



# Ageing and loneliness: The role of mobility and the built environment



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## ABSTRACT

The ageing of the population raises questions regarding the quality of life of future generations. This article focuses specifically on feelings of loneliness as an important aspect of quality of life in relation with mobility aspects and built environmental characteristics. Based on data collected in the southeast of the Netherlands among 344 respondents in 2014 four ordered logit models were estimated to explain the extent to which people feel lonely or socially isolated. The explanatory variables in the models are age; other personal and household characteristics; characteristics of the built environment and mobility aspects. The results indicate that, although age has little explanatory power, older people are likely to feel lonelier. Other personal and household characteristics, such as household composition, education, health status, being a volunteer and the number of social interactions are found to have more explanatory power. Characteristics of the built environment also explain a substantial part of variance in loneliness. Significant effects are found for living in an apartment, length of residence in the neighbourhood and satisfaction with the neighbourhood and its facilities. Finally, we find that the use of different transport modes (bicycle, car and public transport) significantly reduces loneliness.

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## 1. Introduction

Improving quality of life in both the fast growing and urbanising city areas, as well as in the regions that face a decreasing population is an important objective for urban planners and policy makers. In different fields, such as psychology and sociology, there has recently been an increasing interest in subjective aspects of quality of life, such as subjective well-being, happiness, social satisfaction and loneliness (e.g., Cattan et al., 2005; Helliwell and Putnam, 2004; Ettema et al., 2010; Schwanen and Wang, 2014). According to Schwanen and Wang (2014) “well-being provides a useful concept to move beyond biomedical understandings of health”. In that sense the increased attention for subjective aspects of quality of life reflects the concerns regarding the consequences of an ageing society. Whereas the elderly nowadays are more educated, have a better physical health and are more mobile than earlier generations of elderly, they have a heightened risk of social isolation and loneliness (e.g., Scharf and De Jong Gierveld, 2008; Pino et al., 2014). Older people, in general, have fewer social support networks due to changes in their life cycle stage (e.g., retirement), or age-related losses and critical events (e.g., death of partner)

(e.g., Oh, 2003; Tang and Lee, 2011). However, loneliness and social isolation occur among all age groups.

Loneliness has been found to be related to socio-demographic characteristics such as income and health, as well as to neighbourhood characteristics such as perceived quality of the neighbourhood (e.g., Scharf and De Jong Gierveld, 2008). Also, mobility becomes increasingly important as it provides access to quality interactions that are necessary for life's necessities as well as social and emotional well-being (Metz, 2000; Spinney et al., 2009). However, the impact of mobility aspects on feelings of loneliness has been largely overlooked.

The aim of the current article is to contribute to this knowledge by analysing the socio-demographic, mobility and spatial factors that influence subjective feelings of loneliness or social isolation, with a specific focus on the (interaction) effects of age. For this purpose an ordered logit model is estimated based on data collected in the Netherlands among 344 respondents in 2014.

The remainder of this article is structured as follows. Section 2 discusses the existing literature on loneliness as an aspect of subjective wellbeing and quality of life and the possible factors influencing feelings of loneliness. Section 3 describes the data collection effort and the sample characteristics, followed by the methods and results in Section 4. Section 5 discusses the implications of our findings for urban and transport research and policy.

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## 2. Literature review

Social relationships are essential for people's quality of life and well-being. If the quality or the quantity of relationships with family and friends is lower than is considered desirable, people feel lonely (Perلمان and Peplau, 1981). As the reduction of loneliness is crucial in creating quality of life, there is an ongoing interest in this topic in the social sciences.

There seems to be a widespread belief that loneliness only occurs among seniors (Demakakos et al., 2006). Many studies on loneliness focus specifically on elderly. However, loneliness has been found to occur in all age groups. According to De Jong-Gierveld and Van Tilburg (2010), the reason for specifically studying loneliness of older adults is the fact that some of the determining factors of loneliness, such as lower levels of health and income, or the loss of a spouse, are directly related to older age. This shows that loneliness not only relates to age but also to other socio-demographic characteristics.

In social sciences, loneliness has extensively been studied in relation to socio-demographic characteristics (although many studies are confined to older adults). In these studies, low education and low income have been found to be associated with loneliness (e.g., Pinguart and Sørensen, 2001; Demakakos et al., 2006; Hawkey et al., 2008). Household composition has also been found to affect feelings of loneliness. Older people tend to feel less lonely if they live with a partner (Demakakos et al., 2006; De Jong-Gierveld and Van Tilburg, 2010) and if they have (more) children (De Jong-Gierveld and Van Tilburg, 2010). In addition, a number of studies showed that a higher (self-perceived) health is related to lower levels of loneliness (e.g., Hawkey et al., 2008; Scharf and De Jong Gierveld, 2008; De Jong-Gierveld and Van Tilburg, 2010; Weijs-Perrée et al., 2015).

Loneliness is also related to more objective measures of social relations. For instance, Demakakos et al. (2006) found that loneliness is related to the size of one's social network. Hawkey et al. (2008) also found that loneliness decreases if one's social network is larger. They did however not find a relationship between frequency of social interaction and loneliness. Hughes et al. (2004) stress that the relationship between objective and subjective social isolation is relatively modest, which "suggests the importance of studying both aspects of social relationships". Hughes et al. (2004) used a number of objective measures of social integration or isolation, including marital status, living arrangements, whether the respondent volunteers at least 100 h a year whether the respondent provides any kind of help to family members and the respondent's rating of his or her neighbourhood's safety. They did however not use direct information about frequency of social interaction (e.g., how often the respondent contacts others). Moreover, Pinguart and Sørensen (2001) found that lower quality of contact is more closely related with loneliness than lower quantity of social contacts.

In addition to socio-demographics, social interactions and loneliness have been studied in relation to neighbourhood characteristics, such as neighbourhood income and urban density. However, the number of studies taking these aspects into account is limited. In this regard Scharf and De Jong Gierveld (2008) found that people living in high urbanised and deprived neighbourhoods are lonelier. They also found that the subjective evaluation of the quality of the neighbourhood is significantly related to loneliness. In the same vein, Weijs-Perrée et al. (2015) found that people who feel more attached to their residential location are less lonely.

Quality of life from a living environment perspective includes both objective factors such as provision of services, availability of green and condition of houses, and subjective characteristics as

perception of safety, social cohesion, degeneration and satisfaction with their environment (e.g., Van Kamp et al., 2003). Built environment characteristics such as neighbourhood walkability and access to facilities have also emerged as an important theme in studies on local social interaction and community liveability (e.g., du Toit et al., 2007; Wood et al., 2008; Hanibuchi et al., 2012). For example, Wood et al. (2008) explored the relationship between social capital and aspects of the built environment, specifically focusing on the walkability. They concluded that the built environment appears to be important and potentially modifiable, with shops nearby (but not too many) and suburb upkeep being positive aspects of the anatomy of a suburb conducive to social capital. Also other characteristics of the built environment such as the availability of green spaces support social contacts among neighbours and strengthen communities for the ageing population (Kemperman and Timmermans, 2014).

Subjective well-being is assumed to be increased through engagement in everyday activities (e.g., Ettema et al., 2010; Schwanen and Wang, 2014). In turn, activity engagement is related to the travel options people have. In the field of transportation research there is therefore a growing interest in studying the relationship between quality of life or subjective well-being and activity-travel behaviour (e.g., Metz, 2000; Spinney et al., 2009; Ettema et al., 2010; Kolodinsky et al., 2013). Although the definitions of mobility and quality of life differ, studies agree that quality of life and mobility are related.

In the field of transportation research there are only very few studies that consider the relationship between mobility attributes and subjective measures of social interaction. Thus far, attention has mainly been paid to the more objective measures of social activity-travel behaviour, such as the frequency and distance of social trips (e.g., Carrasco and Miller, 2006, 2009; Kemperman et al., 2006; Farber and Páez, 2009; Carrasco, 2011; van den Berg et al., 2009, 2011, 2012; Kowald et al., 2013), with a number of them focussing specifically on the ageing population (e.g., Tacken, 1998; Páez et al., 2006; van den Berg et al., 2011).

Regarding the subjective aspects of social interaction Delmelle et al. (2013) analysed which personal characteristics, housing and residential neighbourhood characteristics and commuting and transportation characteristics influence social satisfaction. They measured social satisfaction on a six-point Likert scale, asking respondents how satisfied they are with their social contacts, and used an ordinal probit regression model to analyse the data. With respect to the mobility-related variables they found that car ownership increases social satisfaction. They suggest that car ownership "increase[s] mobility in a time of increasingly dispersed social networks". In addition, their results show a positive effect of living close to a public transport stop with a high frequency of departures, which may also be explained by a higher accessibility of social network members. Regarding commute times they found a negative effect of a long commute.

In a recent study, Weijs-Perrée et al. (2015) analysed the relationships between personal characteristics, neighbourhood characteristics, travel behaviour, social interactions, social satisfaction and loneliness using path analysis. They measured loneliness using a three-item Loneliness Scale that was developed by Hughes et al. (2004), based on the 20-item Revised UCLA Loneliness Scale (Russell et al., 1980), asking respondents how often they feel they lack companionship, how often they feel left out and how often they feel isolated from others. The response categories were: hardly ever (1), some of the time (2), and often (3). Their results indicate that people who own a car feel less lonely and that loneliness has a negative effect on social satisfaction. In addition, it was found that people who walk more often have a higher social satisfaction and people who cycle more often

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