



# Effects of land use and transport on young adults' quality of life



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## ABSTRACT

In Japan, more than half of the population is concentrated in three major metropolitan areas: Tokyo, Nagoya and Osaka, which have long attracted massive out-migration of young adults. The quality of life (QOL) of young adults in these major metropolises may be different from that of young adults in other cities. The purpose of this study is to examine the effects of land use and transport on young adults' QOL, by reflecting the influences of life choices in different domains, based on the life-oriented approach. Conceptually, QOL contains both personal and interpersonal components, where the former is a reflection of basic life needs embodied in health, job, residence and finance life domains and the latter expresses higher-ordered life needs embodied in social, leisure and recreation, education and learning, and family life domains. Using data collected from 539 young adults in Japanese cities in 2010 to estimate a structural equation model, it is found that young adults prefer to live in cities with compact, mixed and transit-oriented land use patterns. In addition, the young adults residing in Tokyo, Nagoya and Osaka are more satisfied with their life and are happier than those in other areas. Furthermore, young adults' spiritual communications in family, social, leisure and recreation domains are more influential to their QOL than the other factors related to basic life needs.

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## 1. Introduction

Japan is confronting a serious issue of regional depopulation, i.e., a majority of young people have continued to migrate from local cities to the three major metropolitan areas (Tokyo, Osaka and Nagoya regions)<sup>1</sup> where around half of the nation's population is now concentrated<sup>2</sup>, for new jobs or new residences. Furthermore, the proportion of the population aged 65 years or over in Japan was 12.1% in 1990, but rose to 25.0% in 2013 and it is estimated to increase to 33.4% in 2023<sup>3</sup>. Accordingly, increasingly both academic and government agendas have focused on national depopulation issues (e.g., Wilson and Rees, 2003). Such depopulation is primarily

driven by the massive out-migration of young people, often of the brightest adults (Stockdale, 2002). Muilu and Rusanen (2003) claimed that young people hold a key position for the future of the depopulated areas. In particular, based on their analysis of the 15–24-year age cohort in Finland, without renewal of their population structure, these areas cannot remain viable or maintain their economic functions in the long term. Stockdale (2006) further found that migration out of the depopulating areas in Scotland is associated with the prospects of economic regeneration in rural communities. Therefore, it can be seen that if the movement of young adults away from rural areas to big cities continues unabated, it may jeopardize regional development in Japan. However, problems associated with young adults' out-migration do not constitute a special issue just for Japan. It has been observed in other developed nations such as England and Wales that the long-distance movements of young adults are a leading factor in demographic and population changes in society (Smith and Sage, 2014). The same is true for many Asian countries. For example, in Nepal, where communities have thrived for centuries in rugged mountain environments, communities are facing rapid population decline caused by the out-migration of youths (Childs et al., 2014), posing potential long-term threats to agricultural production, the family-based care system for the elderly, socioeconomic inequalities, and human capital. In China, the total number of migrants from rural to urban areas reached 153 million

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<sup>1</sup> There are three metropolitan areas: Tokyo Area—Saitama, Chiba, Tokyo and Kanagawa; Osaka Area—Kyoto, Osaka, Hyogo and Nara; Nagoya Area—Gifu, Aichi and Mie.

<sup>2</sup> Your doorway to Japan: <http://www.nippon.com/en/column/g00189/>.

<sup>3</sup> Statistics Japan. The Elderly Population, 2013 (in Japanese). (Downloadable from <http://www.stat.go.jp/data/topics/topi721.htm>; Accessed 5 July 2014).

in 2010, accounting for about 30% of total rural labour<sup>4</sup>. Such accelerated rural depopulation problems driven by vast out-migration of young workers have imposed huge obstacles to improving land use efficiency and coordinating urban–rural development in China. Problems include low efficiency of rural residential land use, lateral expansion of rural dwellings at the expense of farmland, and the deterioration of rural residential environments (Liu and Liu, 2010; Li et al., 2014). However, in Japan, such migration research is scarce and there is a lack of relevant behavioural studies.

Theoretically, the purpose of land use and transport planning is not to build buildings, electric light poles, waste treatment facilities, parks, roads, and railways and so on, but to support people's lives, economic activities and protect the natural environment. In this sense, if the above public infrastructure cannot contribute to the improvement of people's quality of life (QOL), economic growth, land use and transport planning are meaningless. In other words, the outputs (e.g., length of roads, area of parks and number of facilities) of land use and transport planning are not important, but the planning outcomes (e.g., a higher level of QOL and the minimum level of environmental damages) are essential. This study focuses on people's lives in connection with land use and transport planning. Land use planning provides people with places for activity participation and services for realizing the purpose of activity participation, and transport planning aims to assist people's travel between places. Among various places, residence is the most fundamental in people's lives; school is where people acquire knowledge and enhance their abilities for survival and for enjoying life; the workplace is where people earn money to meet various life needs and/or for value realization; parks provide people with various leisure options (e.g., relaxation, bird watching, walking, jogging, and playing with kids), and roads connect different places to support people's lives. Thus, life activities are performed at various places.

Concerning young adults in Japan aged from 15 to 34 years old<sup>5</sup>, when leaving school and establishing independent households, they have to decide where to live and where to work. However, migration from a childhood home by young adults in search of job opportunities or marriage partners means forgoing the benefits of having parents close by and relinquishing the economic and social values of hometown networks. Residing in a new residential location can be a decisive life choice for young adults, which is further connected with other life domains, including health, social, family life, finance, residence, job, education and learning, leisure and recreation as well as travel behaviour. Migration may further affect their QOL, which might be influenced by their socioeconomic characteristics and residential environment. Unfortunately, little attention has been paid to the young population's migration issues from such a comprehensive behaviour viewpoint in Japan. Therefore, this study attempts to fill this research gap.

Motivated by the above considerations, the purpose of this study is to make an initial attempt to examine and quantify the effects of land use on the young population's QOL, after controlling for the impacts of their socioeconomic characteristics and essential life choices such as job-related choices (decisions). Here, land use attributes are represented by the density of various facilities (e.g., public facilities, welfare facilities, transit facilities), as well as population and employment density. The socioeconomic characteristics contain individual attributes (e.g., age, marital status, education level) and household attributes (e.g., household

composition and vehicle ownership). Life choices are represented by decisions made in the domains of health (e.g., frequency of sports participation), social life (e.g., frequency of participation in community activities), family life (e.g., frequency of sharing dinner time with family members), finance (e.g., income allocation to leisure costs), residence (e.g., reside close to a transit-oriented neighbourhood or city centre), job (e.g., job type, working hours per day), education and learning (e.g., frequency of learning activity participation), leisure and recreation (e.g., frequency of leisure activity participation), as well as travel behaviour (e.g., main travel modes to different leisure facilities). Herein, the policy implications of this study are twofold. First, this study could inform policy makers about how young adults would improve their QOL in response to any re-shaping of the spatial structure and the economic/urban strategies. Second, clarifying the influence of the land use on their relevant life choices could allow policy makers to better evaluate the effects of land use policy by explicitly incorporating the policy outcomes into the evaluation process, which could better facilitate consensus building.

In the remainder of this paper, Section 2 provides a brief review of existing studies to position the present study in the literature. A life choice and QOL survey, providing data for this study, is explained in Section 3. In Section 4, a structural equation model with latent variables is estimated for testing the hypothesis in this study, and then a detailed discussion about model estimation results is given. Finally, the findings of this study are summarized and the policy implications are discussed in Section 5.

## 2. Literature review

QOL refers to one's satisfaction with life and feelings of contentment or fulfilment with one's experience in the world. It is about how people view, or what they feel about, their lives (Andereck et al., 2007; Uysal et al., 2012). Many researchers argue that QOL is best studied from the individual perspective (Taylor and Bogdan, 1990). Similar situations and circumstances may be perceived differently across individuals. Japan is widely known as a country where people experience a relatively good level of QOL. However, Inoguchi and Fujii (2009) argued that Japan is a society undergoing a variety of profound changes, and these changes may influence how they live and what they experience and value in the private and public spheres of their lives. Further, in order to ascertain what domains most affect the overall QOL of Japanese people, they classified 16 specific life domains into three groups. The first group, called "material life sphere", consists of housing, standard of living, household annual income, education and job domains. The second group is "post-material life sphere" and contains health, friendships, marriage, family life, leisure and spiritual life domains. The third group, called "public life sphere", includes neighbours, public safety, environment, the welfare system and the democratic system. Inoguchi and Fujii (2009) found that Japanese people tend to be most satisfied with the post-material sphere of life, and least satisfied with the public sphere of life such as the conditions of the environment and the welfare system; the friendships and spiritual life in the post-material sphere of life are important determinants of their QOL. Similarly, Sing (2009) showed that Hong Kong people have a great desire for a good material life, which bodes ill for their QOL. However, the above findings are slightly different from those observed in China. Shu and Zhu (2009) discovered that Chinese people experience high levels of satisfaction with their interpersonal, material and nonmaterial life domains. Accordingly, it is important to stratify the QOL in the specific studies.

How do land use and transport planning positively contribute to the improvement of people's lives? There are at least four major

<sup>4</sup> Ministry of Human Resources and Social Security. 2011. Human resources and social security undertakings statistical bulletin of 2010. (In Chinese). [http://w1.mohrss.gov.cn/gb/zwx/x/2011-05/24/content\\_391125.htm](http://w1.mohrss.gov.cn/gb/zwx/x/2011-05/24/content_391125.htm).

<sup>5</sup> The term 'young adults' in Japan refers to people aged from 15 to 34 years old. Ministry of Health, Labour and Welfare. (In Japanese). <http://www.mhlw.go.jp/topics/2010/01/tp0127-2/12.html>.

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