A Comparative Investigation on the Role of Mixed Land Use in Travel Generation in Urban Neighborhoods
(Case Study: Chahno and Karmandan Neighborhoods in Mashhad)

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Extended Abstract

1. Introduction

Mixed land use refers to locating different kinds of land usage like residential, business, office, entertainment, and etc. that are close to each other. This can occur at different scales, like combining inside the buildings (It is common in buildings with the office at the first floor and the residential part at higher floors), alongside the streets, and in neighborhood units. It may also include different types of buildings and their prices which lead to income and population classification (Litman & Steele, 2013). Generally, during the recent years, urban planning models or patterns have used car-based and then human-based designs. As we know, the environment has been made of both physical and social aspects. People create their environment and make changes in it, and land, independent from human and the land, is of a speculative relationship (Zarrabian & Monaam, 2008), and successful plans are those which have taken this issue into account in their studies. However, in the recent urban planning, automobile has been given priority over humans, and all the requirements and activities of human beings have been influenced by automobile and its requirements. Considering the difficulties like wasteful horizontal development of the cities, increasing amount of intra and intercity trips, air pollution, decrease in recyclable energy resources, the fade of fresh appearance of the cities as well as the identity and civil life of cities and etc., which are all originated from automobile-based approach, a variety of theories have been proposed for solving some part of such problems. Theories like sustainable development, neo urbanism, green urbanization, compact city, and smart development are some instances of proposed theories one of the aims of which is to achieve their diverse use and combination in the neighborhoods. In fact, since the demand for travel is derived from the distribution of major uses including workplace, educational centers, and entertainment or service centers, some part of the decreasing demands could be obtained through administrating the land use policies (Ahmadi & Moharramnejad, 2006). The aim of making change in the city structure and land use is to increase the compactness, use empty spaces inside the old parts of the city, and create combined uses following a decrease in dependence to personal transportation vehicles by shortening travel distances and leading the transportation toward walking, cycling, and public transportation, which could be applied in both large (all over the city) and small (on neighborhood units) scales (Jahanshahloo & Amini, 2005). Therefore, distribution and diversity in different land uses can result in producing travel with different (internal and external) scales. Accordingly, in the present study, two neighborhoods located in district 6 of Mashhad were selected. Chahno is a district with higher mixed uses of lands while Karmandan has normal mixed uses. The main aim of the present work is to do a comparative investigation of travel production in two aforementioned regions and recognize a location with a different travel production pattern. Hypotheses:
a) Karmandan region (with lesser mixed land use) has more trips than Chahno.
b) Karmandan and Chahno, having different levels of mixed uses, are significantly different in terms of travel production.

2. Theoretical Framework

Mixed land uses have been originated from logistic doctrine. Jane Jacobs, a theorist of this school, believes that a heavy compactness is required alongside an urban compact texture for providing diversity and full functionality of the cities (Shevai, 2004).

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The investigation of the reciprocal relationship between land use and the production of urban trips were first introduced in America and in Europe after World War II, and the hypothesis saying that the distribution of urban land uses results in the increase of trips has been repeatedly tested (Boarnet & Sarmiento, 1998; Cervero & Kockelman, 1997).

The results of the previous studies were different, and most of them found that the role of mixed uses is effective in reducing travel and some other have considered it as ineffective, while the majority of studies, believed in considering mixed uses along with factors such as compactness, regional access and socio-economic characteristics of residents, diversity of transportation, and parking management in travel production and behavior.

3. Method
A descriptive-analytical research method was used to analyze the data obtained for this applied research. The data and information used in this work were collected from questionnaires and libraries. Based on the experiences gained from abovementioned studies, in the present study, it has been tried to choose the regions that share most similarities in terms of socio-economic characteristics of residents as well as physical features of neighborhoods in order to only measure the role of mixed uses in producing intra neighborhood and inter neighborhood trips.

4. Discussion and Conclusion
Mixed development means any combination of commercial applications (e.g., retail business, office and entertainment) and non-commercial applications like residential uses that may be vertically (e.g., residential units above retail businesses) or horizontally (e.g., residential land use in the vicinity of retail businesses) combined (TGM Program Staff, 2001). The increase in mixed uses can result in benefits that according to the results of related research are as follows:

1. Mixed use leads to a 15% to 20% decrease in travelling using personal vehicles.
2. It has a significant effect on travel behavior, both in large and small scales.
3. It is effective in decreasing pollution, traffic problems and energy conservation.
4. It helps to form a walking pattern and provides better access to urban facilities and equipment.

In this research, it was tried to choose the studied regions with regard to the similarities of residents’ socio-economic variables, compactness, and region’s accessibility, and to measure the effect of mixed use on level of residents’ travel generation as much as possible.

Chahno neighborhood, as a region with a higher amount of mixed land use, and Karmandan neighborhood, which contains government-leased houses, with a lower amount of mixed land uses were selected. Travel had also been divided into intra and inter neighborhood trips so that their differences could be evaluated. According to the results, significant differences between the two areas in terms of travel production were found showing that mixed land use had impact the on production of intra and inter neighborhood trips.

5. Suggestions
Urban planners should try to maintain the mixed land uses in form of fine particles during improvement and modernization projects. In addition, during implementing residential complex projects, plans should be made for providing neighborhood services and public facilities. Observing the priorities of urban services, coordinating urban planning and transportation, and having a comprehensive look, leads to environmental, and sense of dependency, liveliness, energy saving, security and the stability of the city.

Key Words: Chahno, Karmandan, Mashhad, Mixed land use, Urban trips.

References

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