games for socially excluded groups (Atlanta 1996–Beijing 2008). *Tourism Management* 33 361-70.

O'Malley, L, Patterson, M & Evans, M 1995 Retailing applications of geodemographics: a preliminary investigation. *Marketing Intelligence & Planning* 13 29-35.

Ogilvie, F & Goodman, A 2012 Inequalities in usage of a public bicycle sharing scheme: socio-demographic predictors of uptake and usage of the London (UK) cycle hire scheme. *Prev Med* 55 40-5.

ONS 2010 Postal Geography (http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/postal/index.html) Accessed 17/12/15.

Preuss, H 2005 The Economic Impact of Visitors at Major Multi-sport Events. *European Sport Management Quarterly* 5 281-301.

Pringle, A, Cooke, C, Gilson, N, Marsh, K & McKenna, J 2010 Cost-effectiveness of interventions to improve moderate physical activity: A study in nine UK sites. *Health Education Journal* 69 211-24.

Ramchandi, G, Kokolakakis, T & Coleman, R 2014 Factors influencing the inspirational effect of major sports events on audience sport participation behaviour. *World Leisure Journal* 56 220 - 35.

Sadler, D 2004 Cluster Evolution, the Transformation of Old Industrial Regions and the Steel Industry Supply Chain in North East England. *Regional Studies* 38 55-66.

Scarborough, P, Bhatnagar, P, Wickramasinghe, K K, Allender, S, Foster, C & Rayner, M 2011 The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: an update to 2006–07 NHS costs. *Journal of Public Health* 33 527-35.

Steinbach, R, Green, J, Datta, J & Edwards, P 2011 Cycling and the city: a case study of how gendered, ethnic and class identities can shape healthy transport choices. *Soc Sci Med* 72 1123-30.

Versichele, M, Neutens, T, Goudeseune, S, van Bossche, F & van de Weghe, N 2012 Mobile mapping of sporting event spectators using bluetooth sensors: tour of flanders 2011. *Sensors (Basel)* 12 14196-213.

Webber, R J, Butler, T & Phillips, T 2015 Adoption of geodemographic and ethno-cultural taxonomies for analysing Big Data. *Big Data & Society* 2 2053951715583914.