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Analysis of the non-motorized commuter journeys in major Irish cities

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ABSTRACT

Non-motorized commuting such as, walking and cycling to work has been recognized as essential in attaining sustainability in urban mobility. Owing to this recognition, in recent years there has been a surge of interest among policy makers and practitioners in promoting non-motorized commuting in Ireland. This paper presents an investigative study to explain the non-motorized mode share of commuter journeys in terms of relevant socioeconomic, transportation and household specific factors in five major cities of Ireland. The non-motorized modes were analyzed using the latest available Irish census data (2006). An overall analysis of the entire study region was conducted along with the development of models specific to each city, gender, distance (under and over 5 km) and to the choice between non-motorized modes (walking and cycling) to gain a deeper understanding of the determinants which influence the choice of non-motorized travel mode for commuter journeys. Gender, car ownership and journey distance were revealed by analysis to have the largest effect on the use of non-motorized transport (NMT). Major Irish cities show similar behavior regarding NMT use and nation-wide policy development can be successful, provided some region or city specific differences are incorporated during policy implementation. The developed models are important tools in understanding the effectiveness of the policy interventions in promoting non-motorized travel for utilitarian purposes across the major cities of Ireland.

1. Introduction

Non-motorized transportation (NMT) is a key factor in attaining sustainability in urban mobilization. NMT which includes walking and cycling is increasingly being favored as an attractive alternative to motorized commuter journeys by policy makers and environmentalists. Favorable NMT policies and increased NMT mode share can provide both personal and social benefits. The individual benefits are improved health and fitness, basic mobility, improved accessibility and cost-effective travel. The social benefits are congestion reduction, roadway and parking infrastructure cost savings, energy conservation, reduced air and noise pollution and reduced accident risks to other road users (Litman, 2004).

Transport policy in Ireland prior to 2006 placed focus entirely on the improvement and expansion of the transport network to accommodate the increasing vehicle numbers on the roads (Department of Transport, 2003). This was due to the growing 'Celtic Tiger' economy in the country which made ownership of a motor car possible for a large percentage of the population. In 2006, 80.3% of Irish households had at least one motor car available to them (Central Statistics Office, 2006a). As a result of this, NMT accounted for just 12.8% (10.9% walking and 1.9% cycling) of commuter trips, while commuter trips using a motor car amounted to 62.6% (Central Statistics Office, 2006a). Between 1986 and 2006 NMT use for commuting dropped by 29.7% and motor car use increased by 37.5% (the difference between these percentage values can be accounted for by the decline in public transport use) (Central Statistics Office, 1986, 2006a). Fig. 1 displays the trend in NMT use for each of the major Irish cities between 1991 and 2006. Overall, in the entire country there had been a 67.7% rise in the total number of trips by other transport modes, while trips by NMT increased by 33%. Even this increase leaves NMT mode share far below transport policy targets. Actually, between 1986 and 2006 the percentage of the population using NMT to travel to work has decreased. This decrease was more dramatic amongst females (10.4% decrease), with the percentage of females cycling falling to just 1% in 2006 (Fig. 2).

In recent years, in Ireland, there had been a surge of interest in improving and encouraging non-motorized travel. The Irish Government has adopted a new transport policy 'Smarter Travel-A Sustainable Transport Future' as the transport policy for Ireland for the period of 2009–2020 (Department of Transport, 2009). According to the policy document, "Alternatives such as walking, cycling and public transport will be supported and provided to

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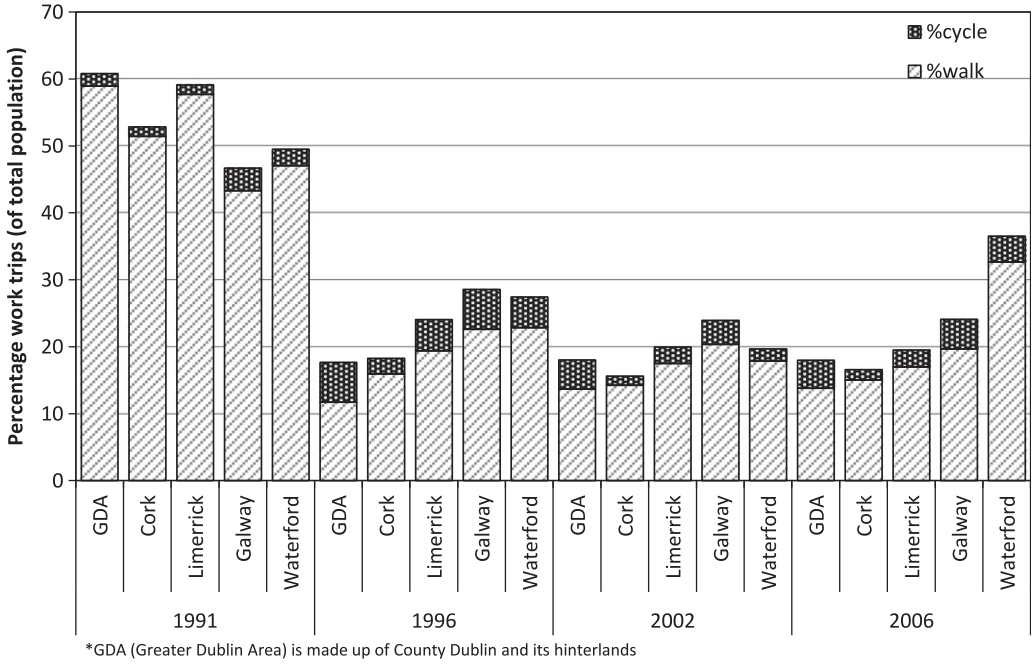

Fig. 1. NMT mode share in each city between 1991 and 2006.

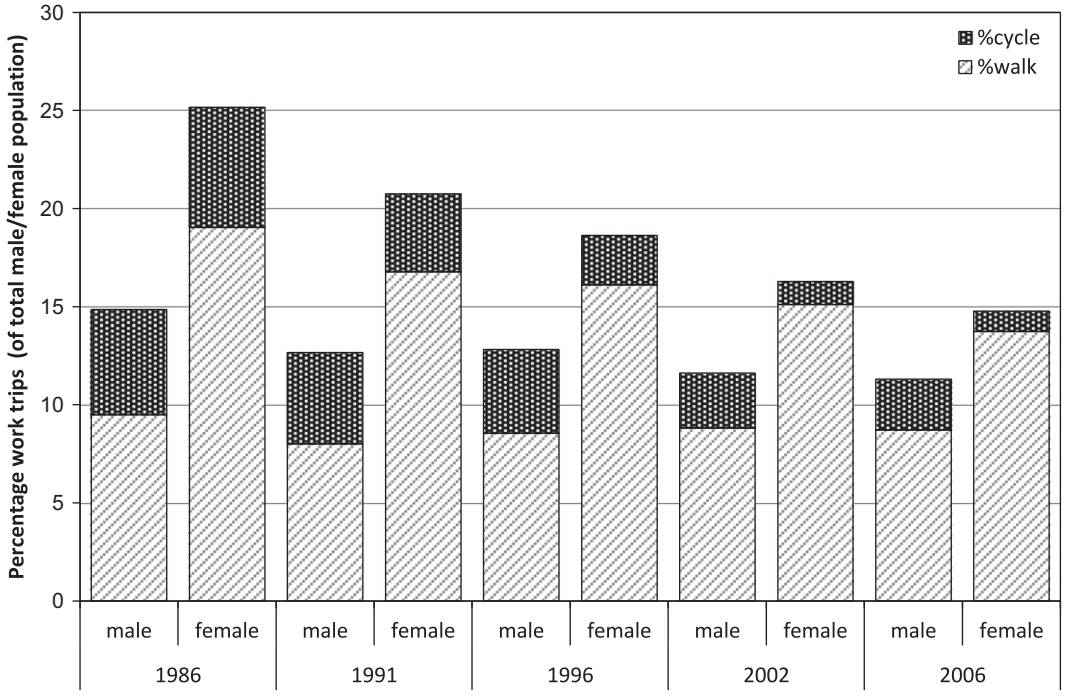

Fig. 2. NMT mode share by gender between 1986 and 2006.

the extent that these will rise to 55% of total commuter journeys to work." As a consequence two new NMT related programs have been undertaken. The first one is 'Smarter Travel Workplaces'; a program which promotes walking, cycling, public transport, car-sharing and trip reduction as part of a workplace mobility management. Along with this, a 'National Cycle Policy Framework, 2009–2020' has been adopted to promote a strong cycling culture in Ireland. This program aims to increase the bicycle mode share of all trips to 10% by 2020.

Adoption, implementation and success of these nationwide transport policies are dependent on their success at the regional and local levels. It is important to identify and analyze the major factors that influence a person's choice of NMT as the preferred mode of travel for commuter journeys in different parts of the country of Ireland. Understanding the reasons and influences behind commuter travel mode choice is important in analyzing commuter behavior and therefore improving the efficiency and sustainability of transport networks.

Early research by Quarmby (1967) showed that the increase in the number of cars in Leeds was causing more congestion and tried to understand why one would be more likely to sit in the congestion than to use public transport, therefore helping to alleviate the problem. Research on the factors influencing commuter travel mode choice has progressed as the world has