



# Encouraging sustainable modal shift—An evaluation of the Portsmouth Big Green Commuter Challenge



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## ABSTRACT

This paper describes the impact of the Portsmouth “Big Green Commuter Challenge” (BGCC) event, organised by Portsmouth City Council (PCC) in order to reduce carbon and nitrogen oxide emissions from transport within the city. In total, over 900 people and 33 organisations took part in the 2011 event. This is an example of a “Smarter Choice” measure designed to encourage travel behavioural change to more sustainable modes of transport. A literature review and evaluation of previous “Smarter Choices” measures has been carried out to give some context to the BGCC. An introduction to the city of Portsmouth is presented, in particular its efforts to reduce road traffic and emissions from the city centre area. The event encouraged a modal shift to more sustainable modes of travel, resulting in estimated reductions in CO<sub>2</sub> and NO<sub>x</sub> emissions per mile. However, a number of further recommendations have been made to enable future similar events to have a greater impact on road traffic and emissions.

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## 1. Introduction

Sustainable transport policies and initiatives have attracted a lot of interest across the UK, particularly over the last decade. These initiatives all focus on creating greater awareness of travel behavioural decisions through more reliable information, encouraging better informed commuters' attitudes, and promoting active travel in relation to a healthy lifestyle. In the transport sector, these initiatives are widely referred to as ‘Smarter Choice’ measures. This paper presents an evaluation of one such measure; the Portsmouth “Big Green Commuter Challenge” (BGCC). This evaluation was carried out as part of the EU INTERREG TraCit (Transport Carbon IntenCities) project (TraCit, 2011).

The Portsmouth BGCC was organised by Portsmouth City Council (PCC) during 17–23 May 2011. In total, over 900 people and 33 organisations took part in the 2011 event. It has been run as an

employer-led initiative for the last nine years. PCC set up 13 Air Quality Management Area's (AQMA) in 2005 under the 1995 Environment Act. An AQMA is an area labelled by a local authority as having unacceptably high levels of air pollution that requires a plan of action to reduce the levels. The AQMA acted as a key driver for the BGCC and other policies and measures aimed at reducing road traffic in the city centre area (Portsmouth City Council, 2010a, 2010b). The specific objectives of the BGCC were to increase the number of journeys using sustainable modes, decrease single occupant vehicle journeys, encourage individuals to explore healthier options and to recognize and reward these individuals and groups, as well as contributing to improve air quality in the area.

A review of the literature on ‘Smarter Choice’ measures is presented in Section 2, to give some context for the Portsmouth BGCC. Section 3 contains an introduction to the city of Portsmouth, providing details of its size, demography, location and transportation infrastructure. Following a description of the data collection process in Section 4, a summary of the key results from the BGCC is presented in Section 5 which includes the estimated emissions savings, modal split, bus patronage and the various awareness raising methods used to encourage more sustainable travel. A

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number of conclusions and recommendations have been drawn from both the literature and the evaluation of the 2011 BGCC which are presented in Section 6. The acknowledgements and references are at the end of the paper.

## 2. Review of smarter choices

Increased car use is often associated with higher levels of pollution and congestion in urban areas. These problems cannot be mitigated completely through the use of cleaner fuels or cleaner engine technology. Local authorities have implemented a number of measures to reduce the level of car use. These can be divided into two areas; hard measures and soft measures. Hard or structural measures such as improvements to the transport infrastructure and traffic engineering solutions have not always been as successful as hoped in reducing car use (Stopher, 2004; Moser and Bamberg, 2008). The UK fuel duty escalator policy introduced in 1993 did not have the desired effect on reducing car use. Traffic grew by 18% in the 6 years before its introduction and by 13% in the subsequent 6 years after its introduction (Ison and Rye, 2008). Other hard measures such as road pricing have not been widely implemented in the UK due to political concerns over public acceptability. As a result, a number of soft measures have been implemented. These measures aim to change people's travel behaviour through persuasion rather than cost.

Harder measures seek to change travel behaviour by altering the travel costs. Under a utility maximising behavioural model (e.g. Eluru et al., 2013), changing costs would be expected to lead to changes in the number of trips, distribution of the trips, modes of transport used and routes selected. Softer measures seek to change travel behaviour not through changing the relative costs of transport but through changing attitudes and preferences of the individuals. This approach is in keeping with an attitudinal model utilising the theory of planned travel behaviour (e.g. Anable, 2005) as opposed to a utility maximising model that is appropriate for harder measures (Banister, 2002).

Another categorisation is that of pull and push measures; push measures are aimed at deterring car use whereas pull measures are used to improve people's travel options by the provision of good quality alternatives (Steg and Vlek, 1997). Eriksson et al. (2008) studied the acceptability of different pull and push measures in a questionnaire survey of car drivers in Sweden and found that while respondents found the pull measures to be effective, fair and acceptable, the reverse was found for the push measures.

'Smarter choices' are an example of a pull technique. They were introduced to local authorities in the UK by the Department for Transport (DfT) to influence the travel decisions people make and to cut congestion on roads (DfT, 2005). Smarter choices include local programmes to encourage schools, workplace and personalised travel planning; improving public transport information and marketing services, setting up web sites for car share schemes and supporting car clubs; encouraging teleworking and teleconferencing, travel awareness campaigns and home shopping (DfT, 2005). They act as a tool to initiate the desired change in the growing level of road traffic, particularly when it is deemed that the existing 'hard' measures such as physical improvements to transport infrastructure, traffic engineering and control of road space will not alter the problem of congestion, pollution and emissions experienced on a day to day basis (Stopher, 2004). This brought about the need to adopt measures that affect the nature of traveller response, with initiatives often addressing psychological motivations for travel choice as well as economic ones. The objectives of smarter choices are to reduce congestion, improve health by encouraging physical activity, improve social inclusion, reduce environmental damage and reduce cost for employers (Cairns et al., 2004; Anable et al., 2008). 'The most specific feature linking

these different policies has been the potential to impact on the level of car use' (Cairns et al., 2004).

There has been extensive research/recommendations in the UK on reviewing the national and international evidence of the effectiveness of soft transport policy measures on traffic levels in British conditions (e.g. Avineri and Goodwin, 2010; Cairns et al., 2004). Overall, Cairns et al. (2004), in their review of policy evidence of smarter choices, suggest that reductions in car use have frequently been observed, of the order of 5%–10% overall or 10%–20% for specific types of journeys. They suggested that an intensive and prolonged application of these measures over wide geographical areas and over time could reduce traffic levels by 11% on average and as much as 20% in congested urban conditions. However, the campaign or intervention must be of good quality and be sustained over a long period of time (possibly between 10 and 20 years). The evidence suggests that simple information provision about a journey does not have much effect on travel behaviour and this is because most journeys are routine and habitual and therefore do not require people to seek information for them (Chorus et al., 2006).

Larger scale advertising campaigns generally have small scale effects, which is much stronger on attitudes than it is on behaviour; targeted campaigns can be more successful on changing behaviour (Cairns et al., 2004). Indeed, personalised travel planning can yield success, though mostly amongst those who are already willing to change. There is, however, debate about how long afterwards this effect lasts (Avineri and Goodwin, 2010). Social facilitation can enact a change through challenging social norms by observing what others do in relation to one's own behaviour (see Avineri and Goodwin, 2010 for a review). Overall, the intervention should be something that breaks the habitual routine and provides alternative information that is personalised and localized with a meaningful social element (Avineri and Goodwin, 2010). The BGCC fulfils these behavioural change mechanisms by trying to change habitual behaviour by marketing this event, providing information about alternatives to using the car and challenging social norms (by trying to enact together a sense of social facilitation around the event).

## 3. Portsmouth and the BGCC

### 3.1. Introduction to Portsmouth

Portsmouth is the second largest city in Hampshire and is the UK's only island city (see Fig. 1). It has a population of 205,056 and is the most densely populated city in the UK with 46.4 persons per hectare compared to 45.6 in London (ONS, 2011). Around 100,900 are estimated to be working, of which 66% travel to work within its own boundaries (ONS, 2011). The geographical area covers 23.2 m<sup>2</sup> of land and sea (15.5 m<sup>2</sup> of land). It has a higher proportion of households owning no vehicle compared to the average for Hampshire and England as a whole (33.4% compared to 14.7% and 25.8% respectively) (ONS, 2011). It is home to 3400 businesses although employment in the city has been in decline and there has been a recent trend for large companies to re-locate around the M27 corridor or elsewhere in the sub-region in order to be more accessible by car and less likely to be affected by congestion (Portsmouth City Council, 2012). Portsmouth has a good public transport infrastructure (bus and rail) in place to serve the city and has numerous flat cycle routes. The proportion of people cycling to work in the City of Portsmouth is higher than the national average of 3.1%, with 7.6% of all commuters from outside the administrative area of Portsmouth (ONS, 2001). A recent travel survey showed that 62% of visitors in 2010 travelled to the city by car providing significant opportunities for modal shift to more sustainable modes of travel (Portsmouth City Council, 2012).

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