Does a residential relocation enable satisfying travel?

Jonas De Vos [a], Kostas Mouratidis [b], Long Cheng [c,*], Md. Kamruzzaman [d]

[a] Bartlett School of Planning, University College London, United Kingdom
[b] Department of Urban and Regional Planning, Norwegian University of Life Sciences, Norway
[c] Geography Department, Ghent University, Belgium
[d] Monash Art Design & Architecture, Monash University, Australia

* Corresponding author: Krijgslaan 281 S8, 9000 Ghent, Belgium
E-mail: long.cheng@ugent.be; ORCID: 0000-0003-3720-4093

Abstract

Transport-related residential self-selection indicates that people try to live in a neighbourhood in line with their travel preferences and needs. Although studies have found that travel attitudes are mostly aligned with urban form characteristics of the residential location, no studies have explored whether people are actually able to travel in their preferred way after having relocated. In this study we analyse whether individuals' travel patterns are consistent with their travel preferences following residential relocation and if this congruency affects their travel satisfaction. Results from 1,650 recently relocated residents in the city of Ghent (Belgium) indicate that most respondents were able to change their travel behaviour in congruence with their travel attitudes. The study found that a decrease in travel duration, distance, car use, and public transport use, and an increase in walking and cycling increased travel satisfaction. This is particularly true when changes in travel behaviour interacted with travel attitudes. Results show that when walking and cycling levels change in line with travel attitudes, travel satisfaction increases strongly. However, the interaction between travel behaviour changes and travel attitudes does not always explain travel satisfaction (improvements). We found, for instance, that individuals with reduced travel durations, despite having a positive attitude towards travel in general, have high levels of travel satisfaction (improvements). The findings indicate that built environment interventions enabling a transport-related self-selection process have the potential to contribute to satisfying travel and thereby to improve subjective well-being of residents.

Keywords: Travel behaviour; Travel satisfaction; Travel attitudes; Built environment; Residential relocation

1. Introduction

Many studies, mainly since the 1990s, have found that the built environment has an important impact on how people travel (see, e.g., Ewing & Cervero (2010) for an overview). People living in low-density suburbs use the car for most of their trips, partly due to distance to destinations being too long to walk or cycle and limited public transport services. People living in compact, mixed-use neighbourhoods on the other hand frequently walk or cycle (due to relatively short distances to destinations) or use public transport (enabled by available public transport services). Besides the built environment, studies (especially since the end of the 1990s) also found that attitudes have an important effect on travel behaviour (e.g., Kitamura et al., 1997). A positive stance towards a certain travel mode is likely to positively influence the use of that mode. However, the effect of attitudes on travel behaviour might also be indirect, through the residential location choice. A person preferring to travel by car might also

prefer living in a suburban-style neighbourhood due to good car accessibility and ample car parking options, while a cycling enthusiast might prefer to live in an urban-style neighbourhood because of short distances and available cycling infrastructure. People trying to live in a neighbourhood in line with their travel preferences and needs is referred to as (transport-related) residential self-selection (Cao et al., 2009). Studies have found that urban residents have more positive attitudes towards public transport and active travel, while suburban residents are more in favour of car use, suggesting that most people are able to live in a neighbourhood stimulating their preferred way of travelling (Bagley & Mokhtarian, 2002; De Vos et al., 2016; Handy et al., 2005).

On the other hand, studies have found that a substantial share of the population does not live in a neighbourhood enabling easy travel with a preferred mode. These studies, conducted in different geographical contexts (including Australia, Europe, and the US) and using various methodologies, mostly found that residential dissonance (i.e., a mismatch between individuals' travel/residential preferences and the chosen residential location) occurred for approximately 25 to 50% of the population (Cho & Rodriguez, 2014; De Vos et al., 2012; Kamruzzaman et al., 2016; Schwanen & Mokhtarian, 2004). Such a dissonance can be explained by the fact that the residential location choice is affected by a wide range of elements and that the choice of where to live is often based on reasons other than transport, such as characteristics of the neighbourhood and dwelling (e.g., Chatman, 2009; Ettema & Nieuwenhuis, 2017; Wolday et al., 2018). Furthermore, elements such as budget limitations, distance to work, and varying preferences within households can constrain people's residential location choice. Residential dissonance can impact people's travel behaviour and dissonant residents are often forced to travel in an undesired way (De Vos et al., 2012; Frank et al., 2007; Huang et al., 2016; Kajoosari et al., 2019; Kamruzzaman et al., 2013; Schwanen & Mokhtarian, 2005), which can negatively affect how people perceive their travel (Cao & Ettema, 2014; De Vos et al., 2016).

Studies exploring how people change their travel behaviour after moving to a new residential location have found that they mostly change it in line with travel stimulated by the built environment, i.e., those moving to compact, mixed-use neighbourhoods walk, cycle and use public transport more often and travel less by car than in their previous neighbourhood, while opposite results were found for people relocating to more suburban-type neighbourhoods (Cao & Ermagun, 2017; De Vos et al., 2018; Giles-Corti et al., 2013; Krizek, 2003; Scheiner & Holz-Rau, 2013; Woods & Ferguson, 2014). Some studies also included travel attitudes in their analyses and found that changes in travel behaviour are both affected by attitudes and changes in the built environment (Aditjandra et al., 2016; Cao et al., 2007; Wang & Lin, 2019), suggesting that most people were able to change their travel behaviour according to their travel attitudes.

Studies have also found that travel experiences are affected by the chosen travel mode and trip duration. People using active travel modes are mostly more satisfied with their trips compared to people using motorised travel modes (especially the bus), while trip duration seems to have a negative effect on satisfaction with travel (e.g., De Vos et al., 2016; Morris & Guerra, 2015; Olsson et al., 2013; Singleton, 2019; St-Louis et al., 2014). The influence of travel distance remains unclear as studies have mostly found conflicting or weak effects (De Vos et al., 2016; Handy & Thigpen, 2019; Mokhtarian et al., 2015; Mouratidis et al., 2019; Ye & Titheridge, 2017). Travel satisfaction is also affected by travel attitudes. Multiple studies have found that a positive attitude towards the chosen mode positively influences satisfaction with a trip using that mode, just as positive attitudes towards travel in general positively affect travel satisfaction, independent of the chosen travel mode (De Vos et al., 2016; De Vos & Witlox, 2016; Mokhtarian et al., 2015; St-Louis et al., 2014; Ye & Titheridge, 2017; Ye et al., 2020). It is possible that satisfaction with travel might change in case of a new residential or work

location, since such a change is often accompanied by changes in trip distance and therefore also trip duration and travel mode choice. Four recent studies have found that shorter distances and durations, and higher levels of active travel positively impact travel satisfaction in case of a workplace relocation (Gerber et al., 2020; Schneider & Willman, 2019), or residential relocation (De Vos et al., 2019; Wang et al., 2020). However, these studies did not take into account travel attitudes. Since studies have found that being able to travel with a preferred travel mode positively affects travel satisfaction (e.g., De Vos, 2018; St-Louis et al., 2014; Ye & Titheridge, 2017), it is likely that especially people with positive attitudes towards active travel will be more satisfied with travel in case of increased walking and cycling. However, existing studies incorporating travel attitudes have used cross-sectional data, making it impossible to capture how changes in travel behaviour impact travel satisfaction.

In this study we successively will analyse (i) to what extent people live in a neighbourhood in line with their travel preferences, (ii) whether recent movers changed their travel patterns according to their travel attitudes, and (iii) whether a change in travel behaviour in line with travel attitudes results in satisfying travel. Although previous studies have started exploring the interactions between travel behaviour, attitudes, satisfaction, and the built environment, none of them have analysed (changes in) travel satisfaction following residential relocation while taking into account travel preferences. We hypothesize that individuals with a positive attitude towards a certain mode have high levels of travel satisfaction if they are able to increase its use, while they are likely to have low satisfaction levels when they decrease its use. Conversely, for individuals with a negative attitude, it can be expected that travel satisfaction is higher when the use of that mode decreases, while satisfaction reduces with increasing use of the mode (Figure 1). Besides the links between mode-specific attitudes and changes in the use of that mode, we will also analyse the links between attitudes towards travel in general (also referred to as travel-liking attitudes) and changes in travel distance and duration, as it can be expected that, for instance, a person with a negative attitude towards travel will become more satisfied with travel when (s)he will be able to reduce travel distances and durations. Findings from this study – using a unique quasi-longitudinal research design – provide insights into how a residential relocation can, apart from affecting travel behaviour, influence satisfaction with new travel patterns. Such insights enable to devise policy recommendations that not only promote sustainable travel patterns, but also enable satisfying travel enhancing people's subjective well-being. The remainder of this paper is structured as follows. Section 2 describes the data collection method and key variables used in this study. The main results are described in Section 3, while a discussion and conclusion are provided in Section 4.

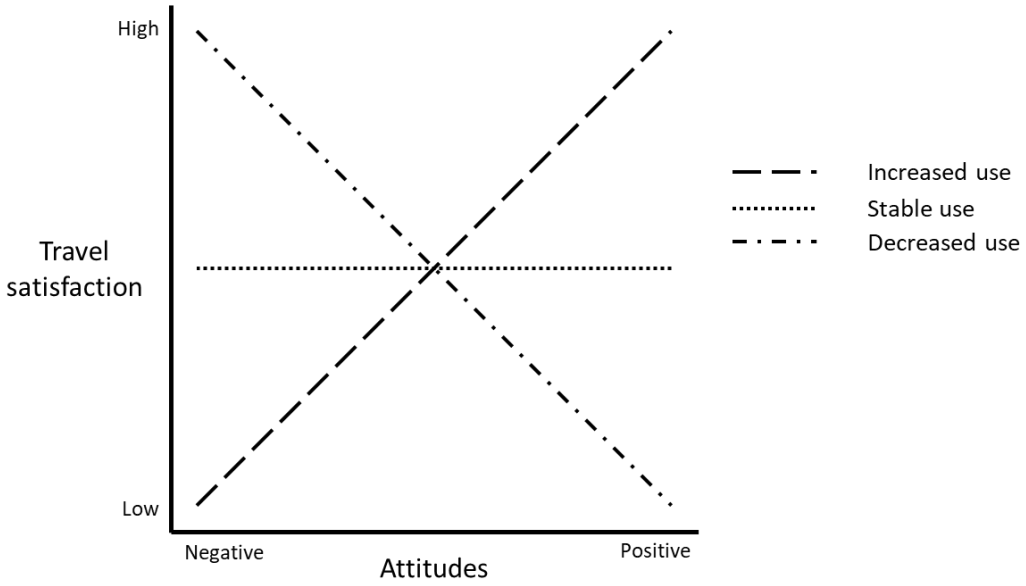

Figure 1. Hypothesized continuum of travel satisfaction according to travel attitudes and changes in travel behaviour.

2. Data and methodology

2.1 Neighbourhood selection and sample recruitment

For this study we use data from a 2017 online survey on travel behaviour of recently relocated residents within the city of Ghent, Belgium (260,000 inhabitants). Within this city, two internally homogenous sets of urban and suburban neighbourhoods were selected. Approximately 101,300 people live in these neighbourhoods, accounting for 39.3% of all residents in the city of Ghent (situation 2017). The urban neighbourhoods – located around the central business district – are characterized by a relatively high population density (8,000 inhabitants per km^2), mixed land uses and can be regarded as low-traffic areas with good public transport services. The suburban neighbourhoods – located around three to six kilometres from the city centre – have a considerably lower average population density (1,800 inhabitants per km^2), lower diversity, good car accessibility and limited public transport services. In February 2017, a total of 9,979 letters with an invitation to participate in an online survey were distributed to all households that relocated in the last two years (i.e., in 2015 and 2016) to the selected neighbourhoods. Eventually, 1650 respondents completed the survey, resulting in a response rate of 16.5%. The relatively low response rate (though higher than many related studies (e.g., De Vos et al., 2016; Ettema & Nieuwenhuis, 2017; Kajosaari et al., 2019; Wolday et al., 2018)) may result in certain levels of self-selection bias.[1] However, no statements in this regard can be made since we do not have information regarding travel attitudes and satisfaction of the population living in the selected neighbourhoods. For more information on the neighbourhood selection and sample recruitment, see De Vos et al. (2018, 2019).

Table 1 shows that most respondents in our sample live in urban neighbourhoods (67.4%), are highly educated (77.2%), and are (mainly full-time) employed (83.5%). There are slightly more men than women in the sample (52.1% versus 47.9%) and most respondents live together as a couple without (resident) children (37.3%) or are single (29.9%). Almost half of the respondents (46.8%) lives in a household with a monthly net income higher than €2,500. Respondents in our sample are noticeably

[1] Self-selection bias occurs when participants differ from invited non-participants, since people with an interest in the survey topic may be more inclined to participate than others.

young, as almost half of them (49.5%) are younger than 30 years old. This is, however, not that surprising since young adults are – compared to older adults – more likely to relocate due to a considerable amount of life events taking place during early adulthood (e.g., entry into the labour market, formation of a household with partner, having children). In contrast to young adults being overrepresented, other socio-demographics of our respondents (e.g., income, gender) are comparable to the total population of the selected neighbourhoods (http://gent.buurtmonitor.be). Although we might not have a fully representative sample of the total population of selected neighbourhoods, our sample is probably representative for the group of people relocating to these neighbourhoods (since all recently relocated residents in the selected neighbourhoods were invited to participate). Furthermore, we do have a relatively large sample size, making it possible to estimate relationships with ample confidence.

Table 1. Respondents' socio-demographic characteristics (N = 1,650)

Socio-demographics	%	N
Personal characteristics		
Age distribution		
18-29	49.5	817
30-44	29.1	480
45-59	13.4	221
60+	7.9	131
Gender		
Female	47.9	790
Male	52.1	860
Education		
Low (No university (college) degree)	22.8	376
High (University (college) degree)	77.2	1274
Job status		
Full time	72.7	1200
Part time	10.7	177
Unemployed	6.4	106
Retired	6.9	114
Student	3.2	53
Household characteristics		
Household composition		
Single	29.9	494
Single parent	5.9	97
Couple without children	37.3	615
Couple with children	14.6	241
Other (e.g., living with parents, with friends)	12.3	203
Household net income/month		
< €1,500	13.6	215
€1,500 - €2,499	39.7	630
€2,500 - 3,499	19.1	303
€3,500 +	27.6	437
Residential location		
Urban neighbourhood	67.5	1113
Suburban neighbourhood	32.5	537
Household car ownership		
0	25.5	421
1	54.3	896
>1	20.2	333

Note: One respondent did not report his/her age, while 65 respondents did not report their income.

2.2 Key variables

2.2.1 Travel attitudes

In order to analyse respondents' attitudes towards various travel modes, we asked them – on a 5-point scale from *totally disagree* (-2) to *fully agree* (+2) – to what extent they agree on the following four statements: "I like to (i) travel by car, (ii) travel by public transport, (iii) cycle, and (iv) walk". The highest average scores were found for cycling (1.11), followed by walking (1.05). The attitudes towards car use and especially public transport use are considerably lower (average scores are 0.44 and -0.09, respectively).

We also measured attitudes towards travel in general – or travel-liking attitudes – by asking respondents to what extent they agree – on a 5-point scale from *totally disagree* (-2) to *fully agree* (+2) – on the following five statements: *I like exploring new places; The only good thing about travelling is reaching my destination; I like to travel; I try to avoid making trips;* and *Travel time is wasted time*. Since the internal consistency (i.e., the average inter-item correlation) of the scores on statements 1 and 3, and the reverse scores of statements 2, 4 and 5, is within the acceptable range (i.e., cronbach's alpha = 0.71), we averaged the scores in order to create one variable representing a positive attitude towards travel in general. The average score on this variable is 0.70, indicating that respondents have relatively positive attitude towards travel in general.

For the analyses in Sections 3.1 and 3.2, four groups were created for each type of attitudes (i.e. mode-specific and travel in general): Negative, Neutral, Positive and Very positive. Respondents indicating to have very negative and negative attitudes towards a certain travel mode were grouped together, since the group of people being very negative was very small (especially for walking and cycling). For travel-liking attitudes, the respondents were grouped as follows: Negative: average scores below 0, Neutral: score from 0.0 to 0.5, Positive: scores from 0.5 to 1, Very positive: scores higher than 1. Given the overall positive nature of travel-liking attitudes, we have chosen to group respondents not purely based on the attitude scores, but also according to the distribution of respondents (to avoid having groups of respondents with negative to neutral attitudes being too small). As a result, our 'neutral' respondents actually have slightly positive attitudes towards travel in general. In section 3.3, binary variables of attitudes were used in the analyses, by grouping negative and neutral (score 0), and positive and very positive (score 1).

2.2.2 Change in travel behaviour

For both commute and leisure trips, we asked respondents to indicate to what extent they changed travel distance, travel duration and the use of various travel modes (car, public transport, cycling and walking) after they relocated, on a 5-point scale going from *decreased a lot* (-2) to *increased a lot* (+2). On average, respondents decreased their car use (average scores are -0.21 and -0.26 for commute and leisure trips respectively), decreased public transport use for commute trips (-0.18), yet slightly increased its use for leisure trips (0.06). Overall, cycling has increased (average scores are 0.13 and 0.20 for commute and leisure trips respectively), while walking increased only for leisure trips (average scores are 0.00 and 0.35 for commute and leisure trips respectively). Most respondents also indicated that their travel time and travel distance have decreased (average scores for travel time: -0.30 and -0.24, and travel distance: -0.27 and -0.25, for commute and leisure travel respectively). The decrease in car use, travel distance and travel duration and increase in active travel can partly be explained by the overrepresentation of urban respondents, who (not surprisingly) switched more to active and short trips compared to those moving to suburban neighbourhoods (see, e.g., De Vos et al., 2018).

2.2.3 Travel satisfaction

Satisfaction with both commute and leisure travel was measured by asking respondents to what extent they agree on six statements, on a 5-point scale from *totally disagree* (-2) to *fully agree* (+2): *I am satisfied with my commute trips [leisure trips]; When I think about my commute trips [leisure trips], the positive aspects outweigh the negative; I do not want to change anything about my commute trips [leisure trips]; My commute trips [leisure trips] provide me with positive feelings; My commute trips [leisure trips] go well;* and *I could not imagine my commute trips [leisure trips] to go any better.* Since the internal consistency of the six items measuring travel satisfaction with commute and leisure trips are high (Cronbach's alpha are 0.94 and 0.93, respectively), we averaged the scores on the six statements to create a variable representing satisfaction with commute trips and a variable representing satisfaction with leisure trips. Respondents are relatively satisfied with their travel, somewhat less satisfied with commute trips than with leisure trips (average scores are 0.57 and 0.72, respectively).

Respondents were also asked to indicate how their travel satisfaction with commute and leisure trips changed after they relocated, on a 5-point scale from *far less satisfied* (-2) to *far more satisfied* (+2). Overall, respondents indicate that they have become more satisfied with their travel after they relocated (average scores are 0.44 and 0.40 for commute and leisure trips, respectively). These results seem in line with studies indicating that people choose a residential location based on travel preferences (i.e., transport-related self-selection), enabling them to have satisfying travel patterns (e.g., Cao & Ettema, 2014; De Vos & Witlox, 2016; Wang et al., 2020).

2.3 Methodology

We conducted 24 two-way analyses of variance (ANOVAs) to identify whether (a change in) travel satisfaction is affected by a change in travel behaviour in line with travel attitudes (i.e., six for leisure travel satisfaction, six for commute travel satisfaction, six for changes in leisure travel satisfaction, and six for changes in commute travel satisfaction) (see Section 3.3). Doing so, we can analyse what affects (changes in) travel satisfaction most, i.e., travel attitudes, changes in travel behaviour, or interaction effects (i.e., changes in travel behaviour in line with travel attitudes).

In a second stage, we estimated ordered logistic regressions to identify the extent to which changes in behaviour or changes in behaviour according to travel attitudes affected (changes in) leisure and commute travel satisfaction.[2] Since behavioural changes according to attitudes are derived from changes in behaviour (and attitudes) we have performed two separate models, model 1 including changes in travel behaviour and model 2 including behavioural changes according to attitudes. As a result, we have performed eight ordered regressions (i.e., two for satisfaction with leisure trips, two for satisfaction with commute trips, two for changes in satisfaction with leisure trips, and two for changes in satisfaction with commute trips) (see Section 3.3). In order to capture behavioural changes in line with attitudes we created new variables by multiplying scores on changes in behaviour (i.e., from -2 to +2) with scores on attitudes (i.e., from -2 to +2), resulting in variables ranging from -4 (representing considerable behavioural changes inconsistent with attitudes) to +4 (representing considerable behavioural changes in line with attitudes). The following socio-demographics were included as independent variables: Age (in years); Gender (0 = man, 1 = woman); Education (0 = no

[2] The dependent variables for the ordered logistic regressions were (i) satisfaction with leisure travel, (ii) satisfaction with commute travel (for both variables: 1 = average travel satisfaction score ≤ 0; 2 = 0 < score ≤ 1; 3 = score > 1), (iii) change in leisure travel satisfaction, and (iv) change in commute travel satisfaction (for both variables: -2 = *far less satisfied*; -1 = *less satisfied*; 0 = *no change*; 1 = *more satisfied*; 2 = *far more satisfied*).

University (college) degree, 1 = University (college) degree); Income (0 = household net income/month < €2500, 1 = household net income/month ≥ €2500); Children (0 = no resident child(ren), 1 = resident child(ren)); residential location (0 = suburban, 1 = urban); and Car ownership (0 = household car ownership = 0, 1 = household car ownership ≥ 1). Travel attitudes were not included as independent variables in the models since there is no reason to expect an effect of travel attitudes on travel satisfaction (changes) independent from changes in behaviour.[3]

3. Results

3.1 Do people live in a neighbourhood in line with their travel preferences?

Table 2 shows that respondents are not randomly distributed according to travel attitudes and the residential location. Those with a negative (to neutral) attitude towards car use and a (very) positive attitude towards public transport and especially active travel tend to live more frequently in urban areas, while those with opposite attitudes live more often in suburban areas. Those with a positive attitude towards travel in general often tend to live in urban neighbourhoods. This outcome is somewhat surprising as it might have been expected that those who do not like to travel might prefer to live in an urban neighbourhood where it is often easier to limit travel time and especially travel distance (De Vos & Witlox, 2016). The found results can be partly explained by the fact that travel-liking attitudes are positively correlated with cycling and especially walking attitudes.[4] Table 3 shows that urban respondents have significantly more positive attitudes towards active travel and travel in general and more negative car attitudes compared to suburban respondents. In sum, the results suggest that most respondents have been able to select a residential neighbourhood type in line with their travel preferences.

[3] Although we did not expect effects from travel attitudes on travel satisfaction (changes) independent from (changes in) travel behaviour, the two-way ANOVAs presented in Figures 4 and 5 (Section 3.3) show that significant effects exist. Results from bivariate correlation analyses (Spearman's rho) indicate that travel-liking attitudes are positively correlated with travel satisfaction (improvements). Cycling attitudes are positively correlated with satisfaction with both leisure and commute travel, while walking attitudes are positively correlated with (improvements in) satisfaction with leisure travel. Car attitudes are negatively correlated with changes in leisure travel satisfaction. The reason for these correlations might be as follows. It can be assumed that travel-liking attitudes are positively correlated with travel satisfaction (changes) since both constructs relate to a degree of a positive or negative evaluation of performed trips (see, e.g., De Vos, 2019). Some existing studies have confirmed this and found that travel liking has a positive effect on travel satisfaction, independent from the chosen travel mode, travel distance and duration (De Vos & Witlox, 2016; St-Louis et al., 2014; Ye & Titheridge, 2017; Ye et al., 2020). Since especially walking and cycling attitudes are positively correlated with travel-liking attitudes, we also found positive correlations between walking/cycling attitudes and travel satisfaction (changes).

[4] The spearman's rho correlation coefficient of travel liking is: -0.07 with car attitudes, 0.09 with public transport attitudes, 0.12 with cycling attitudes, and 0.23 with walking attitudes.

Table 2. Crosstabs of travel attitudes and residential location (including column percentage per attitude)

		Negative	Neutral	Positive	Very positive	Total	P-value χ^2 test
Car attitude	Urban	297 (78.4%)	261 (74.1%)	298 (63.5%)	190 (51.8%)	1046 (66.8%)	0.00
	Suburban	82 (21.6%)	91 (25.9%)	171 (36.5%)	177 (48.2%)	521 (33.2%)	
	Total	379 (100%)	352 (100%)	469 (100%)	367 (100%)	1567 (100%)	
PT attitude	Urban	419 (64.5%)	300 (70.9%)	258 (72.1%)	134 (65.0%)	1111 (67.9%)	0.03
	Suburban	231 (35.5%)	123 (29.1%)	100 (27.9%)	72 (35.0%)	526 (32.1%)	
	Total	650 (100%)	423 (100%)	358 (100%)	206 (100%)	1637 (100%)	
Cycling attitude	Urban	135 (63.7%)	93 (54.1%)	236 (65.7%)	620 (71.8%)	1084 (67.5%)	0.00
	Suburban	77 (36.3%)	79 (45.9%)	123 (34.3%)	244 (28.2%)	523 (32.5%)	
	Total	212 (100%)	172 (100%)	359 (100%)	864 (100%)	1607 (100%)	
Walking attitude	Urban	64 (40.3%)	140 (53.4%)	349 (68.2%)	556 (78.6%)	1109 (67.6%)	0.00
	Suburban	95 (59.7%)	122 (46.6%)	163 (31.8%)	151 (21.4%)	531 (32.4%)	
	Total	159 (100%)	262 (100%)	512 (100%)	707 (100%)	1640 (100%)	
Travel liking	Urban	116 (55.8%)	236 (63.4%)	413 (68.4%)	348 (74.7%)	1113 (67.5%)	0.00
	Suburban	92 (44.2%)	136 (36.6%)	191 (31.6%)	118 (25.3%)	537 (32.5%)	
	Total	208 (100%)	372 (100%)	604 (100%)	466 (100%)	1650 (100%)	

Note: Since not all respondents completed the questions regarding mode-specific attitudes (e.g., because they never use a certain mode), the total sum of respondents for the mode-specific attitudes does not equal 1650.

Table 3. Average attitude score (min.: -2; max.: +2) according to residential location (bold = significantly different at $p < 0.05$; based on one-way ANOVAs)

	Urban	Suburban
Car attitude	**0.26**	**0.79**
PT attitude	-0.05	-0.17
Cycling attitude	**1.18**	**0.96**
Walking attitude	**1.25**	**0.65**
Travel liking	**0.76**	**0.58**

3.2 Have recent movers changed their travel patterns according to their travel attitudes?

Figures 2 and 3 clearly show that respondents with a negative attitude towards a certain travel mode were often able to reduce its use after relocation, while those with a positive mode attitude were often able to increase its use. However, differences exist according to mode and purpose. Around 40% of respondents disliking car use and cycling were able to reduce its use for leisure and commute trips, while this is – especially for leisure trips – considerably lower for those disliking walking and public transport. For those with positive mode attitudes, the situation is different. Respondents with a (very) positive attitude towards public transport and active travel were often able to increase its use, especially for leisure travel, while this was only the case to a limited extent for those preferring the car. Respondents with a negative attitude towards travel were mostly not able to reduce their travel distances and durations to a higher extent than those with positive travel-liking attitudes. Only for the duration of leisure trips we found that – based on chi-square tests – those with a negative attitude were more likely to increase and less likely to decrease their duration compared to those with a more positive attitude. This somewhat surprising outcome might be the result of a negative effect of long durations (of leisure trips) on attitudes towards travel in general, an effect that previously has been found by Ory and Mokhtarian (2005).

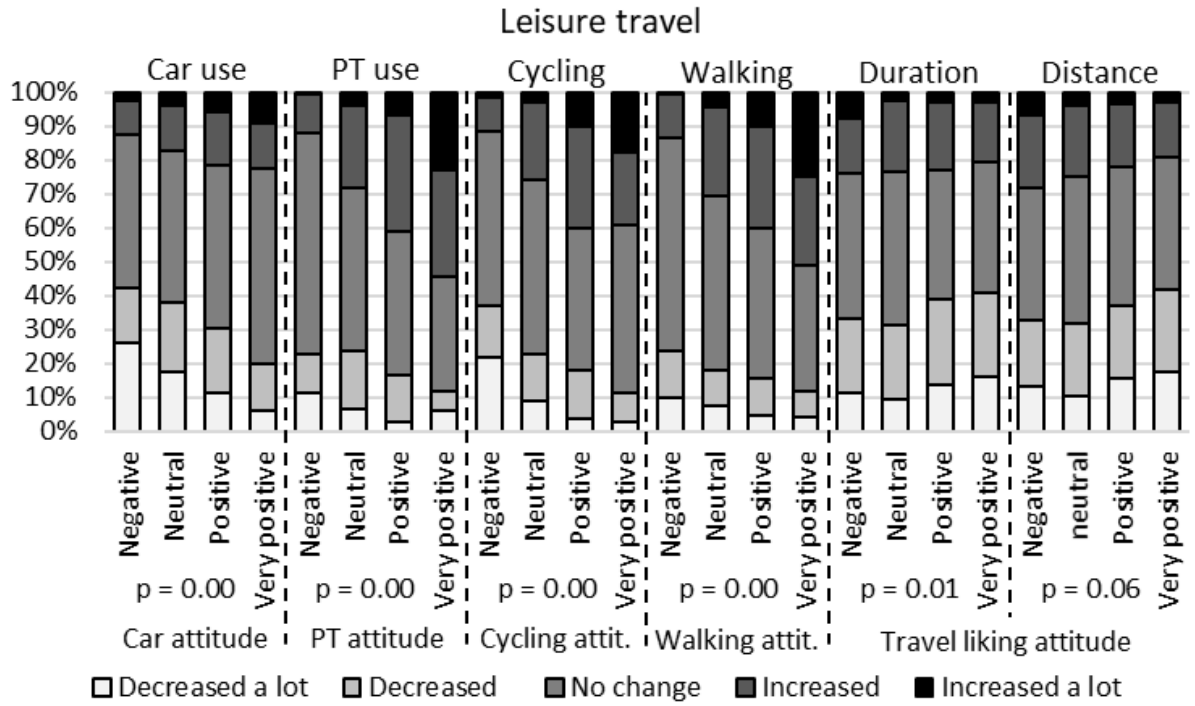

Figure 2. Changes in mode choice, duration and distance for leisure travel according to travel attitudes (p-values are retrieved from chi-square tests).

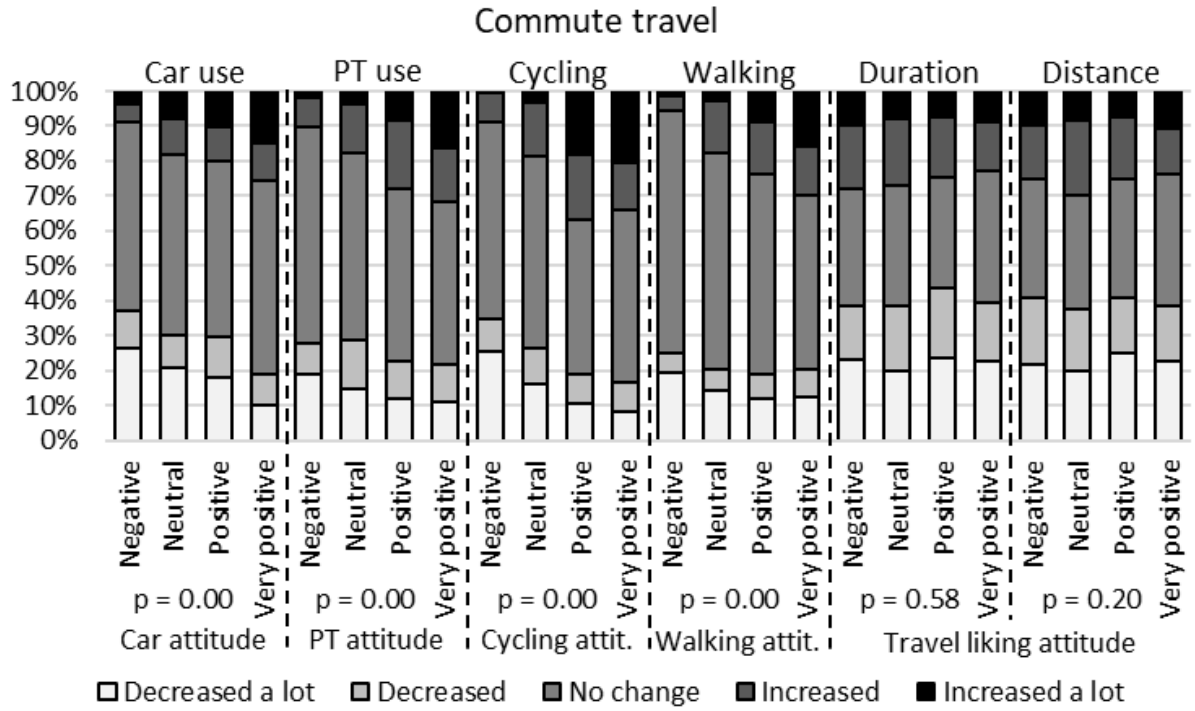

Figure 3. Changes in mode choice, duration and distance for commute travel according to travel attitudes (p-values are retrieved from chi-square tests).

3.3 Does a change in travel behaviour in line with travel attitudes result in satisfying travel?

3.3.1 Travel satisfaction

Results from two-way ANOVAs analysing the effects from travel attitudes and changes in travel behaviour on travel satisfaction are provided in Figure 4. Travel satisfaction with leisure trips is

positively affected by a decrease in car use, travel duration and travel distance, an increase in walking, and positive attitudes towards public transport, walking and travel in general. Interaction effects were found for cycling, indicating that respondents who increase their cycling frequency have higher travel satisfaction scores compared to those reducing their cycling frequency, but only for those with a positive cycling attitude. The outcomes regarding satisfaction with commute trips are similar, although more strongly affected by changes in behaviour. An increase in walking and cycling and a decrease in car use, public transport use, travel distance and travel duration result in high and increased levels of travel satisfaction. Travel attitudes play a less important role. For example, people with car-liking attitudes who increased car use still had lower commute satisfaction than people with car-liking attitudes who decreased car use. Only attitudes towards travel in general had a significant (positive) effect on travel satisfaction. No significant interaction effects between attitudes and change in behaviour were found for commute satisfaction.

Results from the ordered logistic regression shown in Table 4 indicate that an increase in public transport use and travel duration negatively impact satisfaction with leisure trips, while an increase in walking and a decrease in duration have a positive effect. Changing walking frequency in line with walking attitudes positively affects satisfaction with leisure trips. A duration change in line with travel-liking attitudes, on the other hand, negatively impacts satisfaction with leisure trips. This might be explained by the fact that especially those with positive (negative) travel-liking attitudes and those who decreased (increased) their duration have high (low) satisfaction levels (see Figure 4). Also older people, women and those that have moved to urban areas are more likely to be satisfied with leisure trips. Satisfaction with commute trips is positively affected by a decrease in travel duration and especially car use, while a decrease in cycling negatively impacts satisfaction levels (Table 5). Changing cycling frequency in line with cycling attitudes positively influences commute satisfaction, while a change in duration in line with travel liking negatively impacts satisfaction. Age, being a woman, and not owning a car also positively affect commute travel satisfaction.

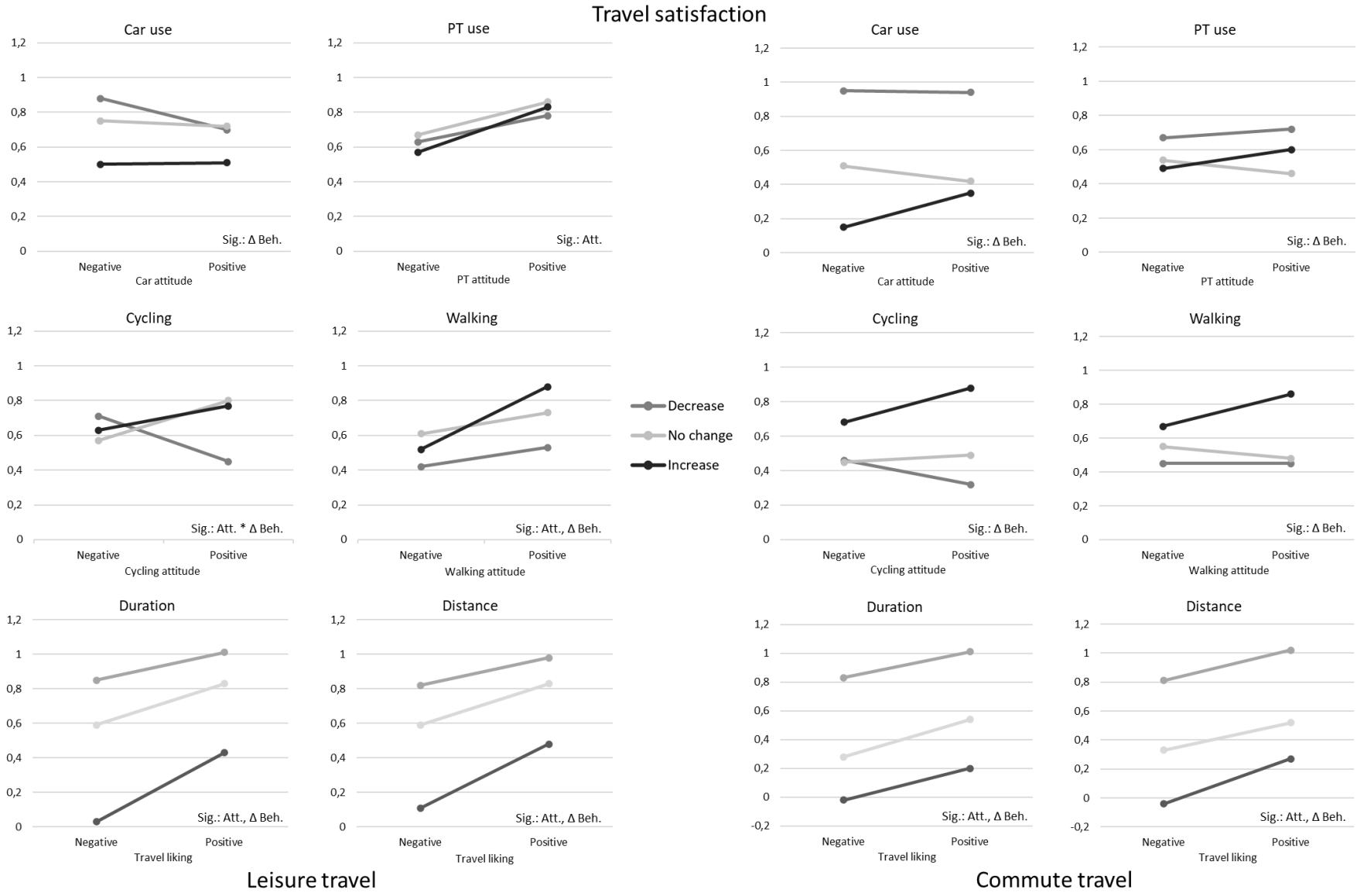

Figure 4. Travel satisfaction of leisure travel (left) and commute travel (right) according to travel attitudes (att.) and change in travel behaviour (Δ beh.)

Table 4. Ordered logistic regressions for satisfaction with leisure trips

Leisure travel satisfaction	**Model 1**	**Model 2**
Socio-demographics		
Age	**0.02** (19.53)	**0.01** (9.33)
Gender (woman)	**0.29** (8.52)	**0.28** (7.66)
Education	-0.06 (0.20)	-0.01 (0.00)
Income	0.13 (1.43)	0.15 (2.08)
Children	0.11 (0.70)	0.13 (0.96)
Residential location (urban)	**0.27** (4.69)	**0.35** (8.46)
Car ownership	-0.23 (3.63)	-0.22 (3.13)
Change in travel behaviour		
Car use leisure (ref. = no change)		
Decrease	0.12 (0.89)	
Increase	-0.07 (0.20)	
PT use leisure (ref. = no change)		
Decrease	-0.09 (0.39)	
Increase	**-0.27** (4.75)	
Cycling leisure (ref. = no change)		
Decrease	-0.25 (2.74)	
Increase	-0.22 (2.97)	
Walking leisure (ref. = no change)		
Decrease	0.08 (0.20)	
Increase	**0.27** (4.56)	
Duration leisure (ref. = no change)		
Decrease	**0.42** (4.80)	
Increase	**-0.73** (13.22)	
Distance leisure (ref. = no change)		
Decrease	0.07 (0.14)	
Increase	-0.09 (0.20)	
Behavioral change in line with attitudes		
Car change in line with car attitudes		-0.01 (0.07)
PT change in line with PT attitudes		0.03 (0.34)
Cycling change in line with cycling attitudes		0.06 (3.65)
Walking change in line with walking attitudes		**0.13** (13.26)
Duration change in line with travel liking		**-0.28** (9.00)
Distance change in line with travel liking		-0.04 (0.19)
N	1584	1527
-2 Log Likelihood (final)	**3052.46**	**2988.06**
Pearson chi-square	2971.65	2902.42
Nagelkerke R^2	0.12	0.09

Note: Wald statistics are shown in brackets; bold = significant at $p < 0.05$.

Table 5. Ordered logistic regressions for satisfaction with commute trips

Commute travel satisfaction	**Model 1**	**Model 2**
Socio-demographics		
Age	**0.01** (6.00)	**0.01** (4.06)
Gender (woman)	**0.23** (4.81)	**0.24** (5.26)
Education	0.04 (0.09)	0.08 (0.37)
Income	0.05 (0.20)	0.01 (0.01)
Children	0.07 (0.24)	0.09 (0.40)
Residential location (urban)	-0.20 (2.50)	-0.06 (0.28)
Car ownership	**-0.36** (7.57)	**-0.33** (6.53)
Change in travel behaviour		
Car use commute (ref. = no change)		
Decrease	**0.51** (12.73)	
Increase	-0.14 (0.71)	
PT use commute (ref. = no change)		
Decrease	0.20 (2.04)	
Increase	-0.17 (1.22)	
Cycling commute (ref. = no change)		
Decrease	**-0.33** (4.12)	
Increase	0.10 (0.51)	
Walking commute (ref. = no change)		
Decrease	0.01 (0.00)	
Increase	0.09 (0.41)	
Duration commute (ref. = no change)		
Decrease	**0.42** (4.27)	
Increase	-0.33 (2.45)	
Distance commute (ref. = no change)		
Decrease	0.37 (3.32)	
Increase	-0.19 (0.77)	
Behavioral change in line with attitudes		
Car change in line with car attitudes		-0.05 (1.56)
PT change in line with PT attitudes		0.03 (0.68)
Cycling change in line with cycling attitudes		**0.13** (18.38)
Walking change in line with walking attitudes		0.06 (3.37)
Duration change in line with travel liking		**-0.32** (9.73)
Distance change in line with travel liking		-0.09 (0.79)
N	1377	1349
-2 Log Likelihood (final)	**2761.85**	**2754.97**
Pearson chi-square	2600.18	2575.17
Nagelkerke R^2	0.16	0.12

Note: Wald statistics are shown in brackets; bold = significant at $p < 0.05$.

3.3.2 Changes in travel satisfaction

The two-way ANOVAs shown in Figure 5 indicate that changes in leisure travel satisfaction are positively affected by a decrease in car use, public transport use, travel distance and travel duration, and by an increase in walking and cycling. Attitudes towards walking and travel in general have positive effects on changes in leisure travel satisfaction, while car attitudes have negative effects. Interaction effects were found for walking and cycling; Increasing walking and cycling levels result in improved satisfaction levels, especially for those with positive walking/cycling attitudes. Changes in commute satisfaction are mainly affected by changes in travel behaviour. Reductions in motorised travel, travel distance and duration, and increased use of active travel result in improved levels of commute satisfaction. Only walking attitudes and travel-liking attitudes seem to positively affect changes in commute satisfaction (Figure 5).

The ordered logistic regressions shown in Table 6 indicate that decreases in car use, travel duration and travel distance have a positive effect on improved levels of leisure travel satisfaction since the relocation. Improvements in travel satisfaction of leisure trips are also positively affected by increased levels of walking and cycling and decreased levels of travel distance and duration. Changes in car use, but especially walking and cycling in line with the respective attitudes have strong positive effects on improvements in leisure travel satisfaction. A change in duration in line with travel-liking attitudes has a negative impact on changes in travel satisfaction. Change in leisure travel satisfaction is also positively affected by age, gender (being a woman), being poorly educated, and living in an urban neighbourhood. Improvements in satisfaction of commute trips are positively affected by decreased levels of public transport use, distance, and especially car use and duration (Table 7). An increase in travel duration is likely to have resulted in deteriorated levels of commute satisfaction since the relocation. Changing levels of public transport use, walking, and especially changing cycling frequency in line with respective attitudes positively influences improved levels of satisfaction with commute trips, while a change of duration in line with travel-liking attitudes has a strong negative impact on changes in satisfaction.

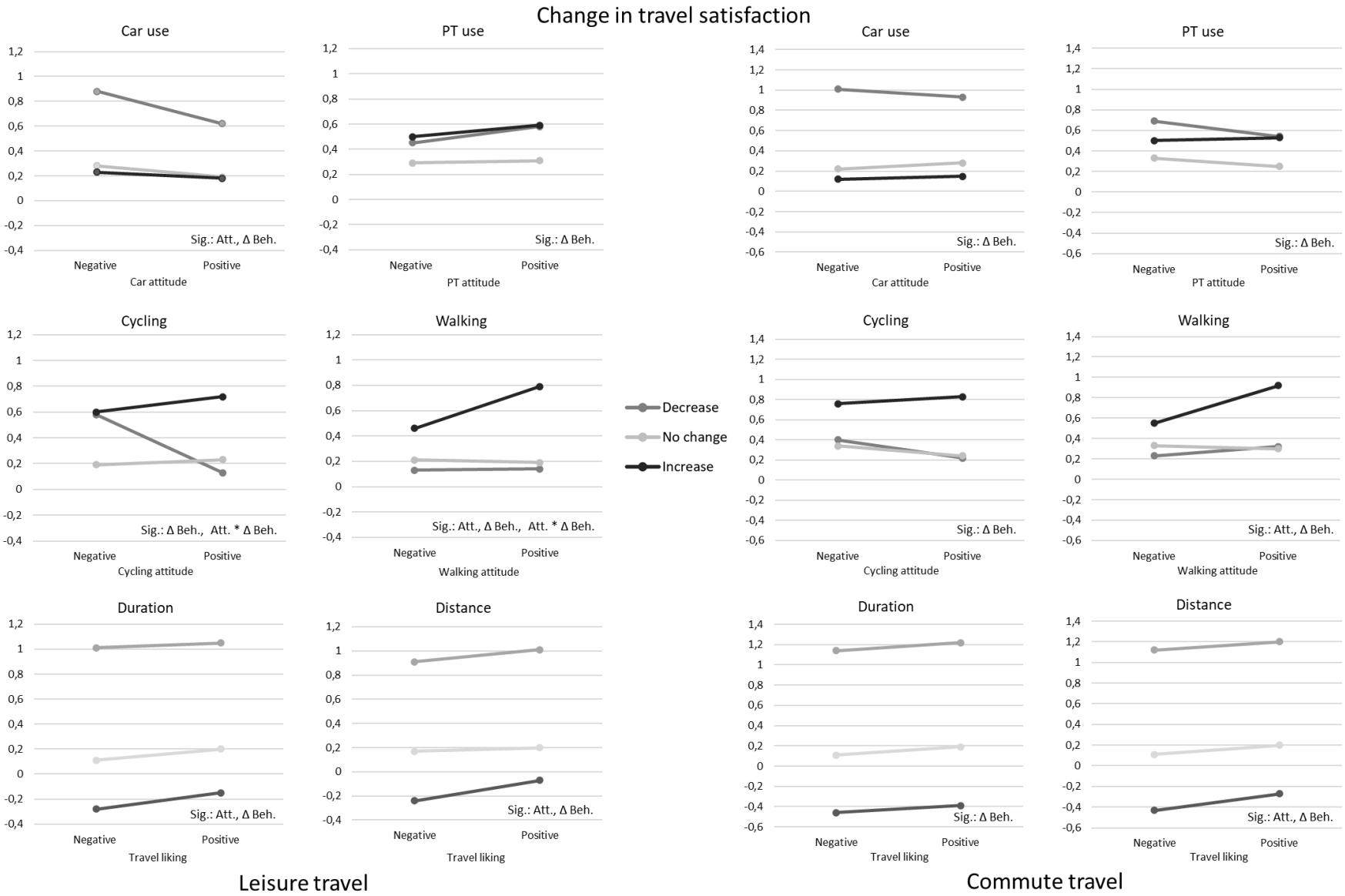

Figure 5. Travel satisfaction changes of leisure (left) and commute travel (right) according to travel attitudes (att.) and change in travel behaviour (Δ beh.)

Table 6. Ordered logistic regressions for changes in satisfaction with leisure trips

Change in leisure travel satisfaction	**Model 1**	**Model 2**
Socio-demographics		
Age	**0.01** (6.98)	0.00 (1.11)
Gender (woman)	0.17 (2.69)	**0.23** (5.04)
Education	**-0.36** (7.54)	-0.26 (3.84)
Income	0.01 (0.01)	-0.01 (0.02)
Children	0.25 (3.05)	0.27 (3.75)
Residential location (urban)	**0.30** (5.20)	**0.61** (22.98)
Car ownership	-0.19 (2.29)	-0.06 (0.25)
Change in travel behaviour		
Car use leisure (ref. = no change)		
Decrease	**0.40** (9.05)	
Increase	0.16 (0.96)	
PT use leisure (ref. = no change)		
Decrease	0.06 (0.17)	
Increase	0.09 (0.47)	
Cycling leisure (ref. = no change)		
Decrease	0.07 (0.67)	
Increase	**0.38** (8.16)	
Walking leisure (ref. = no change)		
Decrease	-0.10 (0.34)	
Increase	**0.48** (12.75)	
Duration leisure (ref. = no change)		
Decrease	**1.68** (70.75)	
Increase	**-0.84** (14.55)	
Distance leisure (ref. = no change)		
Decrease	**0.47** (5.63)	
Increase	**-0.50** (5.21)	
Behavioral change in line with attitudes		
Car change in line with car attitudes		**0.09** (4.89)
PT change in line with PT attitudes		0.00 (0.00)
Cycling change in line with cycling attitudes		**0.30** (73.91)
Walking change in line with walking attitudes		**0.24** (47.05)
Duration change in line with travel liking		**-0.72** (55.88)
Distance change in line with travel liking		-0.13 (2.05)
N	1584	1527
-2 Log Likelihood (final)	**3095.40**	**3201.45**
Pearson chi-square	**11325.31**	**10352.99**
Nagelkerke R^2	0.43	0.34

Note: Wald statistics are shown in brackets; bold = significant at $p < 0.05$.

Table 7. Ordered logistic regressions for changes in satisfaction with commute trips

Change in commute satisfaction	**Model 1**	**Model 2**
Socio-demographics		
Age	0.06 (0.92)	0.00 (0.29)
Gender (woman)	0.07 (0.41)	0.14 (1.78)
Education	-0.02 (0.02)	0.07 (0.26)
Income	-0.02 (0.03)	-0.19 (3.02)
Children	-0.07 (0.19)	-0.02 (0.01)
Residential location (urban)	-0.20 (2.38)	0.13 (1.04)
Car ownership	-0.20 (2.07)	-0.01 (0.00)
Change in travel behaviour		
Car use commute (ref. = no change)		
Decrease	**0.91** (37.57)	
Increase	-0.10 (0.32)	
PT use commute (ref. = no change)		
Decrease	**0.51** (12.45)	
Increase	0.20 (1.53)	
Cycling commute (ref. = no change)		
Decrease	-0.17 (1.02)	
Increase	0.01 (0.00)	
Walking commute (ref. = no change)		
Decrease	0.04 (0.06)	
Increase	0.15 (0.98)	
Duration commute (ref. = no change)		
Decrease	**1.82** (69.57)	
Increase	**-1.55** (42.10)	
Distance commute (ref. = no change)		
Decrease	**0.92** (18.55)	
Increase	-0.26 (1.35)	
Behavioral change in line with attitudes		
Car change in line with car attitudes		0.00 (0.00)
PT change in line with PT attitudes		**0.08** (3.89)
Cycling change in line with cycling attitudes		**0.21** (46.91)
Walking change in line with walking attitudes		**0.10** (9.63)
Duration change in line with travel liking		**-0.86** (65.85)
Distance change in line with travel liking		-0.07 (0.43)
N	1377	1349
-2 Log Likelihood (final)	**2754.82**	**3166.08**
Pearson chi-square	**10917.54**	**6290.99**
Nagelkerke R^2	0.53	0.32

Note: Wald statistics are shown in brackets; bold = significant at $p < 0.05$.

4. Discussion and conclusion

Results of this study – using quasi-longitudinal data of 1,650 recently relocated residents in the city of Ghent (Belgium) – indicate that respondents' attitudes are mostly in line with the chosen neighbourhood; people with a positive attitude towards active travel mainly live in urban areas, while car enthusiasts mainly live in suburban neighbourhoods. This indicates that most people were able to choose a residential location based on travel preferences (i.e., residential self-selection). Furthermore, respondents seemed to be able to change their travel behaviour (after relocating) in line with their travel attitudes. People with a positive (negative) stance towards a certain mode increased (decreased) its use considerably more than those with a more negative (positive) stance. Attitudes towards travel in general, however, only had limited effects on changes in travel distance and duration. Travel satisfaction and changes in travel satisfaction (after relocating) are affected by both changes in travel

behaviour and by whether these changes were in line with travel attitudes. Reductions in travel distance, travel duration, car use and public transport use, and increased levels of active travel result in higher levels of travel satisfaction (improvement). Changes in walking and cycling especially impact (changes in) travel satisfaction when they happen in line with attitudes towards the respective modes (e.g., more frequent cycling of a cycling enthusiast). A change in duration in line with travel-liking attitudes, on the other hand, has a negative effect on (changes in) satisfaction with travel, presumably because both a reduction in travel duration and positive travel-liking attitudes have positive impacts on satisfaction levels. Overall, the results indicate that (a change in) satisfaction with travel is not only affected by (a change in) travel behaviour or travel attitudes, but also whether (a change in) behaviour is consistent with travel attitudes (De Vos, 2018, 2019). This in turn seems to confirm the cognitive dissonance theory (Festinger, 1957), stating that a dissonance between attitudes and behaviour results in feelings of discomfort.

To the best of our knowledge, this is the first study simultaneously analysing how travel attitudes impact the residential location choice, and travel behaviour and satisfaction after moving. The fact that most respondents are able to change their travel patterns (after relocating) according to their preferences indicates that it is important that people are able to easily relocate to their desired neighbourhood and accompanying stimulated ways of travelling. Since it is important to stimulate active travel and public transport (in order to reduce air pollution, congestion, parking space, etc.), policy makers should focus on making it easier for people with preferences for active travel and public transport to relocate to compact, mixed-use areas, e.g., by creating more reasonably-priced and family-sized dwellings in these urban-type neighbourhoods.

Furthermore, this study also indicated that travel satisfaction (improvements) are highest for cycling/walking enthusiasts increasing their walking/cycling frequency (after relocating). This indicates that it is important to enable walking and cycling for those who want to – but perhaps are not able to – travel actively. This could be done by creating better infrastructure (e.g., wide, well-lit sidewalks with safe zebra crossings and bike lanes separated from car traffic), or by increasing density and land use mix resulting in shorter trips (which are easier to cover on foot or by bicycle). On the other hand, results have indicated that travel satisfaction (improvements) are affected by changes in travel mode use and travel distance/duration, independent from travel attitudes. This suggests that people using motorised travel modes and performing long trips are less satisfied compared to those travelling short trips and using active modes. As a result, overall satisfaction with travel can be improved by making short and active travel more convenient, e.g., by stimulating people to live in urban neighbourhoods, increasing density and mixed use in existing neighbourhoods, and improving infrastructure for active travel. More people living/moving to compact and mixed-use neighbourhoods will also directly improve travel satisfaction, as Tables 4 and 5 have indicated that moving to an urban neighbourhood has a positive impact on (changes in) satisfaction with leisure trips. Furthermore, policy makers and public transport operators should try to make public transport more satisfying than it currently is, e.g., by improving service factors which impact satisfaction of public transport users, such as cleanliness, comfort, punctuality, on-board information, and waiting conditions (e.g., de Oña et al., 2013; dell'Olio et al., 2011; Susilo & Cats, 2014; van Lierop et al., 2018). The suggested measures (i.e., more compact developments and making active travel and public transport more appealing) will not only result in higher travel satisfaction levels, but will also have environmental benefits and positive implications for sustainable mobility and sustainable urban development.

Although the use of quasi-longitudinal data in this study provides valuable information on how people changed their travel patterns and satisfaction after relocating, it is subject to memory bias as people

might have difficulties recalling their behaviour and satisfaction prior to their move. Future studies might therefore use true longitudinal data, ideally with a wave before the relocation and multiple waves after relocating (Guan et al., 2020). Although we have treated travel attitudes as stable constructs (in line with the theory of planned behaviour often applied in travel behaviour research, indicating that attitudes affect behaviour (Ajzen, 1991)), studies have found that travel behaviour and the built environment can influence travel attitudes (De Vos et al., 2020; Kamruzzaman et al., 2021; Kroesen, 2019; Kroesen et al., 2017; Lin et al., 2017). As a result, it might be possible that people moving from a suburban-style neighbourhood to a more urban neighbourhood develop more positive attitudes towards active travel and public transport as walking, cycling and using public transport are more convenient (and therefore possibly more often used) in their new neighbourhood. Furthermore, although we have analysed the effects of changes in travel behaviour (due to a residential relocation) on travel satisfaction (changes), dissatisfaction with travel in the previous residential neighbourhood may have triggered a residential relocation in order to enable satisfying travel. Although the possibility of such effects has been acknowledged in previous studies, they remain largely unexplored (De Vos & Witlox, 2017). Studies collecting multiple waves of data could analyse how travel behaviour, attitudes, and satisfaction interact with each other over time (e.g., before and after a relocation took place). Qualitative research (e.g., interviews, focus groups) may also provide valuable insights into the role of travel attitudes and satisfaction in a residential relocation, and how travel behaviour, and especially attitudes and satisfaction change after a relocation.

Acknowledgements

The authors would like to thank the two anonymous reviewers for their constructive comments and suggestions, making it possible to improve the quality of this paper. This work was supported by the Research Foundation - Flanders (FWO) under grant 12F2519N.

References

Aditjandra, P.T., Cao, J., Mulley, C., 2016. Exploring changes in public transport use and walking following residential relocation: a British case study. Journal of Transport and Land Use 9 (3), 1-19.

Ajzen, I., 1991. The theory of planned behavior. Organizational Behavior and Human Decision Processes 50 (2), 179-211.

Bagley, M.N., Mokhtarian, P.L., 2002. The impact of residential neighborhood type on travel behavior: a structural equations modeling approach. The Annals of Regional Science 36 (2), 279-297.

Cao, J., Ermagun, A., 2017. Influences of LRT on travel behaviour: A retrospective study on movers in Minneapolis. Urban Studies 54 (11), 2504-2520.

Cao, X.J., Ettema, D., 2014. Satisfaction with travel and residential self-selection: How do preferences moderate the impact of the Hiawatha Light Rail Transit line? Journal of Transport and Land Use 7 (3), 93-108.

Cao, X., Mokhtarian, P.L., Handy, S.L., 2007. Do changes in neighborhood characteristics lead to changes in travel behavior? A structural equations modeling approach. Transportation 34 (5), 535-556.

Cao, X.J., Mokhtarian, P.L., Handy, S.L., 2009. Examining the impacts of residential self-selection on travel behaviour: A focus on empirical findings. Transport Reviews 29 (3), 359-395.

Chatman, D.G., 2009. Residential choice, the built environment, and nonwork travel: evidence using new data and methods. Environment and Planning A 41 (5), 1072-1089.

Cho, G.-H., Rodriguez, D.A., 2014. The influence of residential dissonance on physical activity and walking: evidence from the Montgomery County, MD, and Twin Cities, MN, areas. Journal of Transport Geography 41, 259-267.

de Oña, J., de Oña, R., Eboli, L., Mazzulla, G., 2013. Perceived service quality in bus transit service: A structural equation approach. Transport Policy 29, 219-226.

De Vos, J., 2018. Do people travel with their preferred travel mode? Analysing the extent of travel mode dissonance and its effect on travel satisfaction. Transportation Research Part A 117, 261-274.

De Vos, J., 2019. Satisfaction-induced travel behavior. Transportation Research Part F 63, 12- 21.

De Vos, J., Cheng, L., Witlox, F., 2020. Do changes in the residential location lead to changes in travel attitudes? A structural equation modeling approach. Transportation. In press: https://doi.org/10.1007/s11116-020-10119-7

De Vos, J., Derudder, B., Van Acker, V., Witlox, F., 2012. Reducing car use: changing attitudes or relocating? The influence of residential dissonance on travel behavior. Journal of Transport Geography 22, 1-9.

De Vos, J., Ettema, D., Witlox, F., 2018. Changing travel behaviour and attitudes following a residential relocation. Journal of Transport Geography 73, 131-147.

De Vos, J., Ettema, D., Witlox, F., 2019. Effects of changing travel patterns on travel satisfaction: A focus on recently relocated residents. Travel Behaviour and Society 16, 42-49.

De Vos, J., Mokhtarian, P. L., Schwanen, T., Van Acker, V., Witlox, F., 2016. Travel mode choice and travel satisfaction: bridging the gap between decision utility and experienced utility. Transportation 43 (5), 771–796.

De Vos, J., Witlox, F., 2016. Do people live in urban neighbourhoods because they do not like to travel? Analysing an alternative residential self-selection hypothesis. Travel Behaviour & Society 4, 29-39.

De Vos, J., Witlox, F., 2017. Travel satisfaction revisited. On the pivotal role of travel satisfaction in conceptualising a travel behaviour process. Transportation research Part A 106, 364-373.

dell'Olio, L., Ibeas, A., Cecin, P., 2011. The quality of service desired by public transport users. Transport Policy 18, 217-227.

Ettema, D., Nieuwenhuis, R., 2017. Residential self-selection and travel behaviour: what are the effects of attitudes, reasons for location choice and the built environment? Journal of Transport Geography 59, 146-155.

Ewing, R., Cervero, R., 2010. Travel and the built environment. A meta–analysis. Journal of the American Planning Association 76 (3), 265-294.

Festinger, L., 1957. Theory of Cognitive Dissonance. Stanford University Press, Stanford.

Frank, L.D., Saelens, B.E., Powell, K.E., Chapman, J.E., 2007. Stepping towards causation: do built environments or neighborhood and travel preferences explain physical activity, driving, and obesity? Social Science & Medicine 65, 1898-1914.

Gerber, P., El-Geneidy, A., Manaugh, K., Lord, S., 2020. From workplace attachment to commuter satisfaction before and after a workplace relocation. Transportation Research Part F 71, 168-181.

Giles-Corti, B., Bull, F., Knuiman, M., McCormack, G., Van Niel, K., Timperio, A., Christian, H., Foster, S., Divitini, M., Middleton, N., Boruff, B., 2013. The influence of urban design on neighbourhood walking

following residential relocation: longitudinal results from the RESIDE study. Social Science & Medicine 77, 20-30.

Guan, X., Wang, D., Cao, X.J., 2020. The role of residential self-selection in land use-travel research: a review of recent findings. Transport Reviews 40 (3), 267-287.

Handy, S.L., Cao, X., Mokhtarian, P.L., 2005. Correlation or causality between the built environment and travel behavior? Evidence from Northern California. Transportation Research Part D 10 (6), 427-444.

Handy, S.L., Thigpen, C., 2018. Commute quality and its implications for commute satisfaction: Exploring the role of mode, location, and other factors. Travel Behaviour and Society 16, 241-248.

Huang, X., Cao, J., Cao, X., Yin, J., 2016. How does the propensity of living near rail transit moderate the influence of rail transit on transit trip frequency in Xi'an? Journal of Transport Geography 54, 194-204.

Kajosaari, A., Hasanzadeh, K., Kyttä, M., 2019. Residential dissonance and walking for transport. Journal of Transport Geography 74, 134-144.

Kamruzzaman, M., Baker, D., Washington, S., Turrell, G., 2013. Residential dissonance and mode choice. Journal of Transport Geography 33, 12-28

Kamruzzaman, M., Baker, D., Washington, S., Turrell, G., 2016. Determinants of residential dissonance: Implications for transit-oriented development in Brisbane. International Journal of Sustainable Transportation 10 (10), 960-974.

Kamruzzaman, M., Giles-Corti, B., De Vos, J., Witlox, F., Shatu, F., Turrell, G., 2021. The life and death of residential dissonants in transit-oriented development: A discrete time survival analysis. Journal of Transport Geography 90, 102921.

Kitamura, R., Mokhtarian, P.L., Laidet, L., 1997. A micro-analysis of land use and travel in five neighborhoods in the San Francisco Bay Area. Transportation 24 (2), 125-158.

Krizek, K.J., 2003. Residential relocation and change in urban travel. Journal of American Planning Association 69 (3), 265-281.

Kroesen, M., 2019. Residential self-selection and the reverse causation hypothesis: Assessing the endogeneity of stated reasons for residential choice. Travel Behaviour and Society 16, 108-117.

Kroesen, M., Handy, S., Chorus, C., 2017. Do attitudes cause behavior or vice versa? An alternative conceptualization of the attitude-behavior relationship in travel behavior modeling. Transportation Research Part A 101, 190-202.

Lin, T., Wang, D., Guan, X., 2017. The built environment, travel attitude, and travel behaviour: Residential self-selection or residential determination? Journal of Transport Geography 65, 111-122.

Mokhtarian, P.L., Papon, F., Goulard, M., Diana, M., 2015. What makes travel pleasant and/or tiring? An investigation based on the French National Travel Survey. Transportation 42 (6), 1103-1128.

Morris, E.A., Guerra, E., 2015. Are we there yet? Trip duration and mood during travel. Transportation Research Part F 33, 38-47.

Mouratidis, K., Ettema, D., Næss, P., 2019. Urban form, travel behavior, and travel satisfaction. Transportation Research Part A 129, 306-320.

Olsson, L.E., Gärling, T., Ettema, D., Friman, M., Fujii, S., 2013. Happiness and satisfaction with work commute. Social Indicators Research 111 (1), 255-263.

Ory, D.T., Mokhtarian, P.L., 2005. When is getting there half the fun? Modeling the liking for travel. Transportation Research Part A 39, 97-123.

Scheiner, J., Holz-Rau, C., 2013. Changes in travel mode use after residential relocation: a contribution to mobility biographies. Transportation 40 (2), 431-458.

Schneider, R.J., Willman, J.L., 2019. Move closer and get active: How to make urban university commutes more satisfying. Transportation Research Part F 60, 462-473.

Schwanen, T., Mokhtarian, P.L., 2004. The extent and determinants of dissonance between actual and preferred residential neighborhood type. Environment and Planning B 31 (5), 759- 784.

Schwanen, T., Mokhtarian, P.L., 2005. What affects commute mode choice, neighbourhood physical structure or preferences toward neighborhoods? Journal of Transport Geography 13 (1), 83-99.

Singleton, P.A., 2019. Walking (and cycling) to well-being: Modal and other determinants of subjective well-being during the commute. Travel Behaviour and Society 16, 249-261.

St-Louis, E., Manaugh, K., van Lierop, D., El-Geneidy, A., 2014. The happy commuter: a comparison of commuter satisfaction across modes. Transportation Research Part F 26, 160-170.

Susilo, Y.O., Cats, O., 2014. Exploring key determinants of travel satisfaction for multi-modal trips by different traveler groups. Transportation Research Part A 67, 366-380.

van Lierop, D., Badami, M.G., El-Geneidy, A., 2018. What influences satisfaction and loyalty in public transport? A review of the literature. Transport Reviews 38 (1), 52-72.

Wang, D., Lin, T., 2019. Built environment, travel behavior, and residential self-selection: A study based on panel data from Beijing, China. Transportation 46 (1), 51-74.

Wang, F., Mao, Z., Wang, D., 2020. Residential relocation and travel satisfaction change: An empirical study in Beijing, China. Transportation Research Part A 135, 341-353.

Wolday, F., Cao, J., Næss, P., 2018. Examining factors that keep residents with high transit preference away from transit-rich zones and associated behavior outcomes. Journal of Transport Geography 66, 224-234.

Woods, L., Ferguson, N.S., 2014. The influence of urban form on car travel following residential relocation: a current and retrospective study in Scottish urban areas. Journal of Transport and Land Use 7 (1), 95-104.

Ye, R., De Vos, J., Ma, L., 2020. Analysing the association of dissonance between actual and ideal commute time and commute satisfaction. Transportation Research Part A 132, 47-60.

Ye, R., Titheridge, H., 2017. Satisfaction with the commute: The role of travel mode choice, built environment and attitudes. Transportation Research Part D 52B, 535-547.