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## I'm multimodal, aren't you? How ego-centric anchoring biases experts' perceptions of travel patterns

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### ABSTRACT

Transport professionals process an enormous range of information to help them accurately predict how, when and where people will use the transport system. Yet we know from a long-standing history of psychology research that people draw upon a range of mental shortcuts when making estimates about the world. Ego-centric anchoring and adjustment is a common example of a mental heuristic whereby people draw upon their own beliefs and experiences when estimating the behaviors and attitudes of others. Do transport professionals use ego-centric anchoring when estimating travel patterns? To find out we conducted a survey of transportation professionals ( $n = 247$ ) who were asked to reveal their own travel patterns and residential location and to estimate the travel patterns of millennials, generation X, and baby boomers.

We find that relative to the average American, transportation professionals in the US are more likely to use alternative transport modes and live in more urban neighborhoods. Transportation professionals systematically over-estimate the use of alternative modes (and under-estimate driving) among other Americans. This effect is strongest among transportation professionals who themselves are multi-modal.

These results raise a note of caution for transport practitioners and policy-makers to be aware of one's initial 'anchor' of personal experience when judging the behavior and desires of the community. For example if practitioners overestimate the proportion of Americans that are already walking, biking, and using transit, they may under-estimate the policy and institutional barriers that have led the majority of Americans to follow the car-dominated path of previous generations.

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## 1. Introduction

An essential component of planning the transport network is accurately predicting how, when and where people will use it. To achieve this monumental task urban planners collect, process, and apply an extraordinary amount of information: from macroscopic models and household travel surveys to opinion polls and focus groups. But transport professionals are humans, and humans rely on a range of mental shortcuts to help them process these vast troves of information. These mental shortcuts, called heuristics, are helpful but they can bias judgements and decisions in predictable ways. If these biases are not

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taken into account, they can lead to inaccurate or misleading conclusions about what people want or need from the transport system.

In this paper we explore one common heuristic—ego-centric anchoring—to determine whether transport professionals, at least in part, use mental shortcuts to make judgements about the travel behavior of others. Under the ego-centric anchoring heuristic, when individuals make judgements about other people, they tend to draw first upon their own personal experience before adjusting their estimate using other information (Epley et al., 2004).

As a simple illustration of how ego-centric bias can influence planning decisions, consider the case of vehicle speed and trip duration. Although vehicle speed is the main determinant of trip duration for personal vehicle trips, it is less central for public transit trips because so much time is spent walking to and from stations, waiting for transit vehicles, and waiting for passengers to load and unload. Many board members of transit agencies rarely use transit and instead drive for most trips. Because they naturally draw on their own experience, these board members tend to overemphasize the importance of vehicle speeds in transit planning and underemphasize the importance of stop spacing, service frequency, and minimizing dwell times (Walker, 2012).

In this paper we explore whether ego-centric anchoring influences transportation professionals' estimates about the travel patterns of the general public. Transportation professionals were asked to estimate the travel patterns of Americans from three generations: baby boomers, generation X, and the millennial generation. This generational approach is most appropriate given the recent interest in the travel habits of millennials in particular (Delbosc and Currie, 2013; McDonald, 2015; Ralph, 2016; Klein and Smart, 2017). We hypothesize that transport professionals (planners, engineers, and academics), at least in part, base their judgment of the travel behavior of others on their own travel behavior and personal experience. If transport professionals are more likely to use alternative transport and live in urban areas (and this seems likely since most transportation courses are offered in urban areas (Zhou and Schweitzer, 2009)), then it may be no surprise that this experience influences their judgements.

To be clear, the focus of this analysis is not how *accurate* the estimates are, but rather how *biased* they are toward personal experience. Estimates of nationwide travel patterns are unlikely to be very precise, but in the absence of egocentric bias we would expect that personal experience would not influence the direction or degree of bias. On the other hand, if egocentric bias is at work, we would expect those transport professionals that drive less to systematically underestimate driving and overestimate the use of other mode because they themselves drive less than the general public.

If we are right that transportation professionals use ego-centric anchoring to estimate the travel patterns of the public, then major consequences follow for planning efforts. For instance, if planners overestimate the extent of multimodality, they may underestimate the opposition to replacing parking with bike lanes or may overestimate the effectiveness of improving transit service.<sup>1</sup>

## 2. Literature review

### 2.1. Everyday biases

People make judgements and decisions throughout their daily life, often in complex contexts characterized by uncertainty. Humans only have limited cognitive resources and rely heavily on heuristics—mental shortcuts—to help them make decisions (Tversky and Kahneman, 1974). One of the common heuristics used when making judgements is the anchoring and adjustment heuristic, first described in 1974 (Tversky and Kahneman, 1974). In this heuristic, when people estimate an unknown quantity (say, the length of the average American commute) they begin with an 'anchor' of information they do know (say, their own commute) and adjust until an acceptable value is reached. This anchor could be based on information given to a person (such as the advertised price of new car before bargaining) or it could be drawn from personal experience (the price a friend paid for a new car).

One of the most common anchors is personal experience, which is the basis of ego-centric decision-making. Estimating the behaviors, attitudes and thoughts of other people is complex and effortful; anchoring and adjustment makes this process simpler by substituting one's own perspective and adjusting until a reasonable estimate has been achieved (Epley et al., 2004). Yet repeated studies have shown that people tend to rely too much on their personal beliefs and experience and underestimate the requisite adjustments (Nickerson, 1999; Epley et al., 2004).

These biases do not just prey on the uneducated or the non-professional. Heuristics and biases shape the diagnoses of medical practitioners (Bornstein and Emler, 2001) and impact the decisions of judges (Guthrie et al., 2001). Academics are also subject to these biases when choosing what topics to research or how to interpret non-intuitive results. In a recent highly publicized example, a team of social psychology researchers identified that psychology researchers were overwhelmingly politically liberal which has biased psychological research into political views (Duarte et al., 2015). The lack of political diversity embeds liberal values into theory and method, avoids topics that contest the liberal narrative, and mischaracterizes conservative traits and values (Redding, 2001; Duarte et al., 2015).

<sup>1</sup> Of course, ego-centric anchoring may not be the only reason to overstate the effects of transit service improvements, see Flyvbjerg, B., M. K. S. Holm and S. L. Buhl (2005). "How (in)accurate are demand forecasts in public works projects?" *Journal of the American Planning Association* 71(2): 131–146.

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