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Investigation of life satisfaction, travel, built environment and attitudes

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ABSTRACT

This study explores the relationships subjective well-being has with travel behaviour, the built environment and attitudes toward transportation. With data from a survey of residents of Nova Scotia, Canada, it develops a random-parameters ordered probit model with life satisfaction as the dependent variable. The approach extends current research by including built environment and attitudinal variables in the model along with daily travel behaviour, and by observing heterogeneous effects of variables at the individual level. The study results reinforce the evidence that daily out-of-home travel has a positive impact on life satisfaction by facilitating access to fulfilling daily activities such as work and social events, and that being physically active positively affects life satisfaction. The results suggest that having greater access to varied modes of transportation generally improves life satisfaction. Results on the built environment and attitudes indicate that living closer to a park or sports field is positively related to life satisfaction. Being community-minded is also generally related to higher life satisfaction. The results reveal that heterogeneity exists in the sample; for instance, attitudes toward being community-minded showed a statistically significant standard deviation in the model. Insights from this study will guide effective transportation policymaking for healthy communities.

1. Introduction

People's views of their own well-being are important indicators of their health and are gaining prominence in research and public policy. As well as being a meaningful measure in its own right, subjective well-being contributes to one's overall health (Diener and Chan, 2011). Empirical relationships between subjective well-being and people's circumstances and choices can provide a way to evaluate policies which incentivize or facilitate those factors (Dolan and White, 2007), helping improve our understanding of how to build happy and healthy communities.

There is a growing consensus that individuals' well-being is greatly influenced by their travel behaviour and the built environment around them; however, empirical evidence which explores these relationships is still limited (Ettema et al., 2010). Since daily travel connects people to activities and often comprises a substantial portion of their day, it is likely to impact well-being. Travel is theorized to affect well-being directly through people's positive or negative experience of their travel, and indirectly by facilitating access to activities such as visiting family and friends (De Vos et al., 2013; Nordbakke and Schwanen, 2014). There is emerging empirical research exploring this question; for example, Bergstad et al. (2011) linked commute satisfaction with higher subjective

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well-being. Similarly, an individual's capacity to access transportation options is likely to affect their autonomy and thus their perception of their own well-being (Delbosc, 2012). De Vos et al. (2013) emphasize a need to further explore how the capacity to move around, such as mobility tool ownership, may affect individual well-being.

Recent progress in research identifies that subjective well-being can be affected by the environment in which one lives (Brown et al., 2015; Ferreira et al., 2013). Dolan et al. (2008) argue that individuals' attitudes may also affect their well-being. While attitudes toward personal circumstances and trust in others have been shown to impact subjective well-being (Dolan et al., 2008), there is a clear gap in the research around how individuals' attitudes towards transportation influence their well-being. Therefore, this research investigates the determinants of subjective well-being, specifically travel behaviour, built environment attributes and people's attitudes toward transportation.

The study uses data from a unique travel activity survey of residents of Nova Scotia, Canada, which combined travel behaviour and health-related questions to explore linkages among relevant health, travel and environmental factors. Methodologically, the paper extends a modelling framework that accommodates individual heterogeneity. The model results demonstrate the varying impact of attributes of interest through a random-parameters ordered probit model.

2. Literature

2.1. Subjective well-being

Broadly, subjective well-being encompasses what people think and feel about their life. In other words, it measures how happy people are. As used in this study, subjective well-being fits within the domain of hedonic well-being, measuring experiences of happiness, as opposed to the eudaimonic domain which measures flourishing (De Vos et al., 2013; Reardon and Abdallah, 2013). Researchers separate subjective well-being into two categories: affective and cognitive (Diener et al., 1999). Affective well-being deals with contemporaneous moods and emotions, measuring how happy or unhappy people feel at the time of an experience. Cognitive well-being represents a retrospective evaluation of overall happiness and satisfaction, measuring how people feel about their life as a whole. This study addresses a facet of cognitive well-being referred to as life satisfaction, a subjective judgement of how individuals feel about their life as a whole (Kahneman and Krueger, 2006). Research on how to measure life satisfaction has concluded that it is possible to obtain consistent and meaningful estimates from retrospective surveys (Diener et al., 1999; Fleurbaey, 2009; Kahneman and Krueger, 2006). Measurement of life satisfaction is most often done using the Satisfaction with Life Scale (Diener et al., 1985) and is also commonly done with single-question Likert-scale measures such as employed by this study (Brown et al., 2015; Ferreira et al., 2013). Some research investigates individuals' estimates of their satisfaction in specific domains such as family life or travel (Ettema et al., 2011); this paper uses a global measure to explore how experiences or behaviour in the travel domain influence overall life satisfaction.

Subjective well-being may be largely determined by inherent personality traits and is often resilient against changes in objective circumstance (Diener et al., 1999). However, empirical research has established several relationships between life satisfaction and external factors, some of which are summarized in Table 1. In particular, socioeconomic characteristics have been well-studied. Age seems to have a U-shaped relationship with life satisfaction with its lowest point in middle age (Dolan et al., 2008), though some evidence suggests age is not significant when other variables are controlled for (Diener et al., 1999). Results on gender are mixed—some studies have reported that women have higher well-being on average, while others have reported no significant difference (Diener et al., 1999; Dolan et al., 2008). Higher incomes have a small but positive effect on life satisfaction, though the effect seems to diminish at higher income levels (Dolan et al., 2008). Subjective well-being has a strong positive relationship with physical health, with causation running both ways (Diener and Chan, 2011). This relationship is strongest in self-reported health measures (Diener et al., 1999).

Table 1
Summary of selected results on life satisfaction (LS).

Study	*Sample from*	*Methods applied*	*Key Results*
Abou-Zeid (2009)	Switzerland / USA	Structural equations	Higher participation in daily activities increases LS
Alesina et al. (2004)	Europe / USA	Ordered logit	Traditionally oppressed minorities have lower LS
Bergstad et al. (2011)	Sweden	Least squares	Satisfaction with travel relates to LS directly and indirectly
Brown et al. (2015)	Europe / Japan	Ordered probit	LS increases with proximity to city centres and larger homes
De Vos (2017)	Belgium	Structural equation modeling	Effect of travel on LS is mainly indirect through activity participation
Downward and Rasciute (2011)	UK	Heterogenous thresholds ordered probit	Participation in sports causes higher LS
Ferreira et al. (2013)	Europe	Ordered probit / least squares	Higher levels of air pollution decrease LS
Ferrer-i-Carbonell (2005)	Germany	Ordered probit with panel data	Income has complex and bidirectional relationship with LS
Haller and Hadler (2006)	International	Multilevel linear	Having children raises LS but not affective well-being
Huang and Humphreys (2012)	USA	Least squares	Participation in sports causes higher LS
Lucas et al. (2004)	Germany	Multilevel linear	Unemployment is related to lower LS
Oswald and Powdthavee (2008)	UK	Least squares with random effects	LS partially adapts to long-term disability
Stutzer and Frey (2008)	Germany	Least squares	Longer commutes are associated with lower LS