

Satisfaction from satisficing: Understanding commuters' satisficing tendencies

Rathee D. Sivasubramaniyam^{a,*}, Rebecca J. Sargisson^{a,b}, Samuel G. Charlton^a

^a University of Waikato, New Zealand

^b University of Groningen, Netherlands

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ABSTRACT

Satisficing is the tendency to make 'good enough' decisions. Consumers tend to satisfice when making routine decisions (e.g., grocery shopping). Commuters also make routine decisions about their daily commute. Our goals were to investigate whether, like consumers, commuters tend to satisfice when deciding to use the modes they typically use for commuting and to understand the psychological and travel characteristics that distinguish commuters with strong from those with weak tendencies to satisfice. A sample of New Zealand commuters ($n = 313$) completed an on-line questionnaire measuring their satisficing scores, psychological and travel characteristics. A factor analysis revealed two measures of satisficing such that commuters may satisfice when deciding to use (decision-satisficing) and when using (behaviour-satisficing) their usual modes for their daily commute. Commuters tend to satisfice when deciding to use modes that they use frequently (usual modes) compared to modes that they use infrequently (alternative modes). Commuters with high satisficing tendencies (decision and behaviour) tend to be more positive and more satisfied with their usual-mode commutes compared to commuters with low satisficing tendencies. Cyclists had the strongest decision-satisficing tendencies while solo drivers had the weakest decision-satisficing tendencies. We demonstrated that commuters do satisfice during their daily commutes and there are some differences between high- and low-satisficing commuters. Mode-shift interventions could target commuters' satisficing decision-making strategy to encourage the use of sustainable modes.

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1. Introduction

Traditional decision-making approaches assume that people are rational and always make the "best" decisions. One such approach is the *rational choice approach* which suggests that people seek to maximise their gains (i.e., utility) by engaging in an exhaustive search for all possible options before choosing the best option (Becker, 1976; De Palma, 1998; Simon, 1955). In everyday life, however, people do not always have all the information to make the best decision and often make decisions under uncertain and biased conditions (Ajzen, 1977; Thaler, 1991). Simon's (1957) alternative decision-making approach, *bounded rationality*, assumes that people are generally "satisficers" who achieve satisfaction by making "good enough" as opposed to the best decisions. Making good enough decisions (i.e., satisficing) tends to be less rigorous and involves fewer alternatives than making the best decisions (Simon, 1957).

In other words, "satisficing" can be a more efficient decision-making strategy, making it more likely to be used in everyday decisions, such as travel mode decisions (Simon, 1979). Travel mode decisions have both

environmental and social implications. Road vehicles in particular tend to be the biggest contributor of poisonous gases leading to air pollution, which in turn affects the quality of public health (see Fisher et al., 2002; IEA, 2019). Therefore, there is an imminent need to reduce the use of road vehicles such as the car. To do so, it is essential to understand the decision-making strategy that commuters use to decide on a travel mode and one possible strategy is satisficing. There are several key aspects to the satisficing decision-making strategy and we will discuss four of them.

Firstly, satisficing is a low-effort decision-making process where satisficers tend to invest minimal cognitive effort and time in the decision-making process. One of the ways satisficers minimise their effort and time is by setting some criteria around their preferences and needs, such that they evaluate their possible options against their criteria and tend to pick the first option that meets the minimum level of their set criteria (Simon, 1957). The low-effort decision-making process is evident in consumers who make routine purchases (e.g., Cole and Balasubramaniam, 1993; Dickson and Sawyer, 1990; Sproles, 1985). For example, grocery shoppers tend to compare only two or three cereal options before making a decision

* Corresponding author at: Transport Research Group, School of Psychology, University of Waikato, Private Bag 3105, Hamilton, New Zealand.
E-mail address: srd12@students.waikato.ac.nz (R.D. Sivasubramaniyam).

instead of evaluating all of the possible cereal options (Cole and Balasubramaniam, 1993). Commuting also involves making routine decisions such as deciding which route to take, which travel mode to use, and what time to depart for work or school. Commuters use criteria such as travel times, distances, and costs, accessibility, and parking fees before making their satisficing travel choices (Avineri and Prashker, 2006; Fujii and Kitamura, 2000; Jou et al., 2010; Mahmassani and Jou, 1998). For example, some travellers are only willing to use a new route if the length of travel time they can save meets the minimum length of time they are willing to travel (Di et al., 2017). Therefore, consumers' and commuters' tendencies to evaluate fewer options and then choose an option that meets the minimum level of their criteria may imply that satisficing is a low-effort decision-making strategy.

Another way of understanding the satisficing decision-making strategy is to examine the role of habits in the decision-making process. Habits are decisions or behaviours performed repeatedly to achieve certain goals (Aarts and Dijksterhuis, 2000; Verplanken et al., 1997). With constant repetition, the association between the goal and the decision (or behaviour) becomes stronger, which increases individuals' familiarity with the decision (or behaviour) (Wood et al., 2002). As a result, individuals are less likely to evaluate other alternatives when executing the same decision or behaviour in the future (Aarts and Dijksterhuis, 2000). The low effort nature of habitual decisions or behaviours is also shared by the low effort nature of satisficing decisions or behaviours (see Gifford and Checherita-Westphal, 2008). Consumers and commuters tend to be dependent on their habits as they rely on their automatic thinking and avoid searching for alternatives (e.g., Fazio et al., 2000; Fujii et al., 2001; Wang et al., 2015). For example, Wang et al. (2015) found that consumers tend to purchase items that they have consistently purchased in the past from manufacturers they are familiar with, while Verplanken et al. (1997) found that habitual cyclists tend to search less for information about alternative travel modes before making travel choices for their daily commute. Therefore, consumers' and commuters' strong tendencies to resort to their habitual and familiar decisions or behaviours is another possible indication of their satisficing decision-making tendencies.

A third way of examining the satisficing decision-making strategy is to take into account the role of reinvestment – the propensity to consciously monitor and evaluate decision-making processes (i.e., decision-specific reinvestment). Kinrade et al.'s (2010b) Decision Specific Reinvestment Scale has two factors: decision reinvestment and decision rumination. Decision reinvestment reflects an individual's tendency to consciously monitor the decision-making process, while decision rumination refers to the tendency to consciously reflect on the poor decisions made in the past. Individuals with high tendencies to consciously monitor their decisions (high reinvesters) tend to perform slower in various tasks compared to low reinvesters possibly because of the time consuming nature of the reinvestment process (Kinrade et al., 2010a; Malhotra et al., 2018). As satisficing behaviour tends to be less time-consuming, it could imply that satisficers are less likely to consciously monitor their decisions. In the context of commuting, Aarts and Dijksterhuis (2000) demonstrated the automatic nature of choosing travel modes for commuting trips, such that commuters' decisions to use a particular mode (e.g., bicycle and car) are under the direct control of their automatic travel-goal-behaviour associations instead of their conscious reasoning. In other words, as commuting decisions have become automatic over time, commuters are less likely to reinvest in their decisions to use their preferred commute modes (Aarts et al., 1998; Verplanken et al., 1997). Therefore, the satisficing decision-making strategy can also be characterised by the lack of decision reinvestment.

Another point to consider when understanding the satisficing decision-making strategy is the role of negative emotions. Decision-makers who tend to ruminate on their poor past decisions (see Kinrade et al., 2010b) are susceptible to experiencing regret – negative feelings associated with the belief that one's decision could have brought a more desirable outcome (Roese et al., 2009). As satisficers are less likely to ruminate over their past decisions, they are less likely to experience regret because they tend to make decisions that meet the minimum levels of their criteria namely, something that is good enough for them (Schwartz et al., 2002). Consequently, they

are less inclined to regret their decisions even if there are better alternatives (Iyengar et al., 2006; Schwartz et al., 2002; Simon, 1957). Mao et al. (2016) suggested that habitual commuters tend to be highly satisfied with their commutes possibly because of their low expectations with their habitual mode choices where, they tend to trivialise any negative emotions they experience if the outcomes were unsatisfactory (Simon et al., 1995). Like habitual commuting, habitual purchase is also related to higher satisfaction with the product or brand and lower tendency to regret the purchase decisions (Chowdhury et al., 2009; Liao et al., 2017; Tsiros and Mittal, 2000). In short, satisficing decisions and behaviours are more likely to be satisfying but less likely to result in feelings of regret.

As can be seen in this brief review, when understanding the satisficing decision-making strategy, it is important to consider the low-effort and habitual nature of satisficing decisions and the extent to which satisficers reinvest in their decisions and experience negative feelings such as regret after making decisions. However, travel behaviour studies examining commuters' satisficing tendencies (e.g., Avineri and Prashker, 2006; Fujii and Kitamura, 2000; Jou et al., 2010; Mahmassani and Jou, 1998) have focused on commuters' tendencies to establish some criteria and to evaluate alternatives when making decisions after presenting them with a series of hypothetical and real-world problems. Conceptually, this may be problematic because 'satisficing' is more than just a series of tendencies to do certain things. In fact, commuters may satisfice by putting in less effort, resorting to their habits, reinvesting less in their decisions and wanting to experience less regret about their decisions to achieve overall satisfaction with their commuting decisions. These tendencies may be able to explain the findings of our previous study where we found that drivers, car passengers, bus users, cyclists, and pedestrians used their usual modes most of the time in a week (i.e., strong commitment) despite being motivated by different factors (Sivasubramaniyam et al., 2020). It is possible that these commuters were satisficing when deciding to use their modes regardless of the different reasons for using their respective modes.

Therefore, we wanted to identify whether commuters tend to satisfice when deciding to use travel modes that they use most often for their daily commute (i.e., usual modes). Specifically, we measured and compared commuters' satisficing scores when deciding to use their usual modes to their satisficing scores when deciding to use modes that they do not usually use (i.e., alternative modes) because we wanted to compare commuters' satisficing tendencies for a mode which they frequently use to their satisficing tendencies for a mode which they occasionally use. Frequently performed behaviour or decisions have been associated with high satisficing tendencies because of their low-effort and habitual nature (see Simon, 1979). We also wanted to distinguish between commuters with high and low satisficing tendencies based on their psychological and travel characteristics. Our motivation for doing this revolved around the question of whether commuters with high tendencies to make good enough commuting decisions (i.e., high-satisficing commuters) are different to commuters with low tendencies to make good enough commuting decisions (i.e., low-satisficing commuters). We were interested in comparing travel and psychological characteristics which were not limited to the four aspects of the satisficing decision-making strategy: effort, habits, reinvestment, and regret. The travel characteristics that we were interested in were commuters' trip frequencies, trip distances and time, and preferred travel modes. By conducting this study, we hoped to get a better understanding of the decision-making process underlying commuters' decisions to use certain modes, particularly the car, for their commuting trips and that the findings of the study will be useful for designing and implementing effective travel behaviour interventions and policies.

2. Method

2.1. Participants

We recruited 575 respondents who were 16 years and older between June and October (2019), winter and spring in New Zealand, through notices placed on the intranets of various organisations as well as on social

media and through word-of-mouth. The study received ethical approval from the Human Research Ethics Committee of the School of Psychology at the University of Waikato. After excluding respondents who did not complete the entire online questionnaire, our final sample was 313 respondents; 198 women, 114 men, and 1 respondent of undisclosed gender. The final sample had a mean age of 42.72 years ($SD = 12.62$). Table 1 shows the demographic characteristics of the sample. We used a convenience sample to get a broad representation of New Zealanders in our study, however, women and degree holders were more highly represented in our study. In terms of travel modes, a majority of our respondents were car drivers, which was also the case for the whole of New Zealand, where 74% of New Zealanders tend to drive to work (Ministry of Transport, 2018).

Table 2 shows the percentages of commuters who used various types of alternative modes (i.e., modes that commuters use for their commuting trips when it is not possible to use their usual modes for unexpected reasons) for their commuting trips. Commuters who drove solo for their usual commute tended to ride-share for their alternative commute. The majority of ride-sharers who used alternative modes drove solo for their daily commute. Cyclists and commuters of 'other' modes also tended to drive solo for their alternative commutes. Commuters who usually took the bus tended to use other modes such as scooters, motorbikes, and skateboards as their alternative commuting method.

Table 1
Demographic characteristics of respondents ($N = 313$).

	Percentage of respondents (%)
Employment status	
Full-time work (30 h or more per week)	84.30
Part-time work (< 30 h per week)	9.60
Casual/Sporadic work	1.30
Unemployed/looking for work	1.00
Looking after home and family	1.30
Retired	0.30
Other	2.20
Education status	
Not studying	84.30
Secondary school	0.60
Full-time university/polytech/other	6.40
Part-time university/polytech/other	8.60
Education level	
No secondary school qualification	1.00
High school qualification or equivalent	9.60
Tertiary diplomas or certificate	18.20
Master degree or higher	24.90
Household type ^a	
Person living alone	9.90
Married/de facto couple only	27.80
Other adults only (e.g., flatmates)	9.90
Family (including extended) with children	37.10
Family with adults only	9.90
Single adult living with children	1.90
Other	3.20
Income ^b	
\$50,000 or less	53.90
\$50,001–\$100,000	23.60
\$100,001–\$150,000	1.30
More than \$150,000	7.70
Prefer not to say	12.80
Recently moved status in the last 12 months	
Yes	21.70
No	78.30
Travel mode used most of the time	
Drive solo	45.70
Ride share	12.50
Bus	7.70
Bicycle	19.80
Other modes (i.e., scooter, motorcycle, skateboard, etc.)	14.40

Note.

^a One missing response.

^b Two missing responses.

Table 2

Percentages of commuters using alternative modes for daily commute.

Usual modes used by commuters	Percentages of commuters using alternative modes (%)					
	Drive solo	Ride-share	Bus	Bicycle	Other modes	Never used alternative modes
Drive solo	–	37.06	17.48	6.29	13.29	25.87
Ride-share	25.64	–	23.08	5.13	17.95	28.21
Bus	16.67	29.17	–	8.33	33.33	12.50
Bicycle	35.48	9.68	37.10	–	16.13	1.61
Other modes	26.67	20.00	22.22	8.89	4.44	17.78

2.2. Materials and procedure

When completing the questionnaire, each respondent received a minimum of eight items and, depending on their answers, a maximum of 147 items, all in forced-choice format. Of the 147 items, two were filter items, four were items on travel characteristics, 134 on psychological variables, and seven on demographic characteristics (Refer to Appendix A for additional details on the items and their respective response scales).

The first filter item asked respondents for the mode they used most often. This item was followed by four items on travel characteristics corresponding to respondents' usual-mode commutes (i.e., commuting trips involving the use of usual modes). We asked for the percentages of all types of trips and commuting trips made in the last 7 days, the average one-way commuting distance (in kilometres), and the average one-way commuting time (in minutes). The second filter item asked respondents for the alternative mode they used most often for their commuting trips (i.e., second filter item in the questionnaire).

The 134 items measuring psychological variables can be divided into three main categories: mode-specific items (78 items), general travel items (26 items), and non-travel-related items (30 items). The mode-specific items measured specific psychological aspects related to respondents' usual-mode commutes. We measured their satisficing scores of deciding to use their usual modes (adapted from Turner et al., 2012), satisfaction scores from using their usual modes (adapted from Singleton, 2017), and their habit strength of using their usual modes (adapted from Verplanken and Orbell, 2003). In addition to Turner et al.'s (2012) adapted scale, we constructed a 3-item satisficing scale as a straightforward or explicit way of measuring satisficing. We worded two of the items to directly refer to the nature of satisficing decisions; that a commuter's use of their usual mode is: (1) good enough and (2) meets one's basic needs. We worded the third item to refer to the opposite nature of satisficing decisions; that a commuter's use of their usual mode is (3) the best in all respects. We also had mode-specific items for respondents' alternative-mode commutes where we only measured their satisficing scores of deciding to use their alternative modes using the 10 items adapted from Turner et al. (2012) and the 3-item satisficing scale that we created. For the hedonic characteristics of their usual-mode commutes, we asked respondents to rate the extent to which they experienced 20 types of emotions (a combination of positive and negative emotions) during their usual-mode commutes (10 items were adapted from Thompson, 2007 and 10 items were adapted from Singleton, 2017), the extent to which they like their usual-mode commutes (adapted from Singleton, 2017), and their overall positive or negative impression of their usual-mode commutes (adapted from Singleton, 2017).

The general travel items measured the psychological aspects of respondents' general travel experience regardless of what mode they use. We obtained measures of how difficult it is for respondents to make general travel decisions (adapted from Turner et al., 2012), how likely they are to experience regret when making general travel decisions (adapted from Schwartz et al., 2002), and how satisfied they are with their general travel experience (adapted from Singleton, 2017). High scores on the travel difficulty scale indicate high effort when making travel decisions and vice versa.

We also examined respondents' general psychological traits using the non-travel-related items. We measured how difficult it is for them to

make general (i.e., non-travel-related) decisions (adapted from Turner et al., 2012), how likely they are to engage in decision reinvestment and decision rumination (adapted from Kinrade et al.'s, 2010b, Decision-specific Reinvestment scale) and, how likely they are to experience regret when making general decisions (adapted from Schwartz et al.'s, 2002, Regret and Maximisation scale). High scores on the general decision difficulty scale indicate high effort when making general decisions and vice versa. Finally, we asked respondents their gender, age, employment status, education status, education level, annual income for the last 12 months, and residential relocation status in the last 12 months (for additional details on the items, see Appendix A).

2.3. Analysis

We ascertained the validity and reliability of the satisficing measure by conducting a factor analysis on Turner et al.'s (2012) 10 adapted items and the three items of the satisficing scale that we created. We first reverse-coded respondents' scores on the third item of the satisficing scale that we created (i.e., commuting using my usual mode is the best in all respect) as it reflects the opposite nature of satisficing.

Next, we compared satisficing scores for usual-mode commutes to satisficing scores for alternative-mode commutes by conducting a paired-samples *t*-test. We obtained commuters' satisficing scores by calculating their mean scores across the adapted 10 items from Turner et al.'s (2012) satisficing measure. To identify whether commuters' satisficing tendencies vary based on the type of modes they usually use for their commuting trips, we carried out a one-way ANOVA on commuters' satisficing scores with five levels corresponding to the five types of commuters (i.e., solo drivers, ride sharers, bus users, cyclists, and other-mode users).

As the secondary aim of our study was to distinguish between high- and low-satisficing commuters we then categorised commuters who scored at or below the 25th percentile on their satisficing score as low satisficers and commuters who scored at or above the 75th percentile as high satisficers. Then, we carried out several independent *t*-tests comparing their scores on 13 psychological variables. For each of the 13 psychological variables, we obtained commuters' mean scores by averaging their scores across the respective number of items in each of the measures. We also compared their travel characteristics to identify the travel differences that may exist between high and low satisficers.

3. Results

3.1. Measuring commuters' satisficing tendencies

As a measure of satisficing tendencies, we not only modified an existing satisficing measure (see Turner et al., 2012) to fit the context of making commuting mode decisions, but also constructed a 3-item scale to supplement the 10-item satisficing scale. To ensure the validity of the modified scale, we carried out a factor analysis with the adapted 10 items and the three items that we created. We expected all 13 items to load onto a single factor, indicating that the two scales were measuring the same construct: commuters' satisficing tendencies when deciding to use their usual modes.

The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the factor analysis, KMO = 0.76, and the KMO values for all 13 items were well above 0.50. Table 3 shows the factor matrix of the 13 items after a varimax rotation, which revealed a four-factor structure. The three items we created loaded onto a single factor (Factor 1) while the 10 adapted items from Turner et al.'s (2012) satisficing scale loaded across the remaining three factors (Factors 2, 3, and 4). Interestingly, after suppressing coefficients of <0.30, none of the adapted 10 items loaded onto the same factor that our three items loaded onto (i.e., Factor 1).

After examining all 13 items, we decided that the wording for our 3-item scale reflected the behavioural aspects of respondents' usual-mode commutes, whereas the 10 adapted items may have reflected the decision-making aspects associated with respondents' usual-mode commutes. In other words, one scale appeared to be measuring commuters' "behaviour-satisficing" scores while the other was measuring commuters' "decision-satisficing" scores. The Cronbach's alpha (0.77) and the face validity of the modified items further confirmed that the 10-item scale was a measure of commuters' decision-satisficing scores for their usual modes. We also found a weak positive correlation between the decision- and behaviour-satisficing scores, $r(311) = 0.16$. Thus, we incorporated the two types of satisficing measures in all analyses: decision- and behaviour-satisficing tendencies. A high score on the decision-satisficing measure indicates a tendency to satisfice when *deciding* to use their usual mode and a high score on the behaviour-satisficing measure indicates a tendency to satisfice when *using* their usual mode for their daily commutes.

Table 3
Rotated factor matrix of the factor analysis on 13 items.

Items	Factor			
	1	2	3	4
Additional satisficing items				
1. Commuting using my usual mode is good enough for me	0.89			
2. Commuting using my usual mode meets my basic needs	0.69			
3. Commuting using my usual mode is the best in all respect (R)	−0.59			
Turner et al.'s (2012) Satisficing items				
4. I usually try to find a couple of good travel options and then choose between them		0.47	0.50	
5. At some point, you need to make a decision about how to travel		0.62	0.32	
6. I try to make the most of whatever travel method I choose		0.58		
7. There are usually several good travel options in a commuting decision situation		0.33	0.61	
8. I try to gain plenty of information before I make a commuting decision, but then I go ahead and make it		0.69		
9. Good things can happen when commuting even if things don't go right at first		0.36		
10. I can't possibly know everything before making a commuting decision				0.42
11. All commuting decisions have pros and cons				0.63
12. I know that if I make a mistake in a commuting decision that I can choose a different method next time			0.69	
13. I accept that commuting often has uncertainty				0.67

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

- Rotation converged in 5 iterations.
- Coefficients below 0.30 were suppressed for clarity.

3.2. Comparing between satisficing scores of usual- and alternative-mode commuters

We compared commuters' satisficing scores (decision and behaviour) for their commute using their usual and their alternative modes. We obtained their mean behaviour-satisficing scores by reverse-coding their score on the third item of the satisficing scale that we created and then averaging scores on all three items. Fig. 1 shows commuters' decision-satisficing scores (left) and commuters' behaviour-satisficing scores (right) when using their usual and alternative modes for commuting trips. Commuters had higher decision-satisficing scores when deciding to use their usual modes, $t(262) = 6.24, p < .001, d = 0.41$, compared to when deciding to use their alternative modes. There were no significant differences in commuters' behaviour-satisficing scores when using their usual modes and when using their alternative modes, $t(265) = -0.69, p = .49, d = 0.06$.

3.3. Comparing the psychological and travel characteristics of low and high satisficers

Our secondary aim was to differentiate the characteristics of high- and low-satisficing commuters. We categorised commuters as low- and high-decision satisficers using the decision-satisficing percentile scores for usual-mode commutes ($Q_1 = 3.00; Q_3 = 4.00$) and as low and high-behaviour satisficers using the behaviour-satisficing percentile scores for usual-mode commutes ($Q_1 = 3.33; Q_3 = 4.00$).

Fig. 2 shows their scores on the five psychological variables that showed significant differences at the Bonferroni-adjusted critical significance level of 0.004 per test (0.05/13). Table 4 shows the results of the independent t -test analyses comparing low and high satisficing scores on all 13 psychological variables. Both high-decision and high-behaviour satisficers tended to be more satisfied with their usual-mode commutes, had a more positive overall impression of their usual-mode commutes, and liked their usual-mode commutes more than both low-decision and low-behaviour satisficers. Additionally, high-decision satisficers tended to feel more positive towards their usual-mode commutes and were more satisfied with their general travel experience compared to low-decision satisficers. Although there were other psychological differences with moderate effect sizes between low and high (decision and behaviour) satisficers, they were not statistically significant after the application of Bonferroni correction.

Fig. 3 shows low and high satisficers' scores (decision and behaviour) on four travel characteristics. High-decision satisficers had a lower mean percentage of all types of trips in a week using their usual modes compared to low-decision satisficers, $t(166) = 4.24, p < .001, d = 0.65$, and a shorter one-way usual-mode commuting distance than low-decision satisficers, $t(125.79) = 4.70, p < .001, d = 0.72$. There were no significant

differences between low- and high-decision satisficers' mean percentages of commuting trips in a week using their usual modes, $t(132.19) = 2.59, p = .01, d = 0.65$, or their mean one-way commuting time, $t(166) = 0.36, p = .72, d = 0.07$. High-behaviour satisficers had a shorter one-way usual-mode commuting distance compared to low-behaviour satisficers, $t(53.42) = 3.74, p < .001, d = 0.76$. We did not find any significant differences between low- and high-behaviour satisficers' mean percentages of commuting trips made in a week using their usual modes, $t(128) = 0.75, p = .46, d = 0.14$, their mean percentages of all types of trips made in a week using their usual modes, $t(128) = 2.06, p = .04, d = 0.39$, or their mean one-way usual-mode commuting time, $t(128) = 2.56, p = .01, d = 0.47$.

We counted the number of low and high (decision and behaviour) satisficers who drove solo, ride-shared, took the bus, cycled, or used other modes for their daily commute. Two 2-x-5 chi-square tests of independence revealed an unequal number of low- and high-decision satisficers, $\chi^2(4, N = 168) = 40.64, p < .001$, Cramer's $V = 0.49$, and an unequal number of low- and high-behaviour satisficers using one of the five travel modes, $\chi^2(4, N = 130) = 11.65, p = .02$, Cramer's $V = 0.30$.

Table 5 shows the percentages of low- and high-decision and low- and high-behaviour satisficers who use one of five travel modes. A majority of low-decision satisficers (65.90%) drove solo for their commute while a majority of high-decision satisficers (31.0%) cycled. However, a majority of low- (69.0%) and high-behaviour satisficers (43.2%) tended to drive solo for their commute. Although a majority of solo drivers were high-behaviour satisficers, there was almost an equal distribution of commuters using travel modes other than driving solo. In other words, high-behaviour satisficers were almost equally likely to ride-share, take the bus, cycle, or use other modes. In contrast, there was a clear and strong preference to drive solo or ride-share amongst low-behaviour satisficers.

3.4. Comparing satisficing tendencies of various commuters

Another way of examining commuters' satisficing tendencies concerning their mode choices is to compare the decision- and behaviour-satisficing tendencies of solo drivers, ride sharers, bus users, cyclists, and other mode users (Table 6). We conducted two separate one-way, between-subjects ANOVA to determine whether there were any significant differences between the five types of commuters' decision- and behaviour-satisficing scores. For their decision-satisficing scores, there were significant differences between the five types of commuters, $F(4, 312) = 11.32, p < .001, \eta^2 = 0.13$. Post-hoc pairwise comparisons (Tukey's HSD) with a Bonferroni-adjusted critical significance level of 0.003 per test (0.05/20) showed that cyclists had higher decision-satisficing scores than solo drivers ($p < .001, d = 0.89$) when deciding to use their usual modes. Other mode users had higher decision-

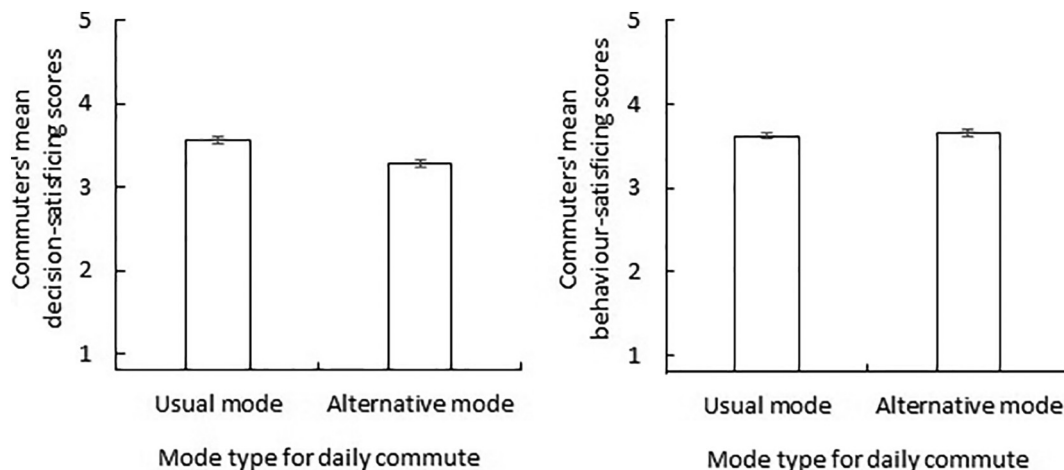


Fig. 1. Commuters' mean satisficing scores. The error bars represent the standard error of the mean.

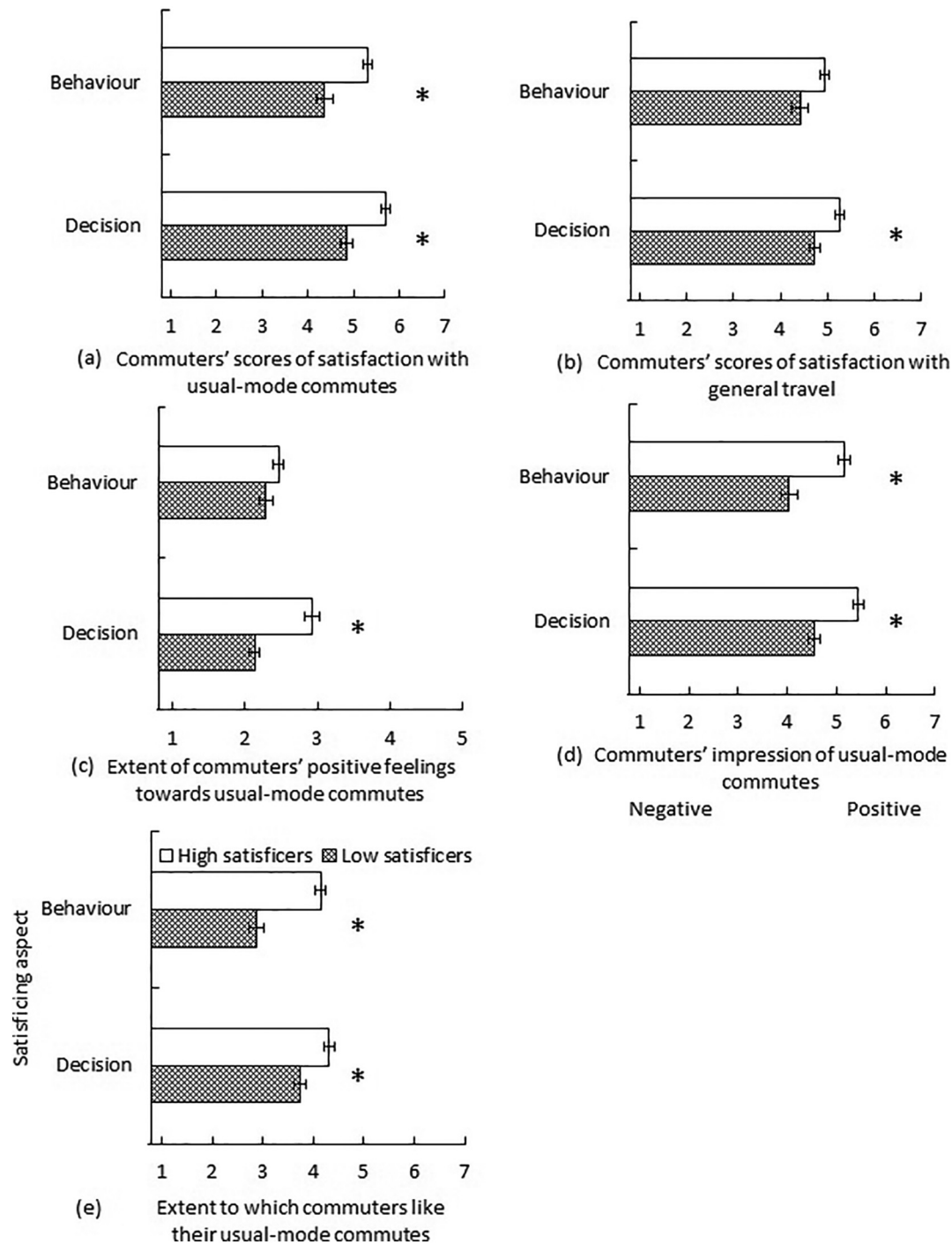


Fig. 2. A series of significant comparisons between low- and high-decision satisficers and low- and high-behaviour satisficers on five psychological variables: (a) satisfaction with usual-mode commutes, (b) satisfaction with general travel experience, (c) extent of positive feelings towards usual mode commutes, (d) impression of usual-mode commutes and, and (e) extent to which commuters like their usual-mode commutes. The error bars represent the standard error of the mean. **t*-Test comparisons that surpassed the Bonferroni-adjusted critical significance level of 0.004.

satisficing tendency scores than solo drivers ($p < .001$, $d = 0.68$) when deciding to use their usual modes. For behaviour-satisficing scores, there were no significant differences between the five types of commuters, Welch's $F(4, 92.59) = 1.57$, $p = .19$, $est. \omega^2 = 0.003$.

4. Discussion

In this study, we took a novel approach to examine satisficing as a decision-making strategy rather than merely a decision outcome. To do this, we constructed a 3-item scale to supplement an existing 10-item

decision-satisficing scale, which we adapted to fit the context of commuting behaviour. To investigate the extent to which the three items are supplementary of the 10 items, we carried out a factor analysis on all 13 items that revealed both scales were measuring different aspects of satisficing tendencies: decision and behaviour. The decision aspect of satisficing refers to commuters' tendencies to satisfice when *deciding* to use their usual modes, whereas the behaviour aspect refers to commuters' tendencies to satisfice when *using* their usual modes.

In terms of their decision-satisficing tendencies, we found that commuters were more likely to satisfice when deciding to use their usual

Table 4
Independent *t*-test results on 13 psychological variables.

Psychological variables	Low- vs. high decision satisficers (<i>n</i> = 168)			Low- vs. high behaviour satisficers (<i>n</i> = 130)		
	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>
Mode-specific variables						
1. Satisfaction with usual mode	−5.22	<0.001 ^a	0.80	−4.93	<0.001 ^a	0.89
2. Habit strength of using usual mode	1.58	0.12	0.24	−0.89	0.38	0.17
3. Positive feelings towards usual mode	−6.41	<0.001 ^a	1.00	−1.21	0.23	0.24
4. Negative feelings towards usual mode	−0.02	0.98	0.02	2.54	0.01	0.46
5. Overall impression of usual mode	−5.30	<0.001 ^a	0.83	−5.79	<0.001 ^a	1.06
6. How much commuters like their usual modes	−3.59	<0.001 ^a	0.55	−6.88	<0.001 ^a	1.30
General travel variables						
7. Satisfaction with general travel experience	−3.50	0.001 ^a	0.54	−2.88	0.005	0.52
8. Feelings of regret after making travel decisions	−2.62	0.01	0.40	0.94	0.35	0.17
9. Difficulty when making travel decisions	−1.88	0.06	0.30	2.21	0.03	0.44
Non-travel-related variables						
10. Difficulty in when making general decisions	−1.88	0.06	0.29	0.79	0.43	0.15
11. Feelings of regret after making general decisions	−0.19	0.85	0.03	−0.24	0.81	0.04
12. Tendency to engage in decision reinvestment	−0.71	0.48	0.11	0.04	0.97	0.00
13. Tendency to engage in decision rumination	1.52	0.13	0.24	1.10	0.28	0.20

Note.

^a Significant at the Bonferroni-adjusted critical significance level of 0.004 per test (0.05/13).

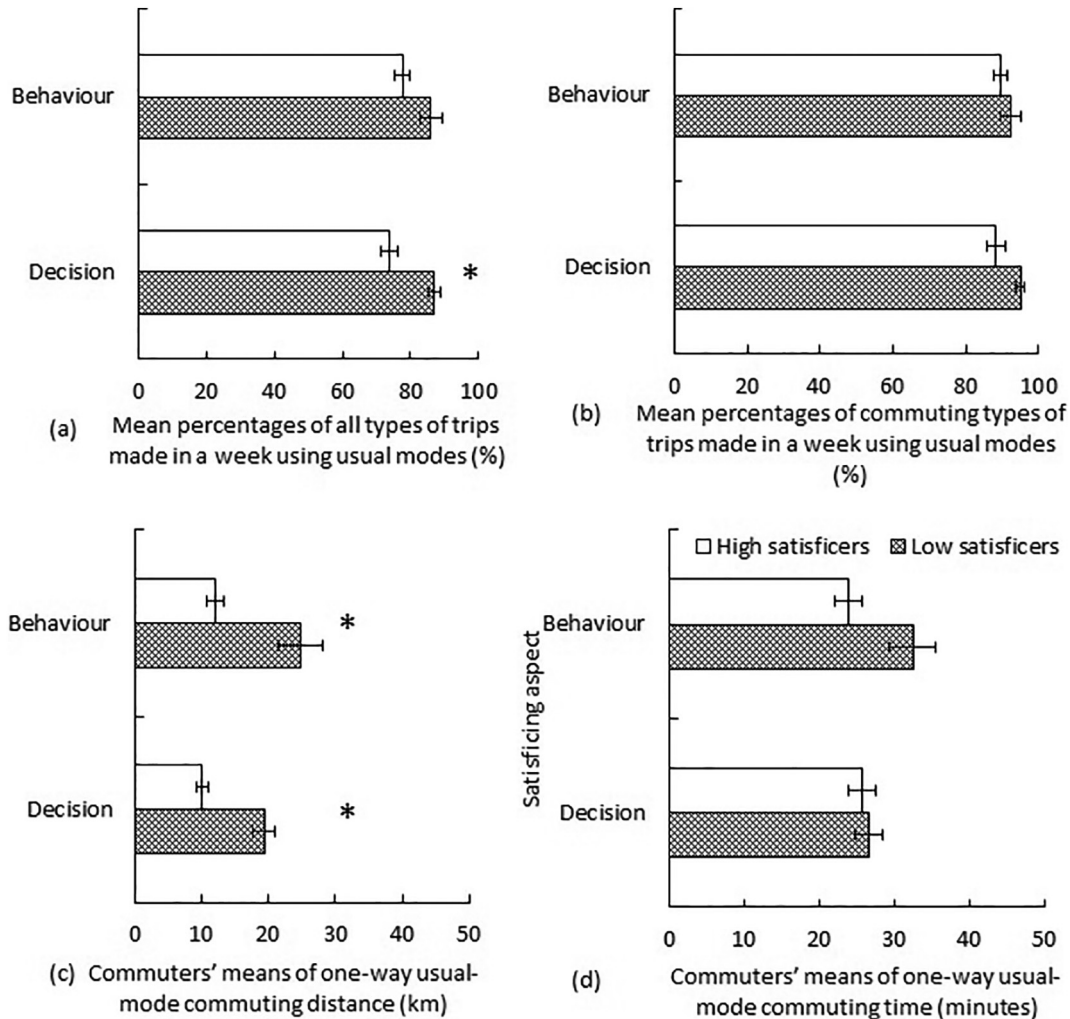


Fig. 3. A set of comparisons between low- and high-decision satisficers' and low- and high-behaviour satisficers' scores on four travel characteristics: (a) mean percentages of all types trips made in a week using their usual modes, (b) mean percentages of commuting trips made in a week using their usual modes, (c) mean one-way usual-mode commuting distances, and (d) mean one-way usual-mode commuting times. The error bars represent the standard error of the mean. **t*-Test comparisons that surpassed the Bonferroni-adjusted critical significance level of 0.01 per test (0.05/4).

Table 5

Percentages of commuters using one of five travel modes for their daily commute.

Usual travel modes	Percentage of commuters using one of the five travel modes (%)			
	Low-decision satisficers (n = 85)	High-decision satisficers (n = 83)	Low-behaviour satisficers (n = 42)	High-behaviour satisficers (n = 88)
Drive solo	65.9	29.0	69.0	43.2
Ride-share	20.0	8.0	16.7	13.6
Bus	3.5	12.0	7.1	11.4
Bicycle	5.9	31.0	4.8	19.3
Other modes	4.7	20.0	2.4	12.5

modes compared to when deciding to use their alternative modes. The findings support the idea that frequently-performed behaviour such as using one's usual mode is strongly associated with high satisficing tendencies (see Simon, 1979). One possible reason why commuters' decisions to use their usual modes is associated with their high satisficing tendencies is the repetitive and low-effort nature of their decisions. When commuters make decisions to use the same travel modes for their daily commute, they are unintentionally strengthening the association between their travel modes and their travel goals (i.e., to get to work or school). The stronger the association, the more familiar commuters become with their decisions (see Aarts and Dijksterhuis, 2000; Verplanken et al., 1997). Thus, the next time commuters need to get to work or school, they are more likely to decide to use the travel modes that are familiar because they do not need to invest effort in looking for other alternatives. Resorting to familiar decisions may suggest that their decisions to use their usual modes are good enough for their daily commute. In contrast, commuters' decisions to use their alternative modes are decisions that they do not make frequently and repeatedly. Therefore, the associations between their decisions to use their alternative modes and their goals of getting to work or school are weak and unfamiliar to them. As a result, commuters' decisions to use their alternative modes are less likely to be good enough for them. However, while habit may seem like an a priori explanation, there may be other factors that contribute to higher satisficing tendencies for usual modes and also the development of habits in the first place. One such factor could be that commuters' usual modes may have been an easier or dominating choice, which required less engagement with the decision-making process. In contrast, their alternative modes may have been a less easy choice, which possibly required greater effort and information search in the decision-making process. Unfortunately, we did not investigate this aspect in our study which could be potential for future research.

Furthermore, we found several differences between high- and low-satisficing commuters with regards to their psychological and travel characteristics. High (decision and behaviour) satisficers were more satisfied with their usual-mode commute experience, more likely to have a positive impression of their usual-mode commutes, and like their usual-mode commutes more than low satisficers. This is expected as satisficers are typically satisfied with their good-enough decisions and therefore tend to feel good about their decisions and behaviours (Álvarez et al., 2014; Baník and Vargová, 2019; Schwartz et al., 2002; Simon, 1957). Schwartz et al. (2002) demonstrated that individuals with high tendencies to satisfice are less likely to experience negative emotions compared to individuals with

low tendencies to satisfice. One possible reason is that people with strong tendencies to satisfice are only concerned with seeking something good enough for them and not necessarily the best for them. As a result, when they find an alternative that seems better than their current choice, they are less likely to regret their original choice (Schwartz et al., 2002). In the context of commuting, high-decision satisficers may believe that their decisions to use their usual modes are good enough for them and, thus they do not regret choosing their usual modes over better alternatives.

The low satisficing scores of low (decision and behaviour) satisficing commuters may imply that they are more likely to seek the best alternative (i.e., maximising) instead of a good-enough alternative. As a result, they tend to feel negative about their decisions to use their usual modes because they feel they might have missed out on a better alternative by deciding to use their usual modes (see Iyengar et al., 2006; Schwartz et al., 2002). Though not travel-related, Iyengar et al. (2006) found that graduate students with low satisficing tendencies (i.e., maximisers) were less satisfied with their jobs and were more likely to be pessimistic, stressed, worried, and depressed throughout their job-search process. One possible reason is that maximisers tend to have high expectations with their decisions and so, they may feel negative and less satisfied with their choices if their choices do not meet their high expectations. The low satisficing commuters in our study may have had high expectations for their daily commute but their usual-mode commutes have not matched their expectations effectively. As a result, they were less likely to be satisfied with their usual-mode commutes, less likely to have a positive impression of their usual-mode commutes compared to the high satisficing commuters and do not like their usual-mode commutes as much as high satisficing commuters like theirs. Therefore, we conclude that there are psychological differences between high- and low-satisficing commuters, particularly with regards to how they feel about, and how satisfied are they with their usual-mode commutes.

Apart from psychological differences, there are also some travel-related differences between high- and low-satisficing commuters. We found that low-decision satisficers used their usual modes more often than high-decision satisficers for all kinds of trips in a week. Although not significant at the Bonferroni-adjusted significance value, low-decision satisficers made more commuting trips using their usual modes in a week than high-decision satisficers (significant at $p = .05$). Low-decision satisficers also commuted over longer distances than high-decision satisficers. In other words, commuters who were more likely to make good-enough decisions tended to make fewer trips and commute over shorter distances using their usual modes. We attribute these travel differences to the types of travel modes that high and low satisficers usually use for their daily commute. By a plurality of 31%, high-decision satisficers tended to cycle, whereas by a majority of 65.9% low-decision satisficers tended to use the car for their daily commute. Several studies (e.g., Kuhnimhof, Chlond, and von der Ruhren, 2006; Simma and Axhausen, 2001; Sivasubramaniyam et al., 2020) have found car users tend to use their mode most of the time instead of using a combination of several modes. So, the low-decision satisficers in our study tended to make more trips using their usual modes possibly because they are mostly car users as shown in our chi-square analyses. High-decision satisficers were largely represented by cyclists, and several studies (e.g., Clifton et al., 2012; Gatersleben and Uzzell, 2007; Winters, Brauer, Setton, and Teschke, 2010) have shown that cyclists tended to travel over shorter distances and make fewer trips in a week compared to solo drivers (Sivasubramaniyam, et al., 2020).

Other than being highly represented in the high-decision satisficing group, cyclists also tended to have the highest decision-satisficing scores compared to other commuters, while solo drivers had the lowest. In other words, cyclists were more likely to make good-enough decisions when commuting with their usual modes compared to other commuters, particularly solo drivers. Baník and Vargová (2019) demonstrated that satisficers are more positive and more satisfied with their outcomes because they are more likely to enjoy the benefits of their good-enough choices. Several studies (e.g., Gatersleben and Uzzell, 2007; Schneider, 2011; Sivasubramaniyam et al., 2020) have shown that cyclists tend to find cycling satisfying and pleasurable, which may

Table 6

Decision- and behaviour-satisficing scores of five types of commuters.

Commuters	Decision-satisficing score		Behaviour-satisficing score	
	M	95% CI	M	95% CI
Drive solo	3.28	3.18, 3.39	3.55	3.47, 3.64
Ride share	3.34	3.12, 3.56	3.58	3.41, 3.75
Bus	3.78	3.55, 4.01	3.67	3.41, 3.94
Bicycle	3.80	3.66, 3.93	3.69	3.62, 3.77
Other modes	3.72	3.52, 3.93	3.64	3.55, 3.73

stem from their perceived health benefits of cycling (Singleton, 2019). In contrast, solo drivers tend to find their commute stressful (Schaeffer, Street, Singer, and Baum, 1998), not pleasurable (Sivasubramaniyam et al., 2020), and therefore, not good enough for them. One source of stress for car users could be their tendencies to engage in social comparisons and to make commuting decisions that make them seem superior to others. Social norms have been found to be associated with drivers' intentions to drive for their daily commute (Bamberg, Ajzen, and Schmidt, 2003; Sivasubramaniyam et al., 2020). In other words, individuals with low tendencies to satisfice (i.e., maximisers), such as the solo drivers in our study, tend to rely on their social standards when making decisions and when they fail to reach these standards they are more likely to seek the best option (see Lyubomirsky and Ross, 1997). Overall, cyclists have high satisficing tendencies possibly because they enjoy cycling and are highly satisfied with their commute, whereas solo drivers have low satisficing tendencies possibly because they find driving stressful, not satisfying, and require social validation from others.

Despite our interesting findings, our study has several limitations. Firstly, we had unequal sample sizes of various commuters such that, the majority of our commuters were solo drivers. As drivers tend to be different from other commuters in terms of their travel characteristics, psychological variables, and their commitment towards their mode (see Sivasubramaniyam et al., 2020), it is essential to take caution in interpreting some of the results of the analyses. Gender imbalance (approximately 63% female) was also present in our sample. Several studies (e.g., Curtin, Presser, and Singer, 2000; Moore and Tarnai, 2002; Singer, Hoewyk, and Maher, 2000) have shown that women are more likely to participate in surveys than men. Our sample also seems to be more educated than the general New Zealand population. While 24.9% of our sample had at least a master's degree, only 10.7% of New Zealanders have attained a post-graduate qualification (Statistics New Zealand, 2019). Some studies (e.g., Curtin et al., 2000; Singer et al., 2000) have identified that more educated and more affluent individuals are more likely to take part in surveys than less educated and less affluent individuals.

In spite of the limitations, our results have not only demonstrated that commuters are more likely to adopt the satisficing decision-making strategy for their usual-mode commutes compared to their alternative-mode commutes, but also that commuters with strong tendencies to satisfice are different to commuters with weak tendencies to satisfice in terms of their psychological (e.g., feelings, impression, and satisfaction) and travel characteristics (e.g., trip frequencies, commuting distance, and travel modes). As a result, further research could develop interventions to encourage mode shift of commuters by targeting their decision-making strategies because encouraging commuters to use more sustainable modes is not only beneficial for the environment but also for their wellbeing (Scheepers et al., 2014). As cycling is associated with high satisficing tendencies and tends to have many affective and hedonic benefits (e.g., Gatersleben and Uzzell, 2007; Schneider, 2011; Singleton, 2019; Sivasubramaniyam et al., 2020), future research can encourage commuters to make satisficing decisions by activating goals of experiencing positive feelings and satisfaction through the use of sustainable commuting modes (see goal priming; Papies, 2016). Furthermore, as commuters' decisions to use their usual modes tend to be 'good enough' for them, another type of intervention to consider is self-persuasion (see Aronson, 1999), where car users in particular, can be asked to generate their own reasons for using more sustainable modes and reasons for not using the car. By doing so, car users will be encouraged to think that their car use may not be good enough after all, especially with regards to the environment and societal implications. Moreover, policy-makers can create policies that support commuters' satisficing decision-making strategies in ways that will provide them with a satisfying, emotionally-rewarding, and yet sustainable commuting experience. For example, placing special emphasis on designing routes and exclusive bus lanes, will not only provide traffic priority for buses, faster connections, and more reliable departures, but also may increase commuters' willingness to use public transport and belief that public transport is good enough for them. Taking into consideration the results of our current study and the possible future directions, we are

optimistic that interventions to encourage mode shift that target commuters' satisficing decision-making strategy may not only be useful for the environment, but also for the commuters themselves.

Author contributions

The study described in this manuscript was undertaken by the first author (RDS) in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology and was supervised by the second (RJS) and third authors (SGC). The manuscript was jointly prepared by all three authors.

Data availability

The data analysed for this study are not publicly available due to lacking of participants' consent for open data-sharing, but the data are available from the first author upon reasonable request.

Funding

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Ethical approval

All participant recruitment and test procedures were approved by the Human Research Ethics Committee of the School of Psychology at the University of Waikato, Hamilton, New Zealand. Informed consent was obtained from all of the participants in the study.

Declaration of competing interest

The authors declare that they do not have any competing interests.

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Appendix A. Questions used in the online survey

Questions Used in the Online Survey

Survey Questions	
First filter item	
Assuming that you had a regular working or schooling week, which method of travel did you use most often to get to work or school in the last seven days (i.e., usual mode)?	
1. I drove alone 2. I shared a ride with one or more people 3. I took the bus 4. I cycled 5. I used other methods (Please specify): 6. I do not commute ¹	
Travel characteristics of usual modes	
1. In the last 7 days, what percentage of all your trips involved using your usual method of travel (i.e., your response to Question 1)?	0 – 100%
2. In the last 7 days, what percentage of your commuting trips (i.e., travel to work or school) involved using your usual method of travel?	0 – 100%
3. How far (in kilometres) do you travel for your one-way regular commute using your usual method?	0 – 100 km ²
4. How long (in minutes) does your one-way regular commute take using your usual method?	0 – 120 min ³
Mode-specific items for usual modes	
Instructions: For the next set of questions we want you to think about yourself and your regular commuting trips using your usual method of commuting.	

(continued on next page)

(continued)

Survey Questions

Measure of commuters' satisficing tendencies

5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

1. I usually try to find a couple of good travel options and then choose between them.
2. At some point, you need to make a decision about how to travel.
3. I try to make the most of whatever travel method I choose.
4. There are usually several good travel options in a commuting decision situation.
5. I try to gain plenty of information before I make a commuting decision, but then I go ahead and make it.
6. Good things can happen when commuting even when things don't go right at first.
7. I can't possibly know everything before making a commuting decision.
8. All commuting decisions have pros and cons.
9. I know that if I make a mistake in a commuting decision that I can go and choose a different method next time.
10. I accept that commuting often has uncertainty.

Measure of commuter's satisfaction

7-point Semantic-differential scale

During my most recent trip to work or school using my usual method of travel,

1. I was very: tensed – relaxed
2. I was very: bored – enthusiastic
3. I was very: sad – happy
4. I was very: tired – energised
5. I was very: distressed – content
6. I was: worried I wouldn't arrive on time – confident I would arrive on time
7. My trip was: the worst I can imagine – the best I can imagine
8. My trip went: poorly – smoothly

My trip was: displeasing – enjoyable

Measure of commuter's habit strength

7-point Likert scale (1 = strongly disagree, 7 = strongly agree)

The way I get to work or school using my usual method of commuting is something:

1. I do frequently
2. I do automatically
3. I do without having to consciously remember
4. That makes me feel weird if I do not do it
5. I do without thinking
6. That would require effort not to do it
7. That belongs to my daily routine
8. I would find hard not to do
9. I have no need to think about doing
10. That's typically "me"
11. I have been doing it for a long time

Direct measure of commuters' satisficing tendencies

5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

Please indicate the extent to which you agree or disagree with the following statements:

1. Commuting using your usual method is good enough for you.
2. Commuting using your usual method meets your basic needs.
3. Commuting using your usual method is the best method to commute in all respects⁴

Hedonic characteristics of usual modes

1. Please indicate to what extent you felt the following feelings and/or emotions while commuting:

5-point Likert scale (1 = not at all, 2 = a little, 3 = moderately, 4 = quite a bit, 5 = extremely)

- a. 10 items adapted from Thompson (2007): upset, hostile, alert, ashamed, inspired, nervous, determined, attentive, afraid, and active.
 - b. 10 items adapted from Singleton (2017): excited, strong, vulnerable, proud, angry, bold, frustrated, timid, calm, stressed.
2. How much did you like commuting using your usual method?
5-point Likert scale (1 = strongly disliked, 2 = somewhat disliked, 3 = neither liked nor disliked, 4 = somewhat liked, and 5 = strongly liked)
 3. Please select the choice that best corresponds to your overall impression of using your usual method for commuting.
7-point Semantic-differential scale
 - a. Slow – Fast
 - b. Expensive – Affordable
 - c. Inconvenient – Convenient
 - d. Unpredictable – Reliable

(continued)

Survey Questions

- e. Risky – Safe (from traffic collisions and injuries)
- f. Vulnerable – Secure (from crime or violence)

Second filter item

If there was a time you had to use an alternative method to get to work or school due to various reasons (e.g., bad weather, you missed the bus, your car broke down, your bicycle tyres were punctured, you recently moved, etc.) what was the alternative method you used most often?

1. I drove alone
2. I shared a ride with one or more people
3. I took the bus
4. I cycled
5. I used other method (Please specify):
6. I never had to use an alternative method⁵

Mode-specific items for alternative modes

Instructions: For the next set of questions we want you to think about yourself and your regular commuting trips using your alternative method of commuting.

Measure of commuters' satisficing tendencies

5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

1. I tried to find a couple of good travel alternatives and then choose between them.
2. At some point I had to make a decision about travel alternatives.
3. I tried to make the most of whatever travel alternative I used.
4. There were several good travel alternatives in the decision situation.
5. I tried to gain plenty of information before I made the decision, but then I went ahead and made it.
6. Good things happened during the trip even when things didn't go right at first.
7. I can't possibly know everything before making the decision to use the alternative method.
8. The decision to use the alternative method had pros and cons.
9. I knew that if I made a mistake in the decision to use the alternative method, I can go and choose a different method next time.
10. I accepted that commuting using the alternative method often has uncertainty.

Direct measure of commuters' satisficing tendencies

5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

1. Commuting using your alternative method is good enough for you.
 2. Commuting using your alternative method meets your basic needs.
 3. Commuting using your alternative method is the best method to commute in all respects.⁶

General travel items

Instructions: For the next set of questions we want you to think about your experience travelling by any method for any trip purpose.

Measure of the tendency to experience difficulty when making travel decisions

5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

1. I usually have a hard time making even simple travel decisions
2. I am usually worried about making a wrong travel decision.
3. I often wonder why travel decisions can't be more easy
4. I often put off making a difficult travel decision until a deadline
5. I often experience 'buyer's remorse' when travelling
6. I often think about changing my mind after I have already made my travel decision
7. The hardest part of making a travel decision is knowing I will have to leave the choice I didn't choose behind.
8. I often change my mind several times before making a travel decision.
9. It's hard for me to choose between two good alternatives
10. Sometimes I procrastinate in deciding even if I have a good idea of what travel decision I will make
11. I find myself often faced with difficult travel decisions
12. I agonize over travel decisions

Measure of the tendency to experience regret when making travel decisions

7-point Likert scale (1 = strongly disagree, 7 = strongly agree)

1. Whenever I make a travel decision, I'm curious about what would have happened if I had decided differently.
2. Whenever I make a travel decision, I try to get information about how the other alternatives turned out.
3. If I make a travel decision and it turns out well, I still feel like something of a failure if I find out that another travel decision would have turned out better.
4. When I think about how I'm doing in life, I often assess the travel opportunities I have passed up.
5. Once I make a travel decision, I don't look back (R).⁷

Measure of satisfaction with travel

7-point Semantic-differential scale

Whenever I travel:

(continued)

Survey Questions

1. I feel very: tensed – relaxed
2. I feel very: bored – enthusiastic
3. I feel very: sad – happy
4. I feel very: tired – energised
5. I feel very: distressed – content
6. I feel very: worried I wouldn't arrive on time – confident I would arrive on time
7. It is: the worst I can imagine – the best I can imagine
8. It has always worked: poorly – smoothly
9. It is: displeasing – enjoyable

Non-travel-related items

Instructions: For the next set of questions, we want you to think about things outside of your commuting or travelling experiences and indicate the extent to which you strongly disagree or strongly agree with the following items.

Measure of the tendency to experience difficulty when making general decision
5-point Likert scale (1 = strongly disagree, 5 = strongly agree)

1. I usually have a hard time making even simple decisions
2. I am usually worried about making a wrong decision.
3. I often wonder why decisions can't be more easy
4. I often put off making a difficult decision until a deadline
5. I often experience buyer's remorse
6. I often think about changing my mind after I have already made my decision
7. The hardest part of making a decision is knowing I will have to leave the item I didn't choose behind.
8. I often change my mind several times before making a decision.
9. It's hard for me to choose between two good alternatives
10. Sometimes I procrastinate in deciding even if I have a good idea of what decision I will make
11. I find myself often faced with difficult decisions
12. I agonize over decisions

Measure of the tendency to engage in decision reinvestment and decision rumination
5-point Likert scale (1 = extremely uncharacteristic, 5 = extremely characteristic)
Decision Reinvestment

1. I'm always trying to figure out how I make decisions
2. I'm concerned about my style of decision-making
3. I'm constantly examining the reasons for my decisions
4. I sometimes have the feeling that I'm observing my decision-making process
5. I am alert to changes in how much thought I give to my decisions
6. I'm aware of the way my mind works when I make a decision

Decision Rumination

7. I remember poor decisions I make for a long time afterwards
8. I get "worked up" just thinking about poor decisions I have made in the past
9. I often find myself thinking over and over about poor decisions that I have made in the past
10. I think about better decisions I could have made long after the event has happened
11. I rarely forget the times when I have made a bad decision, even about the minor things
12. When I am reminded about poor decisions I have made in the past, I feel as if they are happening all over again
13. I'm concerned about what other people think of the decisions I make

Measure of the tendency to experience regret after making general decisions
7-point Likert scale (1 = strongly disagree, 7 = strongly agree)

1. Whenever I make a choice, I'm curious about what would have happened if I had chosen differently.
2. Whenever I make a choice, I try to get information about how the other alternatives turned out.
3. If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.
4. When I think about how I'm doing in life, I often assess opportunities I have passed up.
5. Once I make a decision, I don't look back (R).⁸

Demographic items

1. Gender
2. Age
3. Current employment status
4. Current education status
5. Highest education level
6. Total personal income in the last 12 months
7. Moving status

Notes

- ¹ Respondents who selected 'I do not commute' advanced to the demographic questions
- ² An option of > 100 km is provided
- ³ An option of > 120 minutes is provided
- ⁴ Item 3 needs to be reverse-coded when scoring
- ⁵ Respondents who selected 'I never had to use an alternative method' advanced to the demographic questions
- ⁶ Item 3 needs to be reverse-coded when scoring
- ⁷ Item 5 needs to be reverse-coded when scoring
- ⁸ Item 5 needs to be reverse-coded when scoring

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