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ARENA VENUES AND TRAVEL BEHAVIOUR – A CASE STUDY OF SHEFFIELD HALLAM ARENA

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Abstract

Arena venues are major attractors of leisure trips and the past decade has seen considerable growth in the number of such venues and arena-based events. This paper sets out the findings of a study of how people travel to and from arena venues, whether their personal accessibility to the particular venue influences their decision to attend an event and whether return visitors adapt their travel plans through experience of actual accessibility being different from that perceived.

1. INTRODUCTION

The last 10 to 20 years has seen a large increase in the number of arena style indoor entertainment venues with most medium to large sized cities having an aspiration to have one as part of its venue roster. This increase in available capacity has been filled by a rapid growth in events and in attendances. There is a wealth of material discussing the quality, legacy and externalities of transport in relation to mega-events and other one-off or large scale annual shows (see for example, Kassens, 2009; Chaikley & Essex, 1999; Roche, 1994; and ECMT, 2002). However, for events based on a much smaller scale, attracting attendances in excess of 10,000 on a frequent, but often irregular basis, whose traffic and transport impact is also heavily concentrated in space and time and super-imposed on to normal traffic there is little information to provide knowledge, best practice or planning blueprint.

Hence, the aim of this work was to understand the influences on the travel behaviour of visitors to arena events, specifically to Sheffield Arena, and to identify the scope of options available to planners, venues and authorities for challenging and adapting those behaviours towards more efficient and sustainable modes of transport, thereby reducing congestion and improving the arena event experience. Arena venues can be classified as venues with an indoor seating capacity of at least 5,000 (IPW, 2009). There are approaching 20 such venues in the UK and Ireland, over half of which have a capacity of at least 10,000 with most having flexible seating configurations giving adaptability to various show styles (IPW, 2009).

An arena style venue has since become considered a must have by any large city if it is to present a modern image, however it is possible the UK market for large scale arenas is approaching saturation level (IPW, 2009).

Arena venues and the number of events they host has increased year on year almost without failure since they first emerged in the UK towards the end of the 1970 swith the NEC at Birmingham (1976), the SECC in Glasgow (1985)GMEX in Manchester (1986) and the Sheffield Arena (1991) (Brennan, 2009). Artists could now tour the UK using similar economies of scale to those used in the US, making live music and touring more efficient and in the process providing the impetus for a growth in the sector (Brennan, 2009). The fall in single and album sales has seen artists increasingly looking towards live touring as an opportunity to increase revenue, resulting in a shortened touring cycle resulting in more shows, more often (IPW, 2009).

The National Arenas Association (NAA) Music and Event Research for 2009 reports that there were 2,333 UK arena based performances, an increase of 18% on 2008, attended by more than 1 3.9m people (+30% on 2008), with the average ticket price being £36.12 (Music Week, 2010b). Events staged include sports, classical concerts, television related and family events as well as as the more traditional pop or rock concerts. The research for 2009 shows that 61% of arena shows were live music events, but the biggest selling individual tours are those for family entertainment and comedy shows, reflecting the breadth and diversity of such venue audiences (Music Week, 2010a).

2. Sheffield Arena

Sheffield Arena was approached for it to serve as a case study for this research. The timing of the proposal coincided with the venue examining possibilities for the introduction of a travel plan and so officers at the Arena were happy to assist with the work.

Sheffield Arena was constructed as part of Sheffields hosting of the world Student Games, and opened in May 1991. Having a capacity of 3,500 up to 13,000, it has played host to a diverse range of events from ice hockey through Les Miserable, Cirque du Solel and Cesar Mllan the “Dog Whisperer” to Cliff Richard, local heroes Pulp and Judas Priest. It is operated, along with 13 other venues across the city, by Sheffield International Venues, and managed by Live Nation, a US based company and the largest promoter of live concerts in the world (

It is situated in the Lower Don Valley an area of urban regeneration redeveloped at a time of major changes to the pattern of land-use, including out of town shopping and business parks, with associated changes to the spatial patterns of travel demand (HiTrans, 2005). It has been acknowledged that the area has very strong connections along the valley but not across,

leading to it being relatively inaccessible from neighbourhoods to its east and west sides (Sheffield City Council, 2005).

Nevertheless, its close proximity to the motorway network generates Sheffield Arena catchment population of 3.09 million within a drive time of 45 minutes and 11.99 million within 75 minutes drive (IPW, 2009).

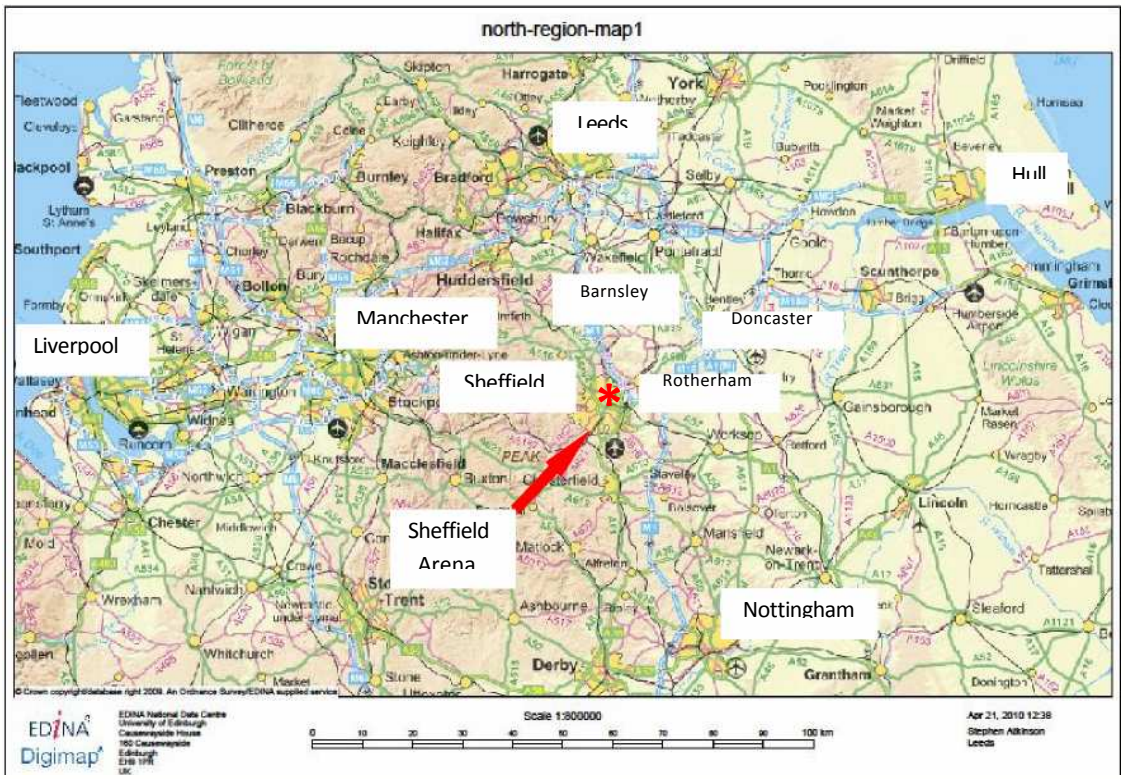

Figure 1. Location of Sheffield Arena within context of the north midlands and Yorkshire, Humberside and Lancashire conurbations

It has 1,300 car parking spaces on site, with a further 200 overflow spaces nearby and if required almost 700 more on the adjacent Don Valley Bowl. The Arena has its own tram stop, “Arena / Don Valley Stadium”, less than 5 minutes walk away on the “yellow” Sheffield Supertram route offerng direct inks to Meadowhall Interchange (10 minutes), Sheffield city centre (15 minutes) and Middlewood 40 minutes. It sits on the opposite side of Broughton Lane to the Centertainment leisure complex, offering evening entertainment such as restaurants and cinemas. Figure 1 places Sheffield and the arena in the context of the north of England.

3. Method

To understand their travel behaviour, it was decided to undertake a survey of arena-goers. Weighing up the relative merits of the possible approaches to this survey, and particularly in view of the degree of bias which would be present in a survey conducted on event nights using face to face interviews (namely a sample of the venue"s visitor spectrum specific to the nature of that one event), and the limited capability of interviewing a substantial number of visitors per event, it was decided that an online survey be used. A number of websites exist which facilitate the creation of on-line questionnaire surveys, producing a URL link to be used as required. Once designed and piloted, the questionnaire, with the assistance of Sheffield Arena, was attached to the venue's website on a new "travel survey" tab on the "how to find us" drop down menu and attached as a URL link within the venue's email newsletter. No incentive to complete the travel survey was included.

The initial questionnaire comprised 20 questions but the piloting created the scope to increase the number of questions asked. The resulting, final questionnaire encompassed 28 questions covering the following categories: home location (complete postcode); whether return visitor or a "never attended"; age make-up of visitors; preferred transport mode to and from venue; travel experience to and from venue; reason for poor travel experiences; scope for mode switch encouragement to be effective; attractiveness of a park and ride option.

The survey went live on the Sheffield Arena website 27th May 2010 and was included in four weekly email newsletters. On 31st July the survey was closed and removed from the Sheffield Arena website.

In addition to the survey, a number of site visits took place to understand the venue"s topography, its location in relation to the other amenities in the Lower Don Valley and to appreciate the nature of the transport issues – both car traffic and public transport provision – on an event night.

4. Sample Results

425 visitor responses gave a travel mode, the mode split being 78% car (including taxi) and 22% non-car modes (including walking). 65% of all visitors travelled in a car with at least two people in it. Only 4 visitors travelled by coach (1%) and only 1 walked to the venue (<0.25%). The local public transport – bus and tram – conveyed 15% of all visitors. Train was 6%. The average distance travelled (not including overnight stays) was 25 miles. 50% of visitors who responded live within an 18 mile drive of the venue. Almost 13% of visitors travel more than 50 miles for an event.

Plotting individual locations (see figure 4) shows the distribution and concentrations of visitors. Visitor respondents from as far away as Stevenage, Bangor and Blackpool reflect the wide area of the catchment. It is the concentration in and around South and West Yorkshire and north Derbyshire which is so apparent and expected.

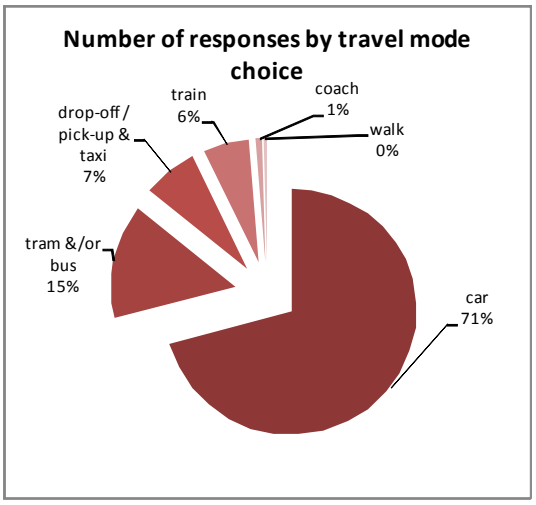

Figure 2. Mode choice proportions

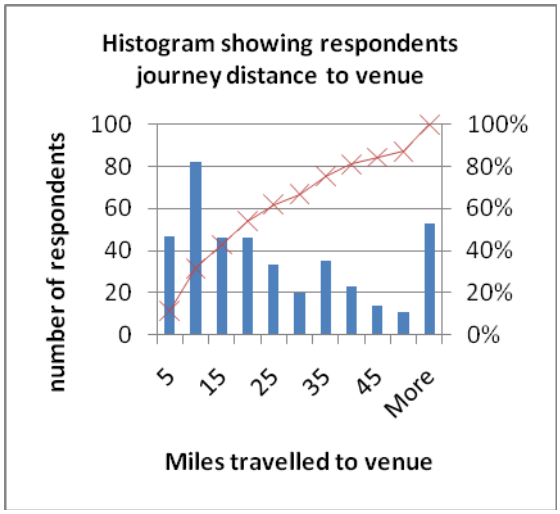

Figure 3. Journey distance summary

Figure 4 demonstrates the important role of the Pennine hills in defining the key catchment area – very few visitor responses to the left of it, to the right the catchment spreads out towards Humberside and north Lincolnshire. Other 5,000+ capacity arena venues have been marked on as blue stars and the catchment cut off half way to Nottingham and then also along the M62 corridor towards Manchester is clear to see. It is difficult to see whether the motorway network plays an instrumental role in visitor concentrations as the M1, M18 and M62 motorways weave through the more densely populated parts the area.

Looking at figures 5 and 6 it is noteworthy that the intensity of visitors in and around Sheffield is not mirrored on the for car and non-car visitors. Figure 5 for car users shows strong colours around the southern suburbs of Sheffield as well as as around Rotherham to the north east of the venue. Lesser concentrations can be seen to the south west of Sheffield, around Chesterfield and around Doncaster. Figure 6 however, shows non-car users to have concentrations to the west of the venue in the north west of Shefffield, with smaller concentrations in and around the other major urban areas. However, the area around Rotherham shows very little in the way of non-car users.

Figures 7 and 8 show the different reasons why visitors travelled by their chosen modes. The stark differences occur for the reasons “convenience”, “getting home” and “no alternative”. The survey did not ask whether the respondent had access to a car for travelling to events and it is

possible that this could be the underlying reason for some non-car mode choices. Interestingly, although most public transport modes scored highly for convenience, only "tram" scored on a par with car modes for "getting home", convenience" and journey time", perhaps suggesting that the tram is more reliable than other public transit modes. Note also bus users do not rate cost or journey time highly, but they do "no alternative".

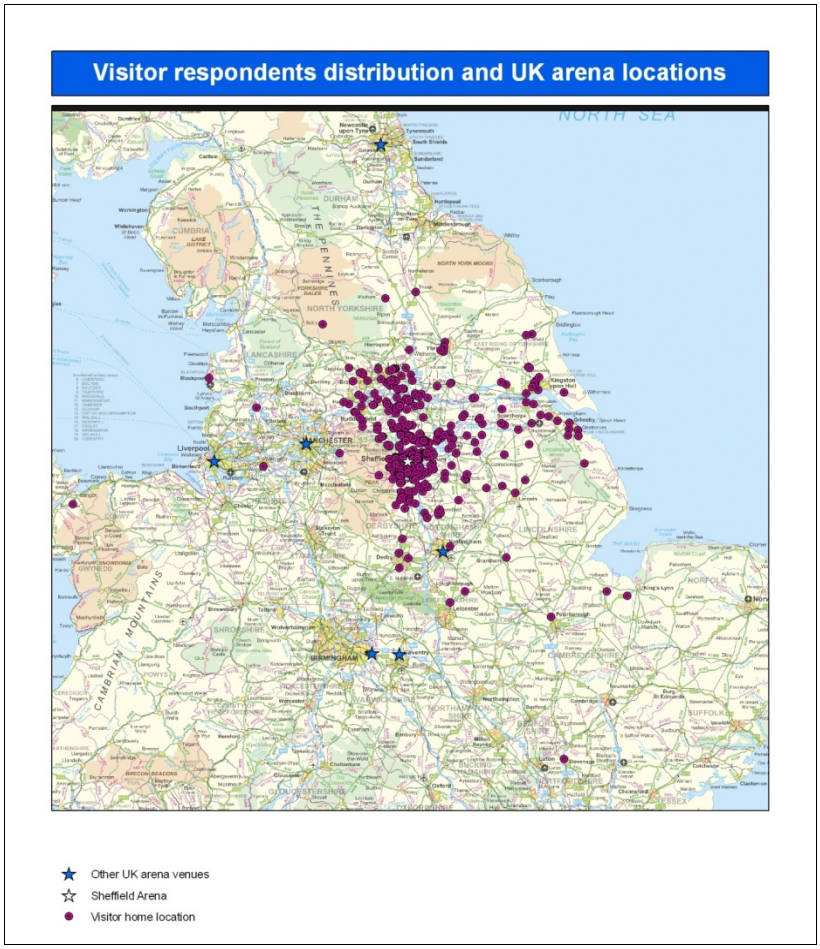

Fig 4 Distribution of respondents and UK arena locations

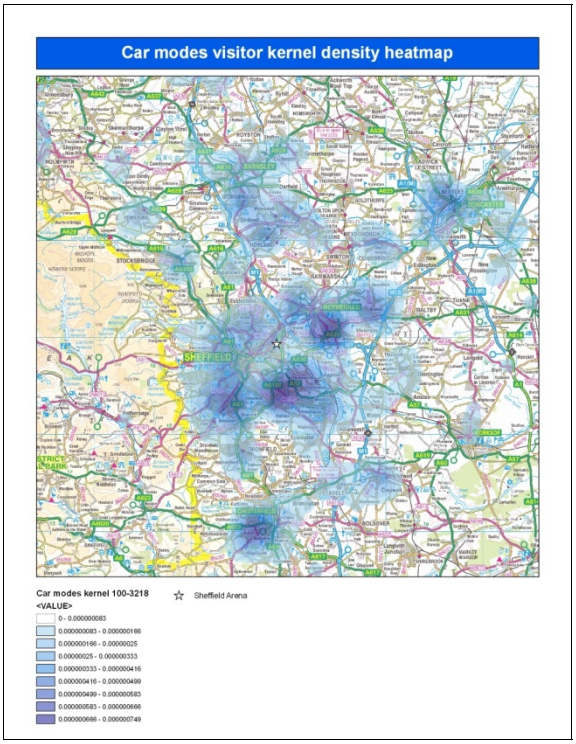

Figure 5 Car mode visitors heatmap

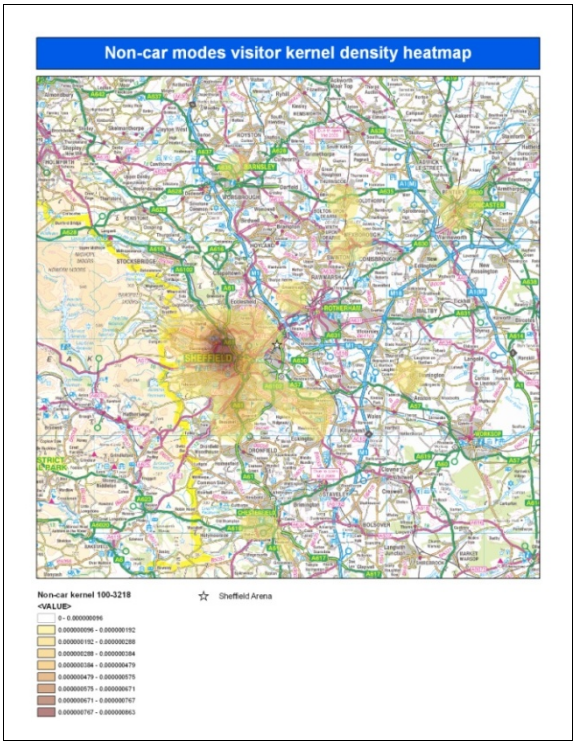

Figure 6 Non-car mode visitors heatmap

Figure 9 shows what different mode users see as an acceptable time from arriving at a P&R site to arriving at the venue. Car users see a very swift connection – almost half only 10 minutes – whereas for public transport modes the acceptable time is seen as more around the 20 minute mark. It appears that public transport users have less urgency in their journey to the venue. The evidence here points to any future park and ride scheme for providing transit to and from the arena would need to be swift if it was to attract the very market it was aimed at

5. Discussion of key findings

The arena was built as part of a plan to rejuvenate and regenerate the Lower Don Valley from an industrial landscape into one which planning developers of the late twentieth century saw as fit for the twenty-first.

Such a vision had connectivity at its heart, maximising the potential catchment area for new and modern business and saw the road network along with modern, rapid public transport as the way forward and the provision of good connections to the national trunk network as essential. This was the landscape from which Sheffield Arena grew, and is now at the core of the venue's success and transport difficulties.

It has almost 12 million people within a drive of not much more than an hour. Copious amounts of parking are available in a streetscape designed around the need of the motor car.

This makes the venue, as well as its close neighbours at the retail park, Valley Centertainment and Meadowhall shopping centre, successful in attracting motorists.

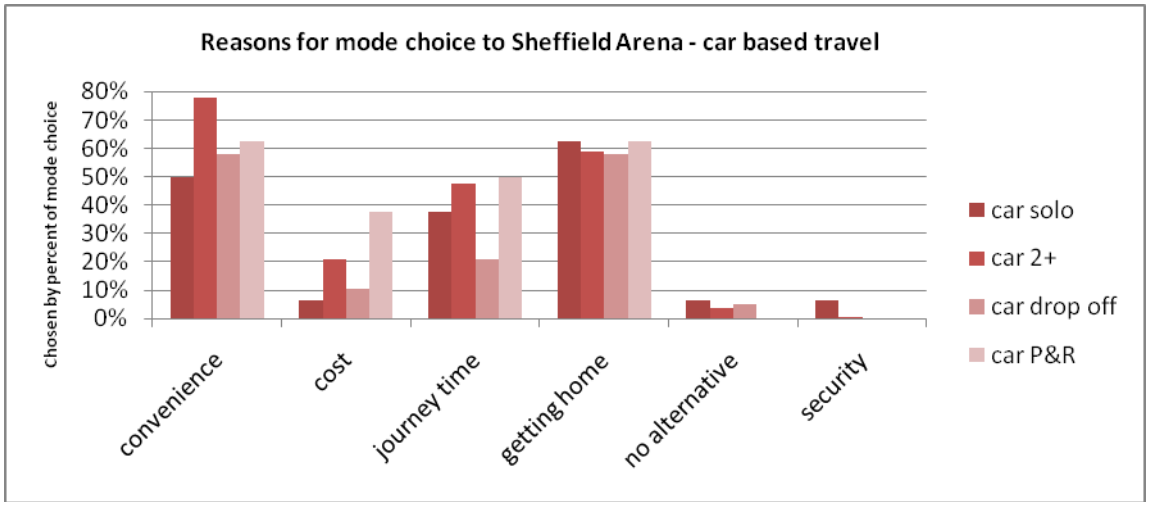

Figure 7 Principal reasons for mode choice – car user visitors (multiple selections)

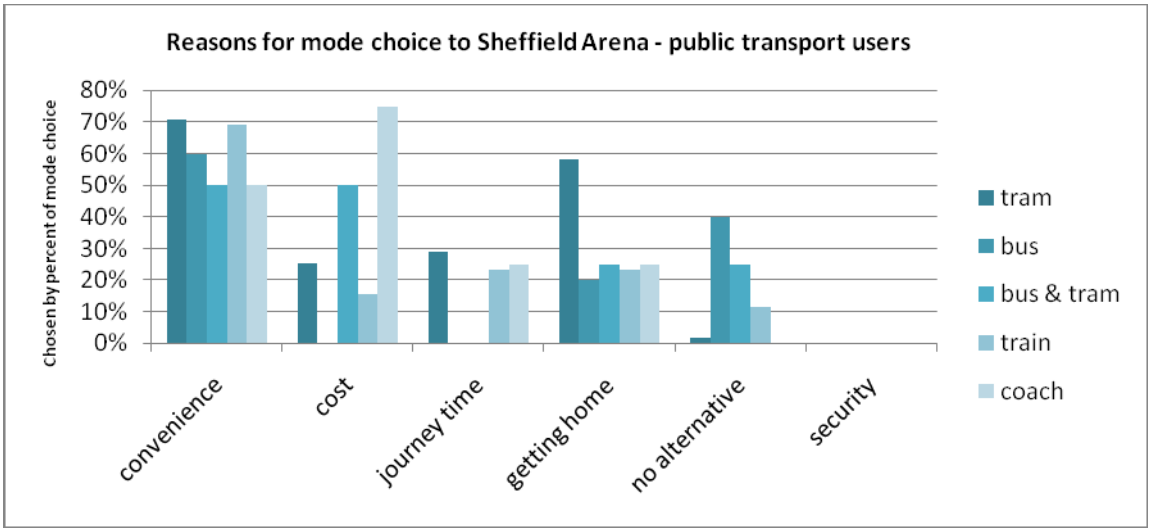

Figure 8 Principal reasons for mode choice – public transport user visitors (multiple selections)

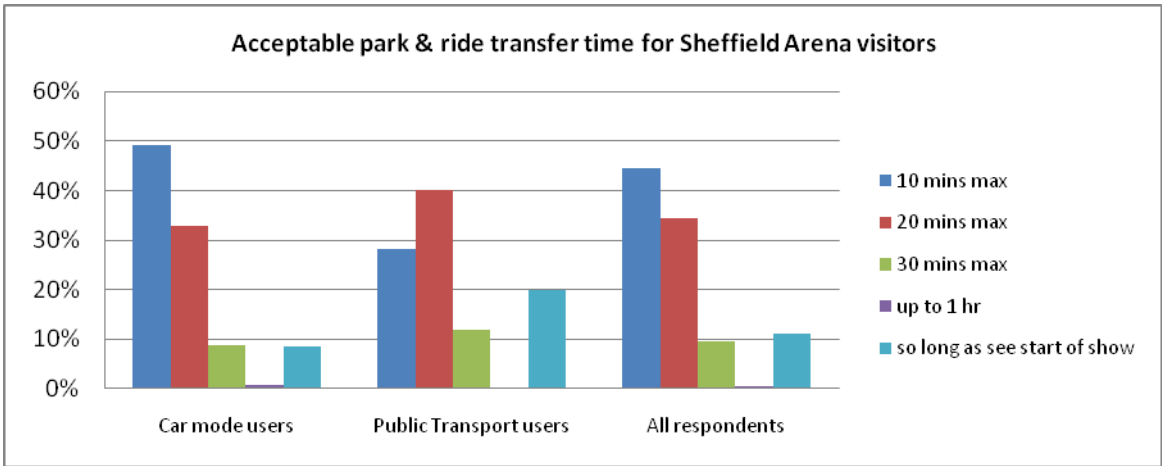

Figure 9 Acceptable park & ride transfer time – from arrival in car park to arrival at arena

But this success and audiences up to 13,000 at a single event, allied to the other nearby evening targeted leisure opportunities, brings traffic problems.

The survey results highlight that many people object to the “extortionate” parking fees and many request more free parking spaces to reduce on-street parking. Unfortunately for the motorist there is far more demand than supply. £5 for a parking space used by a car with two people is much cheaper than the Supertram from a park and ride site. The area is car oriented. Increase parking fees and more will use non-authorised spaces. Deter motorists altogether through some form of cordon on event nights and the custom may go elsewhere, and what of the traffic for the rest of the “ e sure and entertainment corridor”. It must be remembered hat these are commercial enterprises.

Many who responded to the survey asked for “more trams on event nights” or “later trains” or “more buses from other parts of Sheffield that stop near the arena”The public transport that serves the venue is, on the face of it very good, modern and reliable. However, scratch the surface a little and cracks appear. The Supertram link to Meadowhall and the city centre is excellent. However, new users will see a timetabled evening frequency of one every 20 minutes and be deterred. Access anywhere not on the yellow route requires an interchange penalty, increased uncertainty about making an event on time and of getting home ok afterwards. The Lady Gaga concert finished at 22.50. Anyone needing to catch the last train to nearby towns such as Barnsley, Doncaster or Chesterfield would have had to have left before the end and hope that they caught the first tram available to either Meadowhall or Sheffield. The bus routes along the valley from Sheffield to Rotherham become less frequent in the evening and most only run along one route. The one bus service which passes the arena becomes an hourly service after 18:18 (from Rotherham) and is susceptible to being caught up in the car traffic on an event night. The First Sheffield website does not list Sheffield Arena in its places to visit, though it is shown on the route map (First Group, 2010). These are confusing images for those who have not travelled to the area by public transport before.

Research into the current public transport provision also found very little in terms of cross-valley routes.

Comments were registered in the survey about the withdrawal of services or no appropriate service allowing them to make the journey without changing. When such services only operate on a hourly frequency the difficulty is heightened. These are barriers to people wishing to either use their usual mode or who would like not to drive and increases the gap between volitional and actual behaviours.

There is the additional cost of public transport vis avis the car – this cost is both financial and temporal. A good quality public transport alternative must be able to compete with the car on journey time. At the moment much of South Yorkshire cannot be reached by a

quick, hassle free public transport journey. The research suggests the socio-demographic includes a high proportion of those from the "prospering suburbs". Their lifestyles lean more to car use for daily life, making it difficult to attract them onto public transport unless it is quick and reliable.

Public transport access from Rotherham, only 6 miles away, is a particular problem. There is a bus service from Rotherham centre to the Arena, though this is a low-frequency service in the evenings and would, for many, require an interchange in the centre of the town. Alternatively, one could take the train from Rotherham Central to Meadowhall or Sheffield and then tram from there, requiring a further interchange. A journey distance of less than 6 miles becomes an epic of buses, trains and trams. There should be little surprise that the 18 responses received from Rotherham"s central wards produced a mode split car/public transport of 16/2. Visitors from Rotherham who do not have access to a car are faced with 2 choices – a very truncated public transport journey or to hire a taxi. This could be why the drop-off/pick-up map showed such a concentration around Rotherham. Comparing this with the heatmap for public transport use to the north-west of Sheffield shows what impact a direct service can have. This legacy of the area"s regeneration could be resolved if the Supertram were to be extended further north east into Rotherham town centre and Parkway development as proposed in the Lower Don Valley masterplan.

The research suggests that park and ride could have a part to play in a long term solution to the area's traffic problems. However, evidence from other research notes that they can drain existing public transport users and produce a net increase in car traffic. It is also important to stress that many respondents thought only 10 minutes acceptable from parking the car to arriving at the venue – to satisfy such a thirst for swift motion is almost impossible for a park and ride to achieve. Further, if the park and ride were a bus operated scheme there is the distinct possibility of the buses getting caught up in the very car traffic they are aimed at alleviating. Sheffield and Rotherham are not blessed with large scale commuter oriented park and ride facilities which could be easily utilised for evening events such as those held at the arena, though better use of 4 nearby park and ride sites could, together, be used to take 1000 cars out of the arenas immediate vicinity.

6. Conclusions

It became apparent in this case study that the influences are complex (numerous stakeholders and a diverse range of visitor types), familiar (car oriented development and poor public transport interaction) and handcuffed by policy, legislation and finance (limited control over bus services and a lack of funding for Supertram expansion to Rotherham).

Whilst accessibility plays an important role in how people travel to the venue (access to a car, access to public transport), it is probably not the major one. Lifestyle, habit, preference,

convenience, financial and personal security are all fundamental factors visitors weigh up when deciding how to travel. The complexity of interactions between them, make finding workable and long lasting solutions far from straightforward. Nevertheless, we have identified a combination of options, which, although not a complete answer, could help to reduce car traffic on event nights and improve the venue's (and area's) accessibility. These are:

- A frequent – at least every 10 minutes – shuttle bus service direct from Rotherham on event nights – an "Arena Express
- A direct tram service from Halfway (blue route) on event nights
- On the occasions when Supertram up their service frequencies these should be publicised as a formal timetable
- Improved marketing of the late evening services to Barnsley, Doncaster and Chesterfield – this must be done in conjunction with Northern Rail who can ensure trains operate correctly and of suitable capacity
- Improved information flows describing the public transport network available – there should be a Sheffield/Rotherham public transport timetable specifically

  covering Sheffield Arena, Valley Centertainment and Don Valley Stadium as a one-stop shop for potential customers.

A final recommendation, to encompass all of the above, is that an event category rating could be created whereby a different level of event will have an off the peg public transport and car travel directive attached. The researcher sees this as an A, B, or C level event, where A are big events, and C those events which currently occur without any difficulty. Each event is labelled A, B, or C on all documentation and website information; Travel South Yorkshire would have links to detailed information relevant to the category, advising customers accordingly. This could be as sophisticated as advising motorists from X location to use Y route and Z car park, or as little as advising what level of timetable Supertram will provide for that event.

It is clear from much of the evidence that there are two underlying factors leading to the travel problems experienced by Sheffield Arena. Firstly, the Arena is not within a central zone with established transport links radiating out and, secondly, it is less than two miles to the motorway network. The first factor pushes the visitor, the second pulls them away from more sustainable forms of transport into the motor car. Additionally, the venue did not have a supporting public transport system established at the outset, meaning that visitors, most of whom are return visitors, have an established journey routine, in turn making them much more difficult to move toward alternative modes.

Any new build arena style venue must ensure that from the outset it is located in a position which does not deter the non-car user from travelling to it. It must have a supporting public

transport network in place from the start and this network must have the capacity to be user-friendly, serving many destinations on a high frequency basis.

Further research to examine travel behaviours associated with other arena venues would be of interest. It would also be interesting to return to study Sheffield Arena in 5 years to observe changes in behaviour over time, perhaps in response to travel plan measures that the Arena may soon bring forward and to the opening of the Leeds Arena. Based on our experience, we would recommend that further studies sek to gather data on some aspects that were omitted here, including:

- Trip/activity-chaining on event nights
- Visitor accessibility to car transport
- Usual mode of daily travel
- Car parking location
- Views of other stakeholders
- What size of arena event generates transport issues

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