

**Greening Event Goers at the 2010 FIFA World Cup: A User Perspective Assessment of Sustainable  
Transport Strategies**

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by

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## **ABSTRACT**

Mega sporting events are tourist-based events that have recently begun subscribing to the sustainable development framework by greening its events to curtail environmental impact, especially on travel. The sustainable transport strategies outlined in the Green Goal Program for the 2010 FIFA World Cup aimed to reduce car use in favor of public transport, promote environmental awareness, and encourage behavior change. This thesis is an assessment of the structural and informational sustainable transport strategies implemented at the 2010 FIFA World Cup from the event goer perspective. An eclectic approach using social media, web resources, and quantitative-qualitative methods was used. Event goers reported using car more than public transport; many did not notice the environmental campaigns; hardly any post-event behavior changes related to travel were made. Event goer context provides insight on the effectiveness of structural and informational strategies and yields recommendations to improve outcomes for future events.

## **BIOGRAPHICAL SKETCH**

Masumi Izawa was born in Paraguay and grew up in the US. She studied psychology at Seattle University in Seattle, Washington. There she became a member of Psi Chi and completed an honors program in the psychology department, receiving a BA in psychology with departmental honors in 2005. Her senior thesis was a qualitative program evaluation on burned-out pastors participating in a leadership program. In 2006, she moved to Japan where she worked as a native English teacher, educating children and adults in conversational English. Having lived abroad for one and a half years, she returned to the US in 2007 and began working for a local nonprofit organization as a grant writer and development associate. A year prior to entering Cornell University, she became a naturalized US citizen. From 2009 to 2011, she pursued the MS degree in applied research in human-environment relations at Cornell University. During her time at Cornell University, she also worked with Dr. Alan Hedge on an archival and statistical investigation of the Hawthorne illumination experiments.

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# **I. BACKGROUND AND LITERATURE REVIEW**

## **1.1 Introduction**

Events have become a key tourism strategy to lure visitors to a particular region, combining both travel and leisure activity (Schiefelbusch et al., 2007). Mega events (MEs), or large scale events that generate a massive, temporary crowd of people (Fayos-Sola, 1998; Horne & Manzenreiter, 2006; Jones, 2001; Smith, 2009), have the distinct challenge of managing high inter-city travel demands and delivering quality services that go hand-in-hand with the event experience amidst a growing concern for environmental sustainability. Environmental impacts of MEs have garnered significant attention both at the policy level and planning level in recent years and are nowhere more pronounced than in highly publicized mega sporting events (MSEs) such as the Olympics and World Cup. It is now well documented through assessment reports (Carmichael et al., 2009; Collins & Flynn, 2008; Stahl, Hochfeld, & Schmied, 2006) that MSE travel encompasses the greatest potential impact on the environment.

Carbon dioxide, a greenhouse gas emitted by the burning of fuel, is a significant contributor to climate change (IPCC, 2007). Most notably, the 2010 FIFA World Cup in South Africa generated an estimated 2.7 million metric ton carbon footprint where 85% of the footprint came from travel alone, the largest for any event to date (Norwegian Embassy, 2009). Such findings and other known environmental impacts of MSEs (e.g., construction) along with pressure from policy makers have resulted in MSE institutions like the International Olympic Committee (IOC) and the International Federation of Association Football (FIFA) to devise event greening programs. Sustainable transport is one of the target areas of these greening programs that MSEs and their designated host regions must address. The goal of sustainable transport is to manage inter-city travel by significantly reducing car use through the use of public transport and non-motorized transport.

MSE organizers utilize policies, structures, and public awareness/information campaigns to influence the outcomes of sustainable transport, with more of the emphasis placed on policies and structures. Though the literature (Bows, Anderson, & Peeters, 2009; Peeters, Gössling, & Becken, 2006) has shown that policy interventions and structural solutions can greatly play a role in the success of sustainable transport in terms of providing the necessary incentives and transport means respectively, agency at the user level is also necessary for long-term success in sustainable transport. Yet, individual agency should not be viewed in isolation without the consideration of context, especially when the context is that of a ME. MSE organizers have set the expectation that event goers will contribute to the success of sustainable transport by making the environmentally responsible choice of reducing car use in favor of more sustainable modes of transport like public transport. Current assessments of MSE sustainable transport refer only to quantifiable, objective measures (i.e., ridership and emissions) and lack the consideration of user-context interactions. Understanding the event goer perspective can in return provide the design of more effective sustainable transport strategies that better motivates individuals' willingness to behave in an environmentally responsible way.

The following thesis employed hybrid quantitative-qualitative methods to evaluate the MSE greening program of sustainable transport implemented at the 2010 FIFA World Cup from the event goer perspective. Specifically, the structural and informational sustainable transport strategies outlined in the Green Goal Program for the 2010 FIFA World Cup aimed to reduce car use in favor of public transport, promote environmental awareness, and encourage behavior change were assessed.

## **1. 2 Event Greening**

The concept of event greening may be relatively new; however, its historical starting point was the 1992 Winter Olympic Games in Albertville where the IOC encountered a publicly reprimanded ecological disaster. The natural environment is often modified to accommodate for the sporting events and facilities,

and for the 1992 Winter Olympics, decimating the forested landscape of the Alpine mountains brought about pollution and noise, which permanently marred the natural environment and harmed avian wildlife. This event not only spurred negative media attention for the IOC and lashings from local residents and environmental groups, but it also led to the moratorium on the construction of new ski resorts in the Savoy region of the French Alps (Cantelon & Letters, 2000). During that same year, the United Nations Conference on Environment and Development (UNCED) developed a voluntary blueprint for sustainable development known as Agenda 21 and urged for local and global cooperation. To prevent such ecological and media disaster from happening in the future, an initiative was taken by the IOC to integrate Agenda 21 into the Olympic Movement, and in 1994 the IOC set up a cooperative agreement with the United Nations Environment Programme (UNEP). By 1999 the IOC officially incorporated the dimension of environment as the third pillar of Olympism alongside sport and culture. This resulting move towards greening the Olympics catalyzed a trend in MSEs known as event greening (Katzel, 2007). FIFA in recent years has followed suit by implementing the event greening program Green Goal for its World Cup events.

Event greening is “a methodology that incorporates sustainable development practices (of environmental, social, and economic concerns), in some instances mainstreamed into the operations and logistics of the event management process” (Katzel, 2007, p. 2). This triple bottom line of development practice originates from Section 1 and Section 2 of Agenda 21 (UN, 2009). Under Section 2.9.14, transportation is a component of the development practice to protect the atmosphere:

*The basic objective of this program area is to develop and promote cost-effective policies or programs, as appropriate, to limit, reduce or control, as appropriate, harmful emissions into the atmosphere and other adverse environmental effects of the transport sector, taking into account development priorities as well as the specific local and national circumstances and safety aspects.*

Some of the event greening guidelines for transportation by the IOC and FIFA to achieve Agenda 21’s objective have been to: utilize less polluting transport technologies; provide mass transit infrastructure; provide cost and time efficient transport mode alternatives to the car; educate the public on transport and

the environment. Though the MSE implementation of Agenda 21 initially started off as a voluntary action plan, many candidate host regions included its environmental component as part of the candidature file (Balderstone, 2001). This may have been a move on candidate host regions to appeal to winning host region votes. Nonetheless, this tactic has resulted in making the environmental component mandatory.

Event greening methodology is evident throughout the three-phased approach to MSE planning. In the *pre-event* phase, where upon the selection of the host location, structural event greening strategies of planning and construction get underway. Transportation infrastructure is often enhanced or newly built. More and more MSE projects are seeking green building certification such as the Leadership in Energy and Environmental Design (LEED) to construct facilities and venues that would use less energy and resources. During the *mid-event* phase, the actual event is taking place and it is here that event organizers target the event goers with informational event greening strategies of environmental awareness campaigns, often promoting more sustainable lifestyle habits. It is the expectation that these campaigns will incite environmentally responsible behavior in the event goer, which will assist in reducing emissions and energy consumption beyond those achieved through structural and technological solutions. Lastly in the *post-event* phase, the goal is for the event to leave a lasting positive impact on the environment—a legacy. Most event organizers have focused on converting and re-using event facilities for the long-term benefits of the local hosting communities, but MSE institutions are now becoming interested in the event's potential to leverage from its worldwide acclaim the ability to showcase and mainstream sustainability principles (Fela, 2010; 2010 FIFA World Cup, 2011; Frey, Iraldo, & Melis, 2008). Part of this legacy is to incite environmentally responsible behaviors beyond the event and into everyday lives. The legacy of disseminating sustainability principles to a global audience is an appealing feature that MSE institutions will undoubtedly exploit to justify their events in an environmental context. It is not known whether this particular legacy of inciting behavior changes beyond the event has been achieved.

## **1.2 Transport and Tourism**

The global locations of MSEs and the global event goers that they draw make them tourism based events; as a consequence, travel becomes inevitable (Kim & Chalip, 2004). Transport is an essential part of tourism and this relationship is a critical issue in the environmental impact of tourism (Lumsdon, 2000). Transport associated with tourism is a significant contributor of greenhouse gas emissions, accounting for 5%-8% of the nearly 30 million metric ton total global emissions (IPCC, 2007; UNWTO-UNEP-WMO, 2008). What is more, transport for tourism is dependent upon the two most energy intensive forms of transport—air transport and car (Greene & Wegener, 1997).

Air transport accounts for nearly three-quarters of the emissions from tourism transport. The Norwegian Embassy (2009) estimated that 67% (1.8 million tons) of the 2.7 million tons of carbon generated from the 2010 FIFA World Cup in South Africa would come from air travel alone. Second to air transport is inter-city transport, representing some 18% (0.49 million tons) of the total emissions from a MSE (Norwegian Embassy, 2009). Air transport is necessary for tourists to reach their destinations; however, once at the region, inter-city transport becomes a daily and frequent necessity to move about within the region. A more sustainable air transport program would require emissions reductions on a global scale and such an endeavor would involve emissions trading schemes between nations and the aviation sector (McKercher et al., 2010). On the other hand, achieving emissions reductions on a smaller scale (i.e., regionally through inter-city transport) is more feasible and impacts people's everyday travel. Inter-city transport demand is at its peak during a MSE due to the large influx of people. Demand for travel is particularly constrained in both space and time because event goers are often traveling to the same destinations at close time proximities (Robbins, Dickinson, & Calver, 2007). For these reasons, inter-city transport has often become the focus of sustainable transport at MSEs with the primary goal of reducing the use of cars and increasing the use of public transport.

Choice of inter-city transport is an activity that has potential to generate environmental problems and also problems that effect human well-being: air pollution; congestion; noise; risk of accidents (UNEP, 2007). The UNEP reports that the increase in cars is a contributing factor in traffic congestion and urban air pollution, and that switching to public modes of transport can significantly ameliorate these problems. For example, the 2004 Summer Olympics prompted the city of Athens to expand its metro transit system in time for the event by adding 17 km of track and 23 stations, resulting in a reduction of 70,000 cars that would have polluted the air and created traffic congestion during the event (Mintel International Group, 2010). Nowhere was the problem of car transport and air pollution a serious concern than at the 2008 Summer Olympics in Beijing. Participating athletes and event organizers were concerned that Beijing's car-induced air pollution would hinder or cancel outdoor endurance sporting events (e.g., marathons, cycling); however, the city managed to reduce air pollution in time for the Olympics through governmental policy efforts such as enforcing stricter emission standards, regulating traffic density, and halting construction projects elsewhere (Wang et al., 2009).

Largely absent in the MSE literature is the tourist perspective on environmental sustainability, but the literature in sustainable tourism suggests three pertinent trends. First is the good news that tourists are increasingly recognizing the impact that transport and tourism has on the environment (Chafe, 2005; Gössling et al., 2009; Hillery et al., 2001). Second is the bad news that although tourists reported being environmentally aware and having positive environmental attitudes, only a small percentage of tourists acted upon their knowledge and attitudes (Chafe, 2005; Gössling et al., 2009). These findings are not a surprise considering that research conducted by Budeanu (2007) and Martens and Spaargaren (2005) found that tourists are not as interested in adopting sustainable habits as governments and corporations are of adopting sustainable development policies. The challenge, which is an ongoing struggle in sustainable tourism, is translating environmental policies into practical actions for tourists (Lumsdon, 2000). Thirdly is the emerging trend of event-based travel behavior change. Traveling to events can bring about exposure

to different transport modes and the chance to practice new travel behaviors (Robbins, Dickinson, & Calver, 2007). These new travel behaviors may be short-lived though. According to Hensher and Brewer (2002), long-term behavior changes to travel are not likely because circumstances change once the tourist leaves the event. However, a study by Rose and Marfurt (2007), which looked at an annual 'Ride to Work Day' event in Australia, showed that participating in the event had a modest behavior change impact even five months after the event.

### **1.3 Environmental Attitude and Behavior**

Event organizers target the event goers with environmental awareness campaigns, with the belief that these campaigns will incite environmentally responsible behavior among the event goers. This eliciting of environmental attitude to lead to environmental behavior is rooted in the theory of reasoned action (Ajzen & Fishbein, 1980) and the theory of planned behavior (Ajzen, 1991), which are shown in Figure 1. In Ajzen and Fishbein's theory of reasoned action, a person's behavior can be predicted by the person's behavioral intention. Behavioral intention is the product of a person's attitude and the social pressures that the person perceives (subjective norms). If a behavior is seen as favorable by others and the person's attitude towards that behavior is strong, then the person is more likely to perform the behavior. The theory of planned behavior is an extension of the theory of reasoned action, which posits behavior as a function of intentions and perceptual attitudes toward the behavior *and* perceived control over the behavior. The amount of actual control a person has over a particular situation becomes a moderating factor in behavioral outcomes, with behavioral outcomes becoming more likely when there are fewer personal and environmental barriers (Ajzen, 2001).

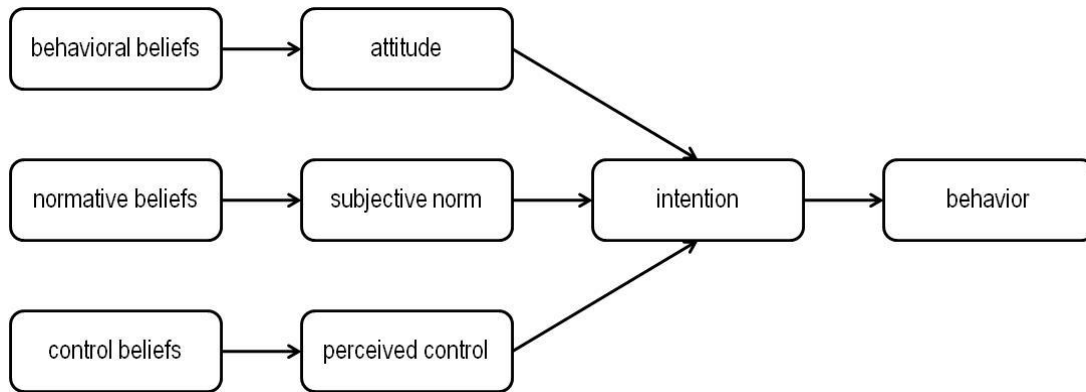


Figure 1. Conceptual Model of the Theories of Reasoned Action and Planned Behavior (Ajzen, 1991; Ajzen & Fishbein, 1980)

In general, the correlation between environmental attitude and behavior is weak (Hines et al., 1987; Diekmann & Preisendorfer, 1998). Armitage and Conner's (2001) meta-analysis review of the theory of planned behavior found that 20% of the variance in behavior can be attributed to intentions. The problem with studies utilizing the theory of planned behavior (Kaiser, Wölfing, & Fuhrer, 1999) is that behavioral intentions are often used to represent behavioral outcomes rather than the actual behavioral outcomes themselves. When actual behavioral outcomes are observed, the attitude-behavior gap widens due to the fact that a person's intention does not always produce the behavior. This may explain why the correlation between environmental attitude and behavior is generally weak. Ajzen's theory of planned behavior has been revised (2001) to address the limitation of using behavioral intention as the determinant of actual behaviors by acknowledging the role of the personal and environmental variables. Steg and Vlek's (2009) identification of personal motivation and context reinforces the moderating roles that these variables have on environmental behavior. For example, if a person wants to take the bus to work, but there is no adequate mass transit infrastructure to do so and the amount of time to take the bus is constrained, then the perceived behavioral control is low, and therefore the behavior may not occur. The field of environmental psychology notes that the theory helps to explain the often observed contradiction between pro-environmental attitude and unsustainable behavior.



Getting individuals to switch from cars to public transport is no simple task because like any human behavior, travel behavior is complex and involves many factors. Steg & Vlek (2009) have identified motivation and context as some of the leading determinants of environmental behavior like transport choice. Motivation factors include an individual's personal reasons for transport choice. These personal reasons have been investigated and are depicted in Table 1. Based on the attributes listed in Table 1, the car is the most attractive mode of transport by having the most number of positive attributes and the least number of negative attributes. More importantly though to MSEs and its largely environmental deterministic view of planning (Smith, 2009), regional differences in the availability and accessibility of public transport can make the modal switch difficult. The success with car use reduction at the 2004 Summer Olympics in Athens previously mentioned can be attributed to the enhancement of public transport infrastructure. The attributes listed in Table 1 may therefore not be consistent across contexts. Different places have different public transport availabilities, accessibility, and service quality. Thus, the switch from cars to public transport cannot be accomplished through voluntary behavior change alone, but the physical landscape must also accommodate and incite the modal switch.

Table 1: Personal Motivation Factors: Attributes Associated with Transport Modes

|                            | <b>Private (Car, Taxi)</b>   | <b>Public (Bus, Rail)</b>                           | <b>Non-Motorized (Bike, Foot)</b>   |
|----------------------------|--|---|-------------------------------------|
| <b>Positive Attributes</b> | comfort<br>convenience<br>flexibility<br>individual freedom<br>safety<br>speed<br>status | cost<br>punctuality<br>reliability<br>safety        | cost<br>physical activity           |
| <b>Negative Attributes</b> | cost<br>courtesy<br>safety   | information<br>punctuality<br>reliability<br>safety | effort<br>safety<br>time<br>weather |

Source: Anable (2005), Edvardsson (1998), Jensen (1999), Recker & Stevens (1976), Steg (2005).

## 1.4 Mega Sporting Event Assessments

A practical, benchmarking tool to measure the execution of MSE greening programs is the post-event assessment. Actual outcomes are evaluated and compared against the planned or expected outcomes in the assessment. Assessments make up a large portion of the literature on MSEs and can generally be categorized according to the economic, social and environmental (i.e., the triple bottom line of sustainable development).

Economic assessments are the most abundant type of assessment within the literature on MSEs. This is no surprise considering that in a review by Malfas, Theodoraki, and Houlihan (2004), they found that the economic impacts were the main lures for hosting MSEs. Economic assessment studies have generally looked at: employment effects before, during, and after the event (Brunet, 1995; Hagn & Maennig, 2008; Hotchkiss, Moore, & Zobay, 2003); the economic power of tourists (Horne & Manzenreiter, 2004; Lee & Taylor, 2005; Preuss, 2005); the value and risks of infrastructure investments (Barker, Page, & Meyer, 2002; Flyvberg, Bruzelius, & Rothengatter, 2003). These assessment studies show that MSEs have both positive and negative economic impacts on host regions.

Second in literary abundance are social assessments. These often focus on the impacts that MSEs have on the local residents of the hosting region. Some of the frequented topics within social assessments include: urban regeneration (Ohmann, Jones, & Wilkes, 2006; Zhou & Ap, 2009); housing effects such as displacement and gentrification (Hall & Hodges, 1996; Shin, 2009); community identity development (Hall, 1992; Misener & Mason, 2006); quality of life indicators such as crowding, traffic, and crime (Getz, 2005; Hall, 1992; Higham, 1999). In general, these assessment studies tend to suggest positive impacts for urban regeneration and community identity and negative impacts for housing and quality of life indicators.

Environmental assessments are the latest addition to MSE literature. These assessments are officially conducted by the host region following legal and scientific standards (Paquette, 2009) and evaluate climate neutrality, energy efficiency, waste management, water use, and sustainable transport (i.e., the five key areas for sustainable development). A review of environmental assessment reports on the most recent Olympics and World Cup show achieved reductions in all five areas of sustainable development (Carmichael et al., 2009; Stahl, Hochfeld, & Schmied, 2006). These reductions were largely achieved through policy implementations (e.g., LEED, carbon offsetting projects) and technological solutions (e.g., fuel-efficient buses, energy-efficient lighting), a top-down approach where event goers are recipients of whatever the organizers provide. Although reductions were achieved, Mallen et al. (2010) have found that this top-down approach produces small to moderate levels of achievement on environmental performance for MSEs. It is not known how effective a bottom-up approach would be; environmental assessment reports currently focus on measuring top-down strategies.

Very few assessment reports on sustainable transport exist besides those which are part of official environmental assessment reports put out by the host region and organizers. These focus on quantitatively measuring top-down strategies of infrastructure enhancements and technological improvements through ridership levels and emissions respectively. Specific structural and informational strategies of sustainable transport at a MSE have been evaluated in the inaugural Green Goal Program set up for the 2006 FIFA World Cup in Germany. Their strategies of limiting car access, enhancing the train and metro systems, and providing ticketed event goers with free and/or discounted public and non-motorized transport were successful in reducing car use (Stahl, Hochfeld, & Schmied, 2006). Still, the quality aspect of sustainable transport, which is a bottom-up approach incorporating event goers' perspectives, is largely missing in assessments. Unlike the other areas of sustainable development, transport is a service that is part of the event experience (Schiefelbusch et al., 2007). Thus, to get at the heart of sustainable transport and achieve

success in modal shift behavior change during the event and after, event goer perspectives should be considered in MSE assessments.

### **1.5 Methodological Framework**

In Robbins, Dickinson, and Calver's (2007) conceptual framework for event transport planning, they proposed that existing research on transport and sustainable tourism would need to be supplemented by qualitative research. Existing event transport planning literature have considered the project costs of various modes of transport infrastructure (Howcroft & Newton, 2003) and ridership patterns (Hensher & Brewer, 2002), which are quantitative indicators pertaining to event management. What qualitative research can do is make clear "the existing travel practices and societal expectations of travel to events in order to indentify the policy options most likely to influence modal choice" (Robbins, Dickinson, & Calver, p. 312). In other words, qualitative research can reveal what Ajzen's theory of planned behavior calls 'subjective norms.' These personal glimpses into transport choice can reveal the internal dynamics of how the structural and informational strategies used at MSEs are processed by the event goers.

Robbins, Dickinson, and Calver also suggested that future studies on event transport planning should make use of web-based resources such as blogs and discussion forums. I propose that a web-based study is appropriate for MSEs due to the fact that 1) during the event, event goers will be preoccupied with the event and may not want to be interrupted or sacrifice the time to participate in a study, and 2) after the event, event goers will no longer be located in the same place and will likely be scattered throughout the globe. There are problems though with certain web-based resources. In an initial search inquiry that I conducted on the web, no such blogs or discussion forums were found that directly related to event goers' experiences with transport during a ME. A few articles and discussion forums were provided to prompt responses; however, none were successful at generating responses. To get such data, a more exhaustive and systematic method of inquiry will be necessary to elicit direct responses and experiences.

## 1.6 Research Questions

I have synthesized my research questions into the following:

- What were the key factors behind event goers' transport selections?
- What experiences, both positive and negative, did event goers have using public transport?
- Did the strategies elicit environmental awareness and behavior change, especially in terms of getting event goers to use public transport beyond the event?
- How do event goers' personal accounts contribute to the understanding of public transport use?

## **II. METHODS**

### **2.1 Research Design**

The present study looked at the sustainable transport strategies implemented at a MSE from the event goer perspective. In particular, the aim of the assessment was to understand how event goers responded to the structural and informational strategies specific to public transport from a MSE. To do so, I used an eclectic quantitative-qualitative approach: 1) I selected a recent MSE to assess, 2) I extracted the sustainable transport strategies of that event from official documents, 3) I found event goers who attended the event using social media, 4) I gathered their responses and experiences systematically through a web-based survey, and 5) I assessed the sustainable transport strategies through descriptive statistics and content analysis using the posed research questions as a guide.

### **2.2 Event Selection**

The 2010 FIFA World Cup in South Africa was the selected MSE for the assessment study. There were several reasons for the selection of this particular event. First and foremost, the World Cup is the biggest single sporting event (FIFA, 2010). Another reason is that much of the assessment studies in academia have focused on the Olympics and not the World Cup. Lastly, the 2010 FIFA World Cup implemented the Green Goal Program, one of the most recent and highly profiled event greening programs to have emerged from MSEs. The Green Goal Program was introduced at the 2006 FIFA World Cup in Germany and was heralded as a success. Thus, the program was implemented again for the 2010 FIFA World Cup in South Africa.

### **2.3 Event Description**

From 11 June to 11 July of 2010, 32 nation-teams competed for the 2010 FIFA World Cup across various stadiums in the host country of South Africa. Ten stadium venues scattered among nine different cities hosted the 64 football matches. These nine host cities are shown in Figure 2. An estimated half a million people attended the event, generating an average attendance of 49,670 people per match (FIFA, 2010). In comparison to previous World Cup events, the attendance figures for South Africa were the third highest in World Cup history (FIFA, 2010).



Figure 2. 2010 FIFA World Cup South Africa Host Cities

## 2.4 Green Goal Program for Sustainable Transport

Originally the National Greening Program devised by South Africa's World Cup Local Organizing Committee and the Department of Environmental Affairs provided the initial strategic framework for the

greening of the 2010 World Cup. This program later became the 2010 Green Goal Program launched by FIFA (National Greening Program, 2009). The 2010 Green Goal Program was primarily implemented for the provincial region of Western Cape with the host city of Cape Town as being the major area of focus. Other host cities in the nation were expected to implement elements of the program as well. Therefore, single locale assessment versus nationwide assessment results may differ due to contextual variations. While the 2010 FIFA World Cup Green Goal Program based their assessment on a single locale, I included any and/or all of the hosting cities in the present assessment study.

The following plan for sustainable transport was directly extracted from the Green Goal Action Plan (2009), the Green Goal Progress Report (2009), and the Green Goal Legacy Report (2011) for the host city of Cape Town. These primary documents were made available on South Africa's official website for the 2010 FIFA World Cup. Two main objectives steered the sustainable transport strategies as well as the overall 2010 Green Goal Program:

- *To green the 2010 FIFA World Cup footprint*
- *To leave a positive environmental legacy*

The specific goals and strategies for sustainable transport are outlined in Table 2 along with the implementation of the strategies. Quantitatively, the target goals for sustainable transport were to get 50% of event goers to use public and non-motorized transport and to spark environmental awareness in 50% of event goers. The term 'behavior change' was constantly and vaguely mentioned throughout the official Green Goal reports without any measureable target goal set. In the framework of sustainable transport, I designated the term 'behavior change' to represent a modal shift in the post-event (legacy) phase.








Table 2: 2010 Green Goal Program for Sustainable Transport

| GOALS     |  | STRATEGIES |  | IMPLEMENTATION  |
|-----------|--|------------|--|---|
| FOOTPRINT | <ul style="list-style-type: none"> <li>• reduce emissions</li> <li>• encourage use of public transport</li> <li>• encourage use of non-motorized transport (walking and biking)</li> </ul> | STRUCTURAL | <ul style="list-style-type: none"> <li>• provide public transport infrastructure</li> <li>• provide non-motorized transport infrastructure</li> <li>• provide safe and accessible transport</li> </ul> | <ul style="list-style-type: none"> <li>• integrated rapid bus system</li> <li>• pedestrian-only walkways and bridges</li> <li>• park-and-ride facilities</li> <li>• bicycle services and bike lanes</li> <li>• bus/rail station upgrades</li> </ul> |
|           | <ul style="list-style-type: none"> <li>• encourage behavior change</li> </ul>  |            | INFORMATIONAL  |   |
| LEGACY    | <ul style="list-style-type: none"> <li>• promote environmental awareness</li> </ul>  |            |  |   |

## 2.5 Actual Transport Landscape

To get a sense for what the transport context was for the event goers, further structural details were obtained for each of the host cities along with overall transport availabilities and pricings. These are depicted in Table 3, and according to this, many of the structural improvements to road infrastructure and bus across all of the host cities were similar. Additions and enhancements related to rail and pedestrian/bike were, nonetheless, treated unevenly. The host cities of Durban, Cape Town, and Johannesburg received the most attention in terms of transport. Table 3 also shows that car and bus were the most abundant modes during the World Cup, and in terms of cost, bus and train were the most affordable.

Table 3: Inter-City Transport Landscape for 2010 FIFA World Cup

| <b>INTER-CITY TRANSPORT LANDSCAPE BY HOST CITY</b>   |  |  |   |  |
|--|--|--|---|--|
| Durban   | <ul style="list-style-type: none"> <li>• new rail station adjacent to stadium</li> <li>• public transport interchange</li> <li>• public transport lanes on motorways</li> </ul>                      | <ul style="list-style-type: none"> <li>• upgrade to motorways</li> <li>• people-mover buses for tourists</li> </ul>        |   |  |
| Cape Town  | <ul style="list-style-type: none"> <li>• new rail stations throughout with park and ride facilities</li> <li>• bus lanes on motorways</li> <li>• upgrade to motorways</li> </ul>                     | <ul style="list-style-type: none"> <li>• 300 new buses</li> <li>• bike and pedestrian lanes and facilities</li> </ul>      |   |  |
| Johannesburg   | <ul style="list-style-type: none"> <li>• extension and integration of Gautrain Rapid Rail Link</li> <li>• 40 public transport interchanges</li> <li>• public transport lanes on motorways</li> </ul> | <ul style="list-style-type: none"> <li>• park and ride and facilities</li> <li>• park and walk facilities</li> </ul>       |   |  |
| Pretoria   | <ul style="list-style-type: none"> <li>• extension of Bus Rapid Transit system</li> <li>• public transport lanes on motorways</li> <li>• new municipal bus fleet</li> </ul>                          |  |   |  |
| Port Elizabeth   | <ul style="list-style-type: none"> <li>• Bus Rapid Transit system</li> <li>• high capacity buses</li> <li>• modal interchanges</li> </ul>  | <ul style="list-style-type: none"> <li>• public transport route rehabilitation</li> </ul>                                  |   |  |
| Nelspruit  | <ul style="list-style-type: none"> <li>• upgrade to motorways</li> <li>• air-public transport links</li> <li>• footpaths along residential areas</li> </ul>  | <ul style="list-style-type: none"> <li>• multi-modal and pedestrian facilities</li> </ul>                                  |   |  |
| Rustenburg   | <ul style="list-style-type: none"> <li>• upgrade to motorways</li> <li>• taxi upgrades</li> <li>• bus facility improvements</li> </ul>   |  |   |  |
| Bloemfontein   | <ul style="list-style-type: none"> <li>• public transport interchange</li> <li>• taxi upgrades</li> <li>• pedestrian and bike friendly streets</li> </ul>  | <ul style="list-style-type: none"> <li>• improved access to airport</li> <li>• high capacity buses</li> </ul>              |   |  |
| Polokwane  | <ul style="list-style-type: none"> <li>• road improvements</li> <li>• taxi upgrades</li> <li>• bus facility improvements</li> </ul>  |  |   |  |
| <b>AVAILABILITY BY MODE</b>  |  |  |   |  |
| <p><b>Air</b></p> <p>Airports at all host cities. Most number of flights from Johannesburg, Cape Town, and Durban.</p> | <p><b>Car</b></p> <p>Most abundant mode. 9 rental car companies to choose from. Very affordable to purchase.</p>   | <p><b>Bus</b></p> <p>Second most abundant mode. Plenty of inter-city mass transit buses and tour package luxury buses.</p> | <p><b>Rail</b></p> <p>Limited tracks and extensions not completed. Advantage Johannesburg and Pretoria.</p> | <p><b>Bike</b></p> <p>Rental companies throughout but targeted more for outdoor excursions. Limited racks.</p> |
| <b>PRICE COMPARISONS BY MODE</b>   |  |  |   |  |
| <br>\$137 one-way                   | <br>\$35 per day  | <br>\$1 one-way                         | <br>\$2 one-way        | <br>\$30 per day          |

Source: South Africa Department of Transport (2010), Zijlma (2010).

## 2.6 Participants

A total of 40 event goers participated in the assessment study. They were recruited from Facebook (see Tools and Procedures for more details), and to participate in the study, participants had to have attended the 2010 FIFA World Cup. It was not necessary for the participants to have tickets to the football matches, nonetheless around 63% of the participants reported having tickets. Exactly 75% of the participants were male and 25% were female with age ranging from 18 to 59 years ( $M = 28.5$ ).

Participants hailed from all over the globe, representing some 13 different countries. Table 4 shows the countries represented by the participants. The majority of the participants (80%) were from countries that qualified to compete in the final World Cup tournament; only 20% of participants were from countries not competing in the tournament. These countries included: Canada, Costa Rica, India, Kenya, Norway, and Tanzania.

Table 4: Countries Represented by Participants

| Country         | Count |
|-----------------|-------|
| Australia       | 3     |
| Brazil          | 2     |
| Canada          | 1     |
| Costa Rica      | 1     |
| India           | 1     |
| Kenya           | 2     |
| Mexico          | 3     |
| The Netherlands | 1     |
| Norway          | 2     |
| South Africa    | 7     |
| Tanzania        | 1     |
| UK              | 4     |
| US              | 11    |
| <i>Missing</i>  | 1     |
| Total           | 40    |

A purposive sampling method was used to specifically obtain participants who attended the 2010 FIFA World Cup. The qualitative aspect of the assessment study made it permissible for non-probabilistic sampling to be used in this case; as a consequence, any causal inferences made from the following assessment study should be treated with caution. The aim of this assessment study was not a comparative, statistical analysis of different MSEs or different greening programs; instead, the aim was to focus on a particular MSE's sustainable transport strategies in relation to its users. By holding the [event] as the constant across participants, selection bias can be reduced (Geddes, 1990). Nevertheless, self-selection bias was a problem, as it is often the case with qualitative and survey studies; participants who understood English and were on Facebook were asked to partake in the study and these participants may have unique characteristics or motivations that other World Cup event goers may not have, which may have prompted them to participate. Despite these sampling and selection problems, the fit of the participants to the gender proportion of football event goers and the countries of the event goers match closely, making the participants to be representative of those event goers who attended the World Cup event. A representative sample does not guarantee that participant responses will be true and accurate; nonetheless, the researcher had no face-to-face contact with the participants, nor knew any of the participants personally.

## **2.7 Tools**

Due to the international scope of the World Cup and its event goers, web-based tools were utilized to recruit participants and collect data. Participants were recruited using the group and ads feature on Facebook and their responses were collected using the web-based survey application SurveyMonkey.

A survey was developed by the researcher to capture event goers' responses to transport options and environmental awareness campaigns and experiences using public transport. The survey was modeled after a structured interview with closed and open-ended questions to capture both the flexibility in

responses afforded by the qualitative approach and the systematic collection of responses afforded by the quantitative approach. The survey was kept brief to encourage participation and the likelihood of completion.

Thirteen questions of closed and open-ended types were included in the survey. Close-ended questions asked about: demographics (age, gender, and home location); whether or not the participant had tickets to any of the World Cup matches; the two most frequently used modes of transport during the event; to what extent did the participant feel that s/he had options when it came to transport at the event (None at all, Somewhat, or A good amount); overall experience using public transport (Very negative, Somewhat negative, Neutral, Somewhat positive, Very positive); whether or not behavior changes associated with transport occurred after the event; whether or not environmental awareness displays were noticed. Open-ended questions asked about: participant's reasons for transport choices; the positive aspects encountered while using public transport; the negative aspects encountered while using public transport; the behavior changes related to transport that occurred after the event if any; the environmental awareness displays noticed. To capture event goers' accounts of their experiences, the last question on the survey asked participants to blog about an experience they had while using public transport. A copy of the survey is provided in Appendix A.

## **2.8 Procedures**

Event goer data collection commenced two weeks after the end of the World Cup event. Through Facebook's group feature, the researcher searched for specific groups using keywords such as *going/attending/traveling to 2010 South Africa World Cup* to identify potential participants. Around a thousand potential participants were identified this way. Once the potential participants were identified, the researcher then posted a message advertising the survey on the group's wall and sent personal messages to every individual in the group. At the same time, the researcher purchased an ad on Facebook

to target those event goers who may not have been part of any Facebook World Cup group. This ad was displayed on over a million Facebook user pages. A copy of the ad is provided in Appendix B. The link to the survey was embedded within the messages and ads.

The collection and storage of data followed the researcher's institutional review board's human-subjects protocol. All participants were informed about the purpose, procedures, and risks/benefits of the research and were told that by completing the survey, they were giving consent. Participants remained anonymous as names were not asked for in the survey. Participants were told that the survey would take five to 15 minutes to complete, depending on how much detail they provide. The survey was available for participants to complete until the end of the year. Beyond the six month post-event period, information recall could be difficult for participants and/or unreliable, thus data collection was terminated at the end of the year.

## **2.9 Data Analysis**

Survey data collected on SurveyMonkey were exported into an electronic spreadsheet. Close-ended responses were coded and entered into SPSS for descriptive statistical analysis. Open-ended responses were analyzed using content analysis and thematic grouping. Because not all 40 participants completed all parts of the survey, data were missing in many instances. Eleven participants completed the blog portion of the survey. Thus the response rates varied throughout the assessment.

To answer the posed research questions for the assessment, survey questions were designated to one of the four posed questions. The following were the designations on how the data collected was used to answer the research questions:

- What were the key factors behind event goers' transport selections (5, 7)?

- What experiences, both positive and negative, did event goers have using public transport (8, 9, 10)?
- Did the strategies elicit environmental awareness and behavioral change, especially in terms of getting event goers to use public transport beyond the event (11, 12)?
- How do event goers' personal accounts contribute to the understanding of public transport use (13)?

The numbers in the parentheses indicate which survey questions were used to answer the research questions.

### III. RESULTS

#### 3.1 Research Question 1: What were the key factors behind event goers' transport selections?

Participants were asked to report their two most frequently used transport modes during the World Cup. From 27 participants who responded, the most used transport mode was 1) car (includes taxi), 2) bus (includes coach), 3) air, 4) non-motorized transport (i.e., bike and foot), and 5) rail. The frequency of use reported by participants matched the availability of modes described in Table 3. Figure 3 shows a graphical depiction of these results. The most frequent transport pairing was car and bus (44%) followed by car and air (15%), and car and non-motorized transport (15%). The ideal sustainable transport pairing of public transport and non-motorized transport was not reported by any of the participants.

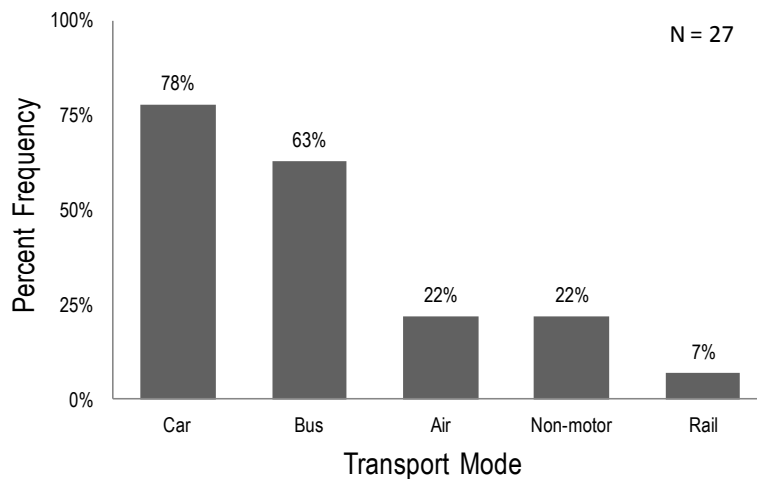


Figure 3. Participants' Frequently Used Transport Modes

To specifically answer Research Question 1, participants were asked to give up to three main reasons for their transport selections. Their reasons were textually analyzed and grouped according to theme



similarity. Over two dozen distinct reasons emerged. These reasons are listed by transport mode in Table 5, and based on this, cost, availability, convenience, and location were the key factors behind transport selections. Close to half of the 27 participants stated cost (44%) as one of three reasons followed by availability (22%), convenience (22%), and location (22%).

Table 5: Transport Selection Reasons by Mode

| Car          | Bus                | Rail         | Air         | Non-Motor         |
|--------------|--------------------|--------------|-------------|-------------------|
| availability | ambience           |              |             |                   |
| control      | availability       | availability |             |                   |
| convenience  | convenience        |              | convenience |                   |
| cost         | cost               | cost         |             |                   |
| crowding     |                    |              |             |                   |
| distance     | distance           |              |             |                   |
| ease of use  | ease of use        |              |             |                   |
| flexibility  | flexibility        |              |             |                   |
|              | information        |              |             |                   |
| location     | location           |              |             | location          |
|              | newness            |              |             |                   |
| own a car    |                    |              |             |                   |
|              | parking            |              |             |                   |
|              |                    |              |             | physical activity |
| practicality |                    |              |             |                   |
|              | reliability        |              |             |                   |
| safety       | safety             |              |             | safety            |
|              | social interaction |              |             |                   |
| speed        |                    |              |             |                   |
| time         | time               |              |             |                   |
|              | tour group         |              |             |                   |
|              | transferability    |              |             |                   |

### 3.1.1 Cost

Cost was reported as a key reason for car, bus, and rail mode selection. Eleven participants stated that car and bus were “cheap” modes of transport. This was partially true; bus was the cheapest mode out of the five modes at \$2 per one-way trip, but car was the second most expensive at \$35 per day (see Table 3). Car rentals in particular were indicated by participants as being a better deal than getting a taxi, which cost around \$20 - \$25 for a one-way trip. Those participants who stated that car was cheap were from the following countries: The Netherlands, United States, South Africa, and India. Only two participants, one from India and the other from The UK, indicated that they had used rail, the second cheapest mode.

### 3.1.2 Availability

Availability, or the lack of availability, was also reported as a key reason for transport selections, mainly for car, bus, and rail modes. As shown in Table 3, car and bus were the most available transport modes during the World Cup and participant responses seemed to support this. In most cases, car and bus were touted by participants as being available. As one participant commented, “Buses are more spread around South Africa.” The lack of availability was associated with the modes of rail and air. More specifically, rail lacked “interconnecting options” that would allow transfers from one mode to another and air lacked in the number of flights available. Nevertheless, two participants indicated that in their case, rail and air were the only available options to them. It is not known where these two participants were located during the World Cup, as host city locations were not asked in the survey.

### 3.1.3 Convenience

Convenience emerged as a key reason for car, bus, and air transport selection. The term ‘convenience/convenient’ was connected to car the most, followed by bus and then air. Rail and non-motorized transport were not associated with convenience, as none of the participants who used these modes indicated convenience as a reason. The modes associated with convenience adhered to the

availability of modes displayed in Table 3 and the results seen in Figure 3. Participants, however, did not provide clues as to what constituted convenience; only the terms “convenience” and “convenient” were indicated in the responses. Therefore, no further participant details for convenience can be reported.

#### 3.1.4 Location

Location emerged as a key reason for car, bus, and non-motorized transport selections. Participants travelled from one match to another across different host cities. Three reference locations were indicated by participants: the location of the host city, the location of the stadium, and the location of the participant’s accommodation. One participant stated that it was “hard to find accommodation for overnight stay at the city hosting the game,” so he opted for the car. The distance between these reference locations seemed to play a role in transport selection. For instance, two participants chose to walk because their accommodations were “within walking distance to the stadium.” Another participant wrote, “We stayed in Sandton and there were no options to get to the matches other than taxis.” Sandton is a suburb of Johannesburg, and suburbs are typically conducive for car transport. Like with convenience, location seemed to be another factor connected to availability.

### **3.2 Research Question 2: What experiences, both positive and negative, did event goers have using public transport?**

Eighteen out of the 27 (66.7%) participants who reported their transport modes utilized public transport (i.e., bus and rail). The overall rated experience of using public transport by the 18 participants was slightly more positive than negative. Thirty-nine percent of participants had a very positive experience using public transport, 22.2% had a somewhat positive experience, 16.6% were neutral, and 22% had a somewhat negative experience; none of the participants rated their experience using public transport as

very negative. These findings are summarized in Figure 4. Details about the positive and negative experiences associated with using public transport were extracted.

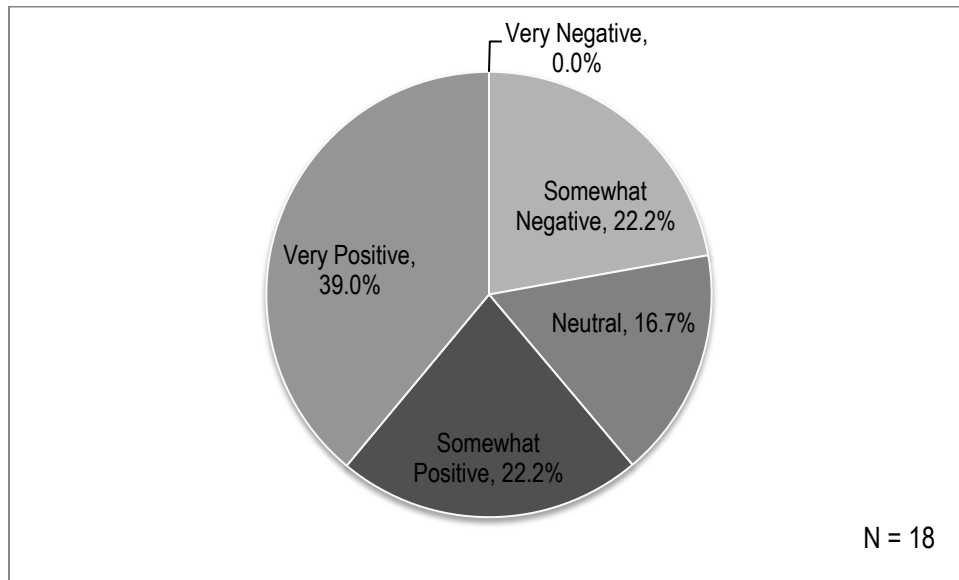


Figure 4. Participants' Overall Experience Using Public Transport

### 3.2.1 Positives

Many of the positives mentioned by participants were very similar to the themes that emerged from transport selection reasons. Cost benefits were the most reported type of positives with participants stating that “cheap” public transport was “cost effective.” One of the other reported positives of using public transport was the “easy access” and “reliability” it provided in getting to the stadiums. Buses were noted by participants to be “extremely efficient” because of “good organization,” “the lines moved quickly,” and had “priority within traffic jams.” For rail, it was noted that “departure times never delayed.” Another widely reported positive was the social benefits of using public transport. Participants described the social

benefits as having the opportunity to “be among locals,” “meet new people,” and “experience the culture.” Additionally, participants reported that using public transport was “lots of fun,” “easy,” and “comfortable.” These positives were largely associated with the period *before* the matches when sports fans were en route to the stadiums.

### 3.2.2 Negatives

Not all participants were fortunate to experience the aforementioned positives of using public transport and instead, they reported the opposite. The negatives mentioned by participants were also identical to the themes that emerged from transport selection reasons. Some participants stated that buses were “not well organized,” “crowded”, “smelly,” “terrible” in terms of service and “lacking in information” regarding times and routes. Moreover, participants complained that the queues for buses were long and that buying bus tickets was not easy because those places “that sold tickets were not adequately staffed to deal with the demand.” According to some of the participants, “the drop-off and pick-up points for the buses were not close to the stadiums.” These negatives were especially noted for the period *after* the matches when sports fans were leaving the stadiums.

### **3.3 Research Question 3: Did the strategies elicit environmental awareness and behavior change, especially in terms of getting event goers to use public transport beyond the event?**

Only 26 participants responded to the survey question pertaining to awareness. Among them, 19% reported noticing the green/environmental information displays advertised at the World Cup. Those participants who did notice only noticed displays related to recycling (Figure 5). Other informational items such as Green Goal signs, pamphlets, videos, and exhibits were not mentioned (Figure 6).



Source: 2010 Green Goal Legacy Report

Figure 5. Environmental Information Displays Noticed by Participants



Source: 2010 Green Goal Legacy Report

Figure 6. Environmental Information Displays Not Reported by Participants

Whether or not using public transport during the World Cup brought about any changes in how the participant now travels, 20 participants responded to this survey question. As shown in Table 6, 15% of participants reported a change, but there is no information on whether the behavior changes in travel were for the better (i.e., less car use) or worse (i.e., more car use). Participants did not provide specific details of the change. Nevertheless, they stated that using public transport during the World Cup made them realize how good public transport was back in their home location.

Table 6: Environmental Awareness and Behavior Change Outcomes

|  |            |           |
|--|------------|-----------|
| Did you see any environmental/green information displayed during the World Cup?                          | <b>YES</b> | <b>NO</b> |
|  | 19%        | 81%       |
| N = 26   |            |           |
| Has using public transport during the World Cup brought about any changes in how you now travel/commute? | <b>YES</b> | <b>NO</b> |
|  | 15%        | 85%       |
| N = 20   |            |           |

### **3.4 Research Question 4: How do event goers' personal accounts contribute to the understanding of public transport use?**

The last section of the survey, which was the blog, generated the richest amount of data despite having the lowest response rate with only 11 participants completing the blog. The blogs were indicative of the aforementioned reasons for transport selection and the positive and negative experiences with using public transport. Furthermore social interaction highlights, the process of decision-making, public transport issues, the car-bus pairing observation, and other influential factors in transport selection emerged from the blogs.

#### 3.4.1 Social Interaction

The World Cup in particular, with its international fans who are united under a passion for a sport, provided an exciting benefit to using public transport. The following describes two participants' experiences:

*Going to Soccer City Stadium in Johannesburg was a very global experience. My group of six boarded the bus with our USA stuff and as we sat in our seats the mix of people and countries represented was truly amazing. We were all laughing, cheering, shouting, and generally celebrating the World Cup and not our particular countries.*

*Awesome! Meeting people of various countries was the highlight of the bus travel. Fans were so loyal and dressed so vibrant to support their country. Even if they could not speak English, some expression was used to gesture/communicate in some form or the other... an experience never to forget!*

These two participants identified the benefits as encountering new people, creating national identity, and creating solidarity among countries. Based on the strong, positive vocabulary used (“amazing”, “awesome”, “never to forget”), these excerpts exemplified social interaction as a highlight of using public transport.

#### 3.4.2 Decision-Making Process

A glimpse into the participant's process of decision-making regarding transport selection was provided by the blogs. For example, an excerpt from one of the participant's blog captured the logic behind his transport choice:

*In order to attend the game France vs. Mexico, taking the bus was the best option. There is only one flight per day between Johannesburg and Polokwane, the economic tickets were sold out quickly, and the available tickets were too expensive.*



The participant identified the key factors of location (between Johannesburg and Polokwane), cost (was looking for economic tickets), and availability (only one flight per day) as part of his decision-making process. Both contextual (location and availability) and personal motivation (cost) factors were involved in the decision-making process. How those key factors were taken into account was revealed; how one factor was trumped over another and the role of constraints (only one flight per day) were demonstrated.

### 3.4.3 Public Transport Issues

Negative experiences were reinforced by the blogs and these touched upon issues with public transport.

One of the very few participants who used rail shared the following:

*Many beggars, mostly blind beggars with a guide beggar, walked up and down trains singing religious songs. Very sad, but I feel like many of them were faking it... Trains were very dodgy and I was told not to ride after dark. The trains also had a lot of graffiti on the inside and many of the seats were torn.*

The excerpt clearly identified two issues that rail transport had in South Africa: passenger security and the physical conditions of rail transport. Another participant's blog summarized the negatives of using public transport in one concise sentence:

*All I have to say is that you can go everywhere with taxis, but public transportation is really really bad, very informal, bad information about routes or times and is not organized in zones.*

This participant identified information and organization as other issues facing public transport. More than just stating that public transport is in need of improvement, these two excerpts pointed out the specific areas that need improvement.

### 3.4.4 Car-Bus Pairing

The car and bus were the most frequented transport pairing used by the participants. Several blogs mentioned the park-and-ride system in place at the World Cup. In the park-and-ride system, individuals drive to the matches, park in a remote parking lot, and get a ride on the free shuttle bus to get to the stadium. One participant wrote:

*Park and ride system worked well in South Africa. Security was tight, crowds were well behaved, and buses departed, arrived, and returned on time.*

Another participant wrote:

*Parking was easy and the walk was short... the bus ride took 10 minutes to skip across Johannesburg city centre, the fastest I have ever experienced.*

Accounts from these two participants demonstrate that the park-and-ride system was a success in terms of getting individuals to places on time and with ease. Furthermore, the park-and-ride system can explain the frequent car-bus pairing as well as the high proportion of car users; its efficiency and ease of use may have convinced users to opt for the car.

#### 3.4.5 Other Influential Factors

From the blogs, two additional factors emerged as playing a role in transport selection. One was the environmental condition and its ability to alter transport selection. Environmental conditions can be seen as being part of contextual factors. An example of this mentioned the weather:

*Just need a taxi once... because it was cold and raining. My friend and I couldn't go out from the mall because it was cold, raining, and we didn't have winter clothes.*

Here, the weather compelled the participant to use a taxi instead of public transport, which had been the main mode of transport up until that point.

The other factor was the locals who have knowledge on public transport. Participants accessed local knowledge regarding public transport, as evidenced by the two excerpts:

*Luckily I stayed with a local friend who I knew from school, who helped me navigate the train system. Without him, who knows how bad my experience could have been.*

*Based on a few advice from people living there, I concluded that taking the bus was a viable solution.*

Such accounts suggest that advice from locals was not only helpful to those unfamiliar with the local public transport options, but also in influencing the outcome of one's experience with using public transport and the transport selection outcome.

### **3.5 Overall Assessment of Sustainable Transport Strategies**

Combining the results from the previous guiding research questions, an overall assessment of the sustainable transport strategies outlined in Table 2 was made. The assessment is summarized in Table 7 with comparisons made between the present assessment study and the actual results reported by FIFA. Based on participants' responses and experiences, the structural and informational sustainable transport were not successful at reducing car use, promoting environmental awareness, and sparking modal shift behavior change after the event.

Table 7: Sustainable Transport Strategies Assessment Summary

| STRATEGIES |  | RESULTS   | OUTCOMES & COMPARISONS   |   |
|------------|--|---|--|---|
|            |  |   | SAMPLE <sup>†</sup>  | FIFA <sup>‡</sup>   |
| STRUCTURAL | <ul style="list-style-type: none"> <li>• provide public transport infrastructure</li> <li>• provide non-motorized transport infrastructure</li> <li>• provide safe and accessible transport</li> </ul> | <p>car was used most followed by bus; non-motorized transport ranked fourth; divisive comments about bus system; bus-car pairing was popular; pedestrian walkways were praised; park-and-ride system was effective and commended; bikes were hardly used; rail was least used with safety and service quality issues reported</p> | <ul style="list-style-type: none"> <li>• 63% of time bus was used, but car was most frequently used (78%); cannot conclude whether target goal was met</li> <li>• positive experience overall using public transport (61%)</li> </ul>    | <ul style="list-style-type: none"> <li>• target goal met with 53% public and non-motorized transport use; 40% used public transport</li> <li>• no data on event goer experience for public transport</li> </ul> |
|            | <ul style="list-style-type: none"> <li>• provide resources on local transport</li> <li>• campaign and communicate Green Goal initiatives to event goers</li> </ul>                                     | <p>lack of information for public transport was reported; asking locals for transport information was helpful; environmental information displays went largely unnoticed; recycling ads were noticed</p>  | <ul style="list-style-type: none"> <li>• proportion of event goers noticing environmental displays was 19%</li> <li>• few experienced a post-event behavioral change related to travel (15%); cannot conclude behavior legacy</li> </ul> | <ul style="list-style-type: none"> <li>• proportion of event goers aware of Green Goal initiatives was 35%</li> <li>• no post-event data on behavior changes experienced by event goers</li> </ul>              |

<sup>†</sup> Refers to the study's sample, which was not limited to the host city region.

<sup>‡</sup> Refers to the official 2010 Green Goal Legacy Report released by FIFA, which only assessed the host city of Cape Town.

## IV. DISCUSSION

Event goer perspective on the sustainable transport strategies implemented at the 2010 FIFA World Cup was explored in the present assessment study using social media and quantitative-qualitative methods. Results from this assessment study highlights the contextual elements embedded within a MSE that influences event goers' transport decision-making and program outcomes.

### 4.1 Transport Selection Factors

Common factors in transport selection extracted from the event goer sample were cost, availability, convenience, and location. These factors corroborate Steg and Vlek's (2009) determinants of environmental behavior (i.e., personal motivation factors and contextual factors), with cost and convenience being personal motivation factors, and availability and location being contextual factors. The emergence of both personal motivation factors and contextual factors could indicate that event organizers are on the right track in terms of adopting environmental determinism and agency as assumptions for transport decision-making. However, the results suggest that participants were influenced by contextual factors more than personal motivation factors. The selection of transport mode corresponded with the availability of modes where car and bus were the most abundant and most used while rail and bike were the least abundant and least used. Even though cost was the most frequently reported reason, participants did not always select the most cost efficient mode of transport. Those modes that were associated with the reason of convenience were also the most available modes, and mode availability is determined by one's location. Thus, contextual factors especially that of mode availability seem to have been the underlying impetus behind transport decision-making.

Some of the transport selection factors that emerged support findings from previous research.

Convenience as one of the main factors confirms Anable and Gatersleben's (2005) finding that

convenience plays a role in tourists' transport selections. Event goers to MSEs are often visitors from other parts of the world and the study's sample was representative of this as the vast majority of participants were from countries other than South Africa. Robbins, Dickinson, and Calver (2007) suggest that location contributes to transport selection and this was found to be the case. Several of the transport selection reasons from Table 4 were identical to the attributes associated with transport modes from Table 1, thus confirming findings from previous transportation studies (Anable, 2005; Edvardsson, 1998; Jensen, 1999; Recker & Stevens, 1976; Steg, 2005). When it comes to the factors of cost and availability, however, these factors did not remain constant due to the World Cup event being hosted in multiple cities. Discordant cost and availability comparison comments by participants further indicate that cost and availability did not remain constant throughout South Africa. Many of the transport selection reasons from Table 4 may be identical to those from Table 1, but these reasons/attributes do not necessarily align by mode type. Hence, different contexts may in fact change people's reasons and personal motivation attributes for the same transport modes, which further supports Steg and Vlek's conclusion that context plays a moderating role in environmental behavior.

Additional factors uncovered by participants' blogs further support transport selection and environmental behavior theories. These factors were the environmental conditions (i.e., the weather) and local knowledge (i.e., asking locals for information). Unlike the Olympics where summer and winter seasons are distinguished, the World Cup does not adhere to a specific season. Both the 2010 and 2006 World Cup events took place in the months of June and July, but due to South Africa and Germany being located on opposite hemispheres, the weather conditions were very different. As Ajzen's (2001) revised theory of planned behavior suggests, the environmental condition is part of the context and can drastically affect one's usual or planned travel behavior. Weather conditions were environmental barriers preventing a person from fulfilling their intended behaviors.

The utilization of local knowledge is a common tactic used by tourists who are either lost or want recommendations, and it is no surprise that local knowledge appeared as a transport selection factor in participant blogs. Accessing what the surrounding people believe about a topic is what Ajzen (1991) describes as normative beliefs in his theory of planned behavior. Tourists often seek normative beliefs in travel books and other travel resources. Rather than providing direct information from a travel call center, which none of the participants mentioned, normative beliefs may be a more effective way to provide information on transport.

#### **4.2 Environmental Awareness and Behavior Change**

Environmental awareness campaigns to promote environmentally responsible behaviors were a significant portion of the informational strategies of sustainable transport. They included signage, posters, videos, pamphlets, and exhibits of various ways to live a more sustainable lifestyle (see Figures 5 and 6). Less than a fifth of the participants from the sample noticed any such environmental awareness campaigns. Campaigns related to sustainable transport and even the Green Goal Program were not mentioned by any of the participants. Those that were noticed were related to recycling. Failing to use proper design principles of information displays (Sanders & McCormick, 1993) such as visibility, legibility, and placement location could have contributed to the weak number of sightings. Participants also may not have been able to recall or comprehend the content seen, likely indicating that the content displayed in the campaigns was not effectively communicated. By and large, the preeminent explanation to the weak number of sightings could be the MSE context. Football is the most popular sport in the world and its fans have been known to be the most passionate and most violent (Giulianotti, 1999). Event goers at the World Cup were immersed in the culture of football with the sole focus being the sport; nothing else matters nor gets processed for those die-hard fans. Still, the effectiveness of the environmental campaigns is not very clear because only a small number of participants were sampled and no direct observations were made at the event to confirm the amount of visibility that these campaigns received across all nine host cities.

Did the environmental awareness campaigns incite the environmentally responsible behavior of using public transport beyond the event? Even though this assessment study did not measure the environmental attitudes of participants, the actual behavior outcomes were garnered for the first time. The inchoate findings from this study suggest that these campaigns did not produce the “legacy” of behavior change. This supports Hensher and Brewer’s (2002) argument that new travel behaviors may be short-lived and are likely to be difficult to continue long-term due to the change in an individual’s circumstances. Many event goers will use public transport during a MSE; they are transients from afar who often cannot bring their own cars to the event. Transport availabilities and the overall contextual landscape during the event and after the event can vary significantly as event goers come from all over the globe. Instead, this assessment study points out that being exposed to public transport use at an event can bring about an awareness of one’s public transport infrastructure back home. Indeed the legacy goal of instilling environmentally responsible behaviors beyond the event especially for sustainable transport may be too difficult of a goal to achieve.

MSE greening discourse “talk the talk” of sustainable transport and behavior change, but the event goers from the sample do not appear to “walk the walk.” These results reflect what Budeanu (2007) and Martens and Spaargen (2005) found among tourists and institutions that while institutions easily adopt sustainable development policies, tourists are less than interested to engage in sustainable habits. The findings from the study underscore the ongoing struggle in sustainable tourism stated by Lumsdon (2000), which is the translation of environmental policies into practical actions for tourists.

#### **4.3 Experiences with Using Public Transport**

The general experience with using public transport during the World Cup among participants was positive, but this finding should take into account the uniqueness of the MSE context. Such an outcome



may be related to the fact that the World Cup and other MSEs can be classified as a holiday trip, considering its international location, duration, and attractions. Holiday trips have been found to be positively associated with happiness, even if a trip was not pleasant (Milman, 1998; Mitchell et al., 1997). Therefore, holiday trip happiness may be a mediating factor in the experiential outcome of public transport use among tourists.

Another important finding to the positive experiential outcome was its temporal association. Event goers mostly related their positive experiences to the period *before* the football matches when event goers are likely to be hopeful and excited in anticipation of the match outcome. Conversely, event goers mostly related their negative experiences to the period *after* the matches when the match outcome has been determined with a loss possibly dampening or exasperating an individual's mood. This temporal shift in event goers' responses helps to explain the contradictory reports whereby before the match, there were comfort, organization, and social interaction, but after the match, there were discomfort, crowding, and chaos. Thus, using public transport on the way to an event may be more pleasant than on the way back from the event.

Economic, personal, and social benefits were the main categories of positives of using public transport identified by the event goers. Notably missing from the positives mentioned was the environmental impact of using public transport, a clear indication that environmental matters were not of immediate concern among the participants. Cost savings was the commonly reported economic benefit of using public transport. Personal benefits of using public transport were efficiency, ease, entertainment and comfort. Event goers were able to get to places on time as long as public transport operations were punctual, well-organized, and prioritized. Taking public transport was also entertaining to the fans because of the people-watching opportunities afforded and impromptu celebrations from passengers. There is a belief that comfort is sacrificed when using public transport, but the reporting of comfort here is contradictory to that belief. The reporting of comfort on the bus in particular may be due to the wide

availability of coaches, which are often more luxurious and filled with amenities than public buses. It is not known if the buses used as part of the integrated bus system for the World Cup event featured amenities found in coaches. Social benefits were primarily based on social interactions such as meeting new people, encountering locals, and experiencing the culture. All together, some of these positive experiences were unique to the MSE context (e.g., impromptu celebrations, coach amenities), but many of the other positive experiences can be encountered in everyday public transport use.

Negative experiences with using public transport were social and personal in nature. One of the most conspicuous negative was crowding, especially on buses. Due to the population influx and event goers traveling to the same location at the same time during the World Cup, there is peak demand (Robbins, Dickinson, & Calver, 2007). Crowding will often result during peak demand. The lack of efficiency and information further frustrated participants using public transport. Some participants found it difficult to use the bus because route information was not clear, pick-up and drop-off points were not conveniently located near stadiums, and the system for buying tickets was not well planned. These negative experiences are examples of how some of the structural and informational strategies outlined in program were not executed as proposed. Mostly these negative experiences could be due to the transport landscape differences across host cities. Additionally, the blogs suggested that there were passenger security concerns and complaints about the upkeep of public transport, both issues possibly deterring individuals from using public transport more frequently. These event goer experiences pinpointed multiple service quality issues and areas of improvement that could explain why public transport came second to car.

#### **4.4. Assessment Outcomes and Recommendations for Future Events**

In the official 2010 Green Goal Legacy Report, the sustainable transport strategies as well as the entire Green Goal Program were concluded to be a success and even garnered an accolade. The structural and informational sustainable transport strategies outlined in the Green Goal Program for the World Cup

event aimed to reduce car use in favor of public transport (footprint goal), promote environmental awareness (legacy goal), and encourage behavior change (footprint and legacy goal). Outcomes from this study's event goer sample were the following: car was used more than public transport; many did not notice the environmental information displays; hardly a few made any behavior changes related to travel after the event. These outcomes may appear to show that both structural and informational strategies were not effective in achieving the goals. However, such a conclusion should be treated as inchoate due to the sample size and limited data collected. The same can be said about the official Green Goal assessment from FIFA who only collected data from one out of the nine host cities. FIFA took a pulse measure of event goers' environmental awareness at the World Cup event, citing that a modest 35% of event goers reported being aware of the Green Goal initiatives (2010 Green Goal Legacy Report, 2011). Yet, FIFA did not indicate the number of event goers surveyed, nor did they report what initiatives event goers were aware of. All together, both this study's outcomes and FIFA's outcomes point to more work needed to be done in the area of sustainable transport.

When compared to the sustainable transport outcomes from the 2006 FIFA World Cup in Germany, the 2010 FIFA World Cup did not perform as well. The World Cup event in Germany achieved a rare feat of carbon neutrality, though largely through offsetting projects and the geographical advantage that Germany had with being connected to the rest of Europe which lessened the need for air transport. For Germany, 57% of journeys within the host country were made by public transport (Stahl, Hochfeld, & Schmied, 2006). Only 30% of the journeys were made by car. For South Africa, 40% of journeys were made by public transport and interestingly, the 2010 Green Goal Legacy Report did not provide the percent value for journeys made by car. Structural and informational strategies were similar, but implemented differently largely due to differences in context. These contextual differences include dipodal host countries, transport availabilities, and socio-economic development. Outcomes in sustainable transport should therefore not be limited to just the physical context, but also consider the socio-historical context of the host country.

Based on this study's findings on transport selection factors, environmental awareness and behavior change, and experiences with using public transport, several recommendations can be made. Event organizers for South Africa invested in road infrastructure and park-and-ride projects, which may explain why car came out on top; event goers reacted to what was available. What event organizers should do structurally to get event goers to use public and non-motorized transport is increase their abundance in availability. Environmental barriers such as weather should also not be overlooked. Heating/cooling on public transport and roofs or shelters at stations to protect users from the elements may attract event goers to public transport. Providing comfort and amenities on public transport may not be priorities for organizers, providing safety and efficiency are. However, if the goal is to get event goers to use public transport over the car, then organizers should consider providing comfort and amenities. The modern car is known for its comfort and amenities, so bringing those features into public transport may potentially lessen car use. Such an investment would also attract locals to use public transport. Achieving such a modal switch among the locals would also be in line with the MSE legacy goal of inciting environmentally responsible behavior beyond the event.

Access to local knowledge and normative beliefs about different transport modes can be a new way of providing information to event goers. What MSEs like the World Cup can do is harness the potential role locals can play in getting event goers to use more sustainable modes of transport. Organizers for South Africa trained and educated event volunteers on sustainable matters; organizers at future events can use that as a platform and educate local volunteers in providing transportation information to event goers. Happiness or feeling positive about one's public transport experience should not be interpreted by organizers that event goers will most likely use public transport. Recall that positive experiences had a temporal association (i.e., the period before the match). Instead, these positive experiences can be shared and advertised to persuade event goers into believing that using public transport is a good thing. Perhaps

organizers can campaign positive event goer experiences related to making environmentally responsible choices at future events.

#### **4.5 Limitations and Recommendations for Future Research**

This assessment study explored only the structural and informational sustainable transport strategies and the findings should be treated with caution due to sampling method, selection biases, sample size, and other methodological problems.

One major issue that this assessment study encountered was its sampling method. A purposive, non-probabilistic sampling method was used and this method may have led to the small sample size in addition to harboring selection biases. To mitigate these problems for future research wanting to use social media, a snowball sampling method may be the most viable option. The snowball method mimics the networking and sharing scheme found in social media and would prevent the researcher from selecting the participants. It would be most effective to begin the snowballing during the event due to increased social interaction.

Another issue with the assessment study that led to a small sample size was survey response rate attrition. As the survey progressed from question to question, the number of participants completing the responses dwindled from 40 to 11 in the end. This study did not provide participants with any reward incentives; future studies should utilize a reward incentive such as an e-certificate to increase sample size and to motivate participants to complete the entire survey.

Ideally, a multi-methods approach could be employed; however, a single method approach of a brief survey was adopted in this study with exploratory nature. A brief survey, though accommodating to the participants, may be prone to mono-operation bias where one question determines the overall outcome.

This was the case with the present assessment study, although contingency questions were in place to justify and/or elaborate participant responses. FIFA committed the same mono-operation bias in its assessment as well by posing single, closed questions. Future assessment studies should incorporate a mix of methods including observations, interviews, and surveys to deal with mono-method and mono-operation bias.

What this assessment study can point to with confidence is that a user perspective assessment study can be conducted entirely from web-based tools and that behavior change legacies can be evaluated. There is potential for garnering a significantly larger sample size in future research from the fact that many event goers are engaged in social media networks like Facebook and Twitter. MSE institutions and organizers, especially with the rise of social media and mobile devices, should tap into these tools to communicate with event goers.

What would a better, future quantitative-qualitative assessment study on sustainable transport strategies look like? It would follow a temporal sequence modeled after the three phases of MSEs: pre-event, mid-event, and post-event. This temporal sequence would allow for the event goers' travel experiences to be told as a seamless experience and becomes more accessible to event organizers who already follow this temporal model. During the pre-event phase, the strategies and implementation plans for transport can be extracted from official documents and analyzed. In the mid-event phase, participant recruitment can begin using the snowball sampling method and social media. Observations and photographic documentation of the transport landscape, actual strategy implementations, and the event goer experience would be made. Participants would also be interviewed and surveyed about their transport selections, experiences, and environmental attitudes and behaviors. All of this would be captured using a mobile device such as a tablet. Finally in the post-event phase, attitude and behavior change data would be collected via social media or an online survey with a reward incentive for full participation.

## 4.6 Conclusion

Structural and informational sustainable transport strategies implemented at the 2010 FIFA World Cup may not have delivered on the Green Goal program goals to reduce car use in favor of public transport, promote environmental awareness, and encourage behavior change. This does not mean that these strategies should be abandoned. Furthermore, it pointed out the necessity to assess the effectiveness of these strategies. Because transport decision-making was largely influenced by contextual factors, structural and informational strategies should instead become more available and apparent to event goers. Though the sample size of the present assessment study was small and the survey only captured a snapshot of data, nonetheless an international scope of event goers were able to provide for the first time direct responses regarding: their transport selections, the effectiveness of the environmental information campaigns, and experiences with using public transport. This kind of user data can potentially be experimented on and applied to improve sustainable transport outcomes that can facilitate in not only greening the event itself, but its event goers.

## VI. APPENDIX

### A. Survey

1. Age: \_\_\_\_\_
2. Gender:    M                      F
3. Where are you from? (City, Country) \_\_\_\_\_
4. Did you have tickets to the World Cup matches?    Yes    No
5. Select the *up to 2 modes of transportation you used the most* during the World Cup.  
 bus/coach                                       train  
 subway/underground/city-rail               car                       other: \_\_\_\_\_  
 aircraft     bicycle
6. Did you feel that you had options when it came to transportation at the World Cup? Choose one.  
  
                    No, not at all                                      Somewhat                                      Yes, a good amount
7. Please list three main reasons why you chose the two modes of transportation mentioned above?
  - 1.
  - 2.
  - 3.
8. List two positives you experienced when using public transportation during the World Cup. (Public transportation includes bus, coach, train, subway, and city-rail). Enter NA if you did not use public transportation.
  - 1.
  - 2.
9. List two negatives you experienced when using public transportation during the World Cup. (Public transportation includes bus, coach, train, subway, and city-rail). Enter NA if you did not use public transportation.
  - 1.
  - 2.



10. Overall, what was your experience using public transportation during the World Cup?  
Choose one.

Very Negative    Somewhat Negative    Neutral    Somewhat Positive    Very Positive    Not Applicable

11. Has using public transportation during the World Cup brought about any changes in how you now travel/commute?    Yes    No    Not Applicable

If yes, what were the changes?

12. Did you see any environmental/green information displayed during the World Cup?  
Yes    No

If yes, what were they?

13. Imagine that you are blogging about your World Cup experience. Write an entry on a specific experience you had while using public transportation during the World Cup. Please be descriptive and narrate the experience with your thoughts and feelings, just like in a real blog. Feel free to use vivid language. If you did not use public transportation, please enter NA in the box.

## B. Facebook Ad

**Student Research Project**  
surveymonkey.com



Did you go to the 2010 World Cup in South Africa? Share your thoughts and experiences by responding to a questionnaire.

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