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Determinants of walking as an active travel mode in a Nigerian city☆

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ARTICLE INFO

ABSTRACT

This study examined factors that influenced the choice of walking as an active travel mode in Ilesa, a major city in Osun State, Nigeria. By using a multistage sampling technique, 524 respondents were surveyed across the three main residential zones of the city: the high-density, the medium-density and the low-density zones. Among others, socioeconomic characteristics of residents such as age and income varied across the residential zones ($F = 54.731$, $p < 0.001$; $F = 68.278$, $p < 0.001$). It was found that the factors that greatly influence respondents' decision to walk include its relative cheapness, the non-possession of personal vehicles by the traveller and favourable weather. However, vehicle ownership, the relative slowness of the mode and the absence of pedestrian facilities constituted the most significant barriers to walking as an active travel mode in the city. The study also found that the strongest predictor of walking among residents was the non-possession of personal vehicles ($R^2 = .551$). Other predictors were income, trip length, travel costs and health benefits, with a cumulative R^2 value of 0.168. The transportation planning implications of the findings are discussed, and policy recommendations are proffered towards engendering a walkable environment, which would in turn encourage active travelling in the city.

1. Introduction

Active travel is any self-propelled, human-powered mode of transportation, such as walking or bicycling (Lavin et al., 2011; National Centre for Environmental Health, 2011). Being emission free, both walking and bicycling are environment-friendly modes. They are popular travel modes as they involve physical activity rather than any form of motorisation for moving between locations. They are also relatively inexpensive and, to a large extent, accessible to all except those who are physically challenged and can neither walk nor cycle. However, in every respect, walking is by far cheaper than bicycling as no financial cost whatsoever is required. Thus, walking is the most common form of active travel. In fact, no other travel mode is totally independent of walking as it serves as the link between modes.

According to the International Transport Forum (2011), active travel constitutes a source of great pleasure for many citizens. In many countries with higher incomes, non-motorised transports are considered important transport modes. These modes are, to a large extent, chosen especially because of the associated health benefits. Such benefits include increased cardiovascular fitness, increased muscle strength and flexibility, improved joint mobility, decreased stress levels, improved posture and coordination, strengthened bones, decreased body fat levels and prevention or management of disease (State of Victoria, 2016). In addition, they

play a dominant and indispensable role as affordable modes for low-income households in developing and less developed countries. However, active transport is generally considered undesirable, unpleasant and unsafe in most developing countries (Rietveld, 2001). In addition, general disposition in these countries tends to work against its popularity, as it is often associated with poverty, low social status and low technology.

More often than not, active transport plays a second fiddle to motorised traffic in transportation planning research, policies and investments. According to the International Transport Forum (2011), active transport is rarely captured in government statistics on mobility and is often neglected in planning and policy development. Lending credence to this is the submission of Beaumont and Pianca (2002), cited by McMillan et al. (2006), that the environment in which we live is traditionally best planned for a single travel mode on the road for the automobile, whereas multimodal road travel mode is incorporated into the planning but hardly implemented.

Furthermore, active travellers are vulnerable travellers. For instance, most of the estimated 30,000 people who are seriously injured in road traffic crashes are from low- and middle-income countries, and most of the casualties are pedestrians and cyclists (Murray and Lopez, 1996; Roberts et al., 2006). In addition, according to the Federal Road Safety Commission (FRSC) (2010) of Nigeria, many victims of road traffic crashes are vulnerable road users or active travellers. This is partly because highway planning standards do not consciously recognise them as an integral part of traffic in the planning of new transport facilities. The implication is that they are marginalised in terms of highway facilities investments as conscious provisions are not made for walkways and street furniture that cater for their need. Thus, in a way, their existence could be viewed by reckless drivers as an 'illegal encroachment' on the designed road space.

Despite the realities of active travel, it has a lot of social, economic, and health benefits. These, according to Litman (2016), include road and parking facility cost savings, reduced chauffeuring burdens, increased traffic safety, pollution reductions, energy conservation, transport cost savings, increased security, higher property values, open space preservation, improved public fitness and health, and increased community cohesion. These are enough reasons to support active travel. However, whether we have an understanding of the factors that encourage or discourage this highly beneficial and environment-friendly travel mode is a major consideration.

Understanding the factors that work for/or and against active travel has significant implications for public health, transportation planning, and transport facilities investments. However, a dearth of empirical studies on active travel has been noted in Nigeria, where the majority are active travellers. It is therefore imperative to conduct an empirical study of the factors that influence the decision of Nigerians to walk or to not walk. A good understanding of this could help in formulating policies that could enhance active transport. The findings will also contribute considerably to the literature of active travel behaviour. It was against this background that this study examined factors influencing the active travel behaviour of travellers in Ilesa, a major Nigerian city.

2. Previous studies

Many studies on active travel were conducted in developed countries. What obtains in developing countries is almost unknown. The study of Basset et al. (2008) examined the relationship between active transport (defined as the percentage of trips taken by walking, bicycling and public transit) and obesity rates in different countries spanning Europe, North America and Australia. National surveys of travel behaviour and health indicators were conducted from 1994 to 2006. It was found that countries with the highest levels of active transport generally had the lowest obesity rates. Even though the findings from the study are of considerable importance, the study was tilted towards public health.

Shannon et al. (2006) and Whalen (2011) worked on commuting patterns and travel preferences of members of university communities. While Shannon et al. conducted their study in the University of Western Australia through an online survey, the case study for Whalen's study was in McMaster University in Hamilton, Canada. Both studies examined the barriers and motivators that affect transport decision and choice of university students and staff. These studies came up with findings that can enhance our understanding of commuting patterns and travel preferences. However, similar studies outside the university setting, and especially in a developing country, would further deepen the understanding.

Wegman et al. (2012) conducted a study on how to make more cycling good for road safety. They discussed the current level of the various road safety problems of cycling. The study illustrated how the safe system approach, such as the Dutch Sustainable Safety Vision, is effective for vulnerable road users such as cyclists in dealing with inherent traffic risks. They concluded that when the number of cyclists increased, the number of fatalities might increase, but would not necessarily do so, depending on specific conditions. In other words, increased cycling would not necessarily increase fatality with effective control in place. However, the research ignored pedestrians by isolating cyclists.

Burbidge and Goulias (2008) examined active travel behaviour. They provided an overview of existing travel behaviour analysis on active mode choice, presented potential threats to validity in that type of research and analysed existing intervention methodologies. They then presented and discussed a conceptual model of active travel behaviour, arguing that by applying the rigour of travel behaviour research to active travel behaviour research and incorporating the conceptual model provided, great strides could be made relatively quickly in understanding the mode choice and active travel behaviour. Their model was a considerable contribution to understanding active travel behaviour; however, they developed only a conceptual model without any empirical investigation.

Ogilvie et al. (2008) developed and established the test-retest reliability of a new scale for use in a study of the correlates of active travel and overall physical activity in deprived urban neighbourhoods in Glasgow, Scotland. They did this by developing and piloting a 14-item scale. However, the study was conducted for establishing a test-retest reliability of a new scale to study the correlates of active travel and physical activity in Glasgow. The emphasis was not on the determinants of active travel.