Journal of Transport Geography 66 (2018) 180–199

Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo

# Does commuting matter to subjective well-being?☆

Olga Lorenz

*Institute for Labour Law and Industrial Relations in the European Union, Campus II, IAAEU - Trier University, Trier D – 54286, Germany*

ARTICLE INFO

*Keywords:*
Commuting distance
Emotion
Satisfaction
Time use
Well-being

*JEL:*
I10
I31
R40

ABSTRACT

How and why commuting contributes to our well-being is of considerable importance for transportation policy and planning. This paper analyses the relation between commuting and subjective well-being by considering several cognitive (e.g., satisfaction with family life, leisure, income, work, health) and affective (e.g., happiness, anger, worry, sadness) components of subjective well-being. Fixed-effects models are estimated with German Socio-Economic Panel data for the period 2007–2013. In contrast to previous papers in the literature, according to which commuting is bad for overall life satisfaction, we find no evidence that commuting in general is associated with a lower life satisfaction. Rather, it appears that longer commutes are only related to lower satisfaction with particular life domains, especially family life and leisure time. Time spent on housework, child care as well as physical and leisure activities mediate the association between commuting and well-being.

## 1. Introduction

In the past decades, subjective well-being has become an important component of the agenda of governments and measures of subjective well-being are often used to assess the costs and benefits of policies (e.g., Blanchflower and Oswald, 2004; Dolan et al., 2008; ONS, 2015). According to the World Happiness Report 2015 of the United Nations, happier and more satisfied people are more likely to be healthier, productive and pro-social, resulting in benefits for the society as a whole, i.e. higher economic productivity, stronger social insurance, greater societal resilience to natural hazards, and greater mutual care (Helliwell et al., 2015). Therefore, most governments and international organisations regard subjective well-being as the most comprehensive measure of wealth, replacing traditional measures like Gross Domestic Product (GDP) and some social indicators (OECD, 2013). Partly as a result, economists are showing increasing interest in the "economics of happiness", reflected by the large body of literature that considers subjective well-being as a proxy for individual welfare.[1] Thus, it is hardly surprising that subjectively experienced well-being has, especially recently, attracted more attention in transport and mobility studies, since transport is intricately linked to the well-being of the economy as well as communities and is seen as the blood of society (e.g., Banister et al., 2011; De Vos et al., 2013). In contemporary societies, the travel to work, in particular, plays a large role in the everyday life of individuals. With increasing suburban sprawl and subsequently longer commutes, the relationship between commuting and well-being is becoming a pressing concern (e.g., Pisarski, 2006; Hilbrecht et al., 2014). This is compounded by the finding that commuting to work is found to be a stress factor and, hence, reflects one of the unpleasant sides of daily life (e.g., Kahneman et al., 2004; White and Dolan, 2009; Mattisson et al., 2015). Understanding the relationship between commuting and well-being may offer insight into workers' quality of life and contribute to programs and policies designed to better support population well-being. Further, understanding how commuting is related to how we feel offers insight into ways of improving existing transportation services, prioritising investments and theorising and modelling the costs and benefits of the travel to work.

Nevertheless, the relationship between travel and subjective well-being is largely "unexplored in travel behaviour research" (Ettema et al., 2010, p. 729). In the limited number of previous studies, subjective well-being has usually been assessed by judgements of overall life satisfaction.[2] Yet, as De Vos et al. (2013) point out, these studies are still in their infancy and many of the multifarious links between commuting and well-being are still under-examined since most studies focus mainly on life satisfaction, drawing mixed conclusions (Stutzer and Frey, 2008; Dickerson et al., 2014; Hilbrecht et al., 2014; Wheatley, 2014; Morris, 2015). In classical urban and regional economic theory, individuals' commuting behaviour is determined by an equilibrium

☆ We thank the participants of the 2017 Colloquium on Personnel Economics (COPE) in Zürich, the 2016 Workshop on Subjective Survey Data in Labour Market Research in Trier, the 2016 Labour Economics Meeting in Trier, and a seminar at U Trier for helpful comments and suggestions.

*E-mail address:* lorenz@iaaeu.de.

[1] Summaries and overviews of this rapidly expanding literature include: Frey and Stutzer (2000, 2002a,b), Layard (2005), Kahneman and Krueger (2006), Di Tella and MacCulloch (2006), Clark et al. (2008), Dolan et al. (2008), Stutzer and Frey (2010), and MacKerron (2012).

[2] A detailed review of this literature is provided by De Vos et al. (2013).

https://doi.org/10.1016/j.jtrangeo.2017.11.019
Received 12 April 2017; Received in revised form 21 November 2017; Accepted 22 November 2017

state of the housing and labour market, in which individuals' utility is equalised over all actual combinations of alternatives in these two markets. Accordingly, it is assumed that individuals freely optimise by changing job or residence and, hence, arbitrage away any utility differentials. If this is the case, no systematic relationship should be found between commuting behaviour and subjective well-being (respectively life satisfaction), which has been shown to be a satisfactory empirical approximation to individuals' utility (Kahneman and Krueger, 2006).

However, subjective well-being covers a wider range of concepts than just life satisfaction. In fact, subjective well-being is defined as a person's cognitive and affective evaluation of his or her life, and encompasses different elements: the cognitive component consists of life satisfaction and satisfaction with specific life domains (e.g., satisfaction with family life, work satisfaction), while the affective component refers to positive emotions, moods and feelings (e.g., joy, pride) and negative ones (e.g., anger, worry) a person has (Diener, 2000). In contrast to the above mentioned studies on the effect of commuting on overall life satisfaction, much less is known about the consequences of commuting on satisfaction with other life domains and emotions, although it has been shown that a distinction is important on both empirical and theoretical grounds (e.g., Kahneman et al., 1999; Kahneman and Deaton, 2010; Deaton and Stone, 2014). Our comprehensive investigation of this issue is intended to fill this gap and to gain further insights beyond those from the life satisfaction studies about the general consequences of commuting for well-being by adopting a more holistic view of well-being related to commuting.

Thus, this article aims to contribute to the understanding of the relationship between commuting distance and well-being by considering several components of subjective well-being, such as: cognitive evaluations of one's life and specific life domains (i.e., satisfaction with family life, leisure time, income, work, and health), positive emotions (i.e., happiness), and negative ones (i.e., anger, worry, sadness), and potential explanatory factors in links between commuting and well-being. Since the aim of (transport) policies is to increase individuals' well-being, it is worthwhile to investigate how these different components of well-being depend on the travel to work (Ettema et al., 2010).

This paper uses data from the German Socio-Economic Panel (SOEP) for the years 2007–2013 to analyse the relation between commuting distance and various measures of subjective well-being. We aim not only to provide evidence on the effect of commuting on well-being, but also to shed some light on the mechanisms through which commuting might affect individual's well-being. We therefore apply, firstly, linear fixed-effects models in which time-invariant idiosyncratic effects are controlled for. All the different aspects of subjective well-being are measured separately to derive a more comprehensive measure of people's quality of life and to allow a better understanding of the relationship between subjective well-being and commuting distance.[3] Second, we use a bootstrapping-based causal mediation analysis to analyse the extent to which several important daily activities (e.g., house work, caregiving, sleeping) serve as potential mediators in any association found between commuting and well-being.

We find that whereas affective well-being measures are hardly influenced by commuting, cognitive well-being measures are lower for people who commute longer. However, in contrast to previous papers in the literature, according to which commuting is bad for overall life satisfaction, we find no evidence that commuting is associated with lower levels of satisfaction with life in general. Our results suggest that longer commutes are rather related to lower satisfaction with family life and leisure time. These findings turn out to be robust against several specifications and sub-samples. Moreover, the multiple mediation analysis indicates that the relation between commuting and satisfaction with leisure and family life can largely be ascribed to changes in daily time use patterns, influenced by the work commute.

The structure of this paper is as follows: The next section reviews related literature. Section 3 presents the data used in the analysis. Section 4 describes the econometric methodology. Section 5 reports results, including several robustness checks, and discusses explanations for the findings. Section 6 concludes the study.

## 2. Related literature

While the literature related to commuting and well-being is diverse, it may be grouped in two streams.[4] The first stream of contributions analyses the association between commuting and cognitive measures of well-being. However, these studies focus almost entirely on life satisfaction and their findings are largely inconclusive.

Using data from the German Socio-Economic Panel (SOEP, 1985–2003), Stutzer and Frey (2008) show that greater commuting times lower self-reported life satisfaction (measured on a scale from 0 to 10). Further, in a robustness check, the authors also find a small negative effect of commuting distance on reported life satisfaction. Stutzer and Frey (2008) conclude that commuting is a stressful activity which does not pay off, a result which they refer to as the 'commuting paradox', as it does not correspond to the predictions from microeconomic theory according to which rational individuals would only choose to spend their time commuting if they are compensated, either in the form of improved job characteristics (including pay) or better housing prospects. Utilising cross-sectional data from the 2010 Canadian General Social Survey, Cycle 24, Hilbrecht et al. (2014) also find that commuting time is associated with lower levels of life satisfaction (measured on a scale from 1 to 10) and an increased sense of time pressure. Hilbrecht et al. (2014) argue that reduced time for physically active leisure and experiences of traffic congestion mediate the association of commute time with life satisfaction. Likewise, Nie and Sousa-Poza (2015), drawing on 2010 cross-sectional data from the China Family Studies, demonstrate that longer commuting times are associated with lower levels of life satisfaction and happiness, partially mediated through reduced sleep time. Analysing panel data from the British Household Panel Survey (BHPS, 1993–2009, subsumed by the Understanding Society Survey from 2009), Wheatley (2014) contributes to the understanding of the interaction between commuting time and levels of satisfaction with working hours, job, and leisure (measured on a scale from 1 to 7) among full-time working men and women in dual career households. Wheatley (2014) shows that only lengthier commutes lower satisfaction with working hours, job, and leisure for men, whereas short and long commuting times reduce satisfaction with leisure for women. Using cross-sectional data from the American Time Use Survey (ATUS, 2012–2013), Morris (2015) indicate that travel time for the purpose of work is negatively correlated with life satisfaction.

Other studies, however, find no evidence that commuting has a negative effect on cognitive measures of well-being.[5] Using data from the BHPS (1996–2008), Dickerson et al. (2014) revisit the debate

[3] This approach is intended to meet the recommendation of the OECD guidelines on measuring subjective well-being (2013), according to which different aspects of subjective well-being should be measured separately.

[4] Besides the small body of research which directly pertains to commuting and subjective well-being, the literature dealing with this relationship is also guided by research on mental and physical health, which are both critical contributors to well-being (Hilbrecht et al., 2014). Many studies address the relation between commuting and health outcomes, showing that commuting is related to increased pulse rate and blood pressure (e.g., White and Rotton, 1998), musculoskeletal disorders (e.g., Koslowsky et al., 1995), fatigue symptoms (e.g., Kageyama et al., 1998), self-perceived stress (e.g., Gottholmseder et al., 2009), reduced sleep time (e.g., Costa et al., 1988), higher sickness absence (e.g., Goerke and Lorenz, 2015) and lower physical and psychological health (measured via GHQ score) (e.g., Roberts et al., 2011; Humphreys et al., 2013; Martin et al., 2014).

[5] Sweet and Kanaroglou (2016), drawing on cross-sectional data from the 2010 General Social Survey (GSS) of Time Use in Canada, find no evidence that total daily travel times are associated with levels of life satisfaction. However, it is unclear whether commuting to work is included in the daily travel time.