Effects of Trip Purpose on Preferred Walking Environment and Route Choice of Pedestrians in Narmak, Tehran

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EFFECTS OF TRIP PURPOSE ON PREFERRED WALKING ENVIRONMENT AND ROUTE CHOICE OF PEDESTRIANS IN NARMAK, TEHRAN

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ABSTRACT

In addition to widely cited macro-scale components of walkability (e.g. street network pattern, accessibility, density, land use diversity), environmental quality aspects of walking routes (e.g. safety, vitality, comfort, aesthetics) have increasingly emerged as requisites of a high quality walking environment. Yet little evidence exists to clarify how these environmental qualities vary in importance to pedestrians going to different destinations (different trip purposes) and how this then influences pedestrians’ route choice decision in their trips to different destinations. The aim of this research is, therefore, to identify various environmental qualities that pedestrians would seek from the walking environment for different types of destinations using Narmak, an urban neighbourhood in Tehran generally recognised for its walkability, as a case study. A total of 100 respondents were asked about their preferred walking environments on trips to three types of destinations: a park, a subway station and a neighbourhood shopping centre. Data analysis reveals that out of eight environmental qualities that have been derived from the literature, four qualities – “distance”, “presence of people”, “presence of formal and informal activities” and “visual attractiveness” – are of varying importance to pedestrians going to different destinations. These qualities, except “distance”, are related to pedestrians’ sense of enjoyment. The remaining four qualities – “pathway amenities”, “sense of security at night”, “sense of security during the day” and “sense of safety from traffic” – do not vary in importance for different destinations, suggesting that they are always prioritised by pedestrians regardless of where they are going to. Indeed, according to the respondents’ ranking of route attributes for walking trips to different destinations, the most determinant factors in pedestrians’ route choice are “sense of security at night”, “sense of security during the day” and “sense of safety from traffic”, which are those qualities that give pedestrians “sense of protection”; followed by “pathway amenities”, the quality which offers sense of comfort. This explains why most pedestrians in Narmak prefer the same category of route – the district distributor, which offers most of the qualities – for their trips to all three types of destinations. The findings of this study may apply as empirical evidence to further refining pedestrian travel behaviour modeling and
simulation approaches as well as planning and design policies for improving walkability in the city.

**Keywords:** Pedestrian route choice; trip purpose; walking environmental quality; sense of protection, comfort and enjoyment; distance

### 1.0 INTRODUCTION

Walking has been currently considered as a response to many social, environmental and economic issues, from reducing air-pollution, traffic congestion and foreign oil dependency to slowing down global warming; from solving obesity and other health problems (Brown et al, 2007) to increasing social interaction and sense of community (Toit et al, 2007). If walking can bring promising economic, environmental, social and health benefits to the society, one of the most critical questions for urban planners, designers and policy makers is how can the built environment be shaped to support and encourage people to walk more – the quality of the built environment which is called ‘walkability’ (Park, 2008).

Much research has been done to examine the relationship between the built environment and actual walking by people. The earliest and largest body of these studies focus on investigating the connection between land use and transportation behaviour in the macro-level built environment, which is known as ‘urban form’ (Greenwald and Boarnet, 2001) and is often defined by three major variables: 1- Density, which focuses on increasing the housing density within a walkable distance to some important destinations in the neighbourhood such as the neighbourhood shopping centre or transit station; 2- Land use diversity, to reduce trip distance to shopping and other services; and 3- A close-knit street pattern, to increase the connectivity between the housing area and major destinations in the neighbourhood. The main goal of research of this kind is to improve accessibility within the neighbourhood (Park, 2008).

Although providing accessibility is a necessary condition, it is not a sufficient one for a high quality walking environment (Greenwald and Boarnet, 2001). The quality of the street as a micro-level built environment is another important component of walkability which affects pedestrians’ walking experience, such as sense of safety from traffic, sense of security from crime, and sense of enjoyment (Sucher, 1995; Saelense et al, 2003; Heath et al, 2006).