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Driving by Choice or Necessity?

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ABSTRACT

From just about all accounts, Americans are driving more than ever, not just to work but to shopping, to school, to soccer practice and band practice, to visit family and friends, and so on. Americans also seem to be complaining more than ever about how much they drive – or, more accurately, how much everyone else drives. However, the available evidence suggests that a notable share of their driving is by choice rather than necessity. Although the distinction between choice and necessity is not always so clear, it is important for policy makers. For necessary trips, planners can explore ways of reducing the need for or length of the trip or ways of enhancing alternatives to driving. For travel by choice, the policy implications are much trickier and touch on basic concepts of freedom of choice. This paper first develops a framework for exploring the boundary between choice and necessity based on a categorization of potential reasons for and sources of "excess driving", and then uses in-depth one-on-one interviews guided by this framework to characterize patterns of excess driving. This research contributes to a deeper understanding of travel behavior and provides a basis for developing policy proposals directed at reducing the growth in driving.

INTRODUCTION

From just about all accounts, Americans are driving more than ever. Data from the Federal Highway Administration suggests that kilometers of vehicle travel (VKT) on roads in the U.S. has been increasing at an average rate of 2.7 percent per person per year, from 8,710 VKT per person per year in 1970 to 15,686 in 2000 (Handy 2002). They are driving more not just to work but to shopping, to school, to soccer practice and band practice, to visit family and friends, and so on. According to data from the Nationwide Household Travel Survey, trips for social and recreation purposes accounted for 13.4% of daily miles of travel by car in the U.S. in 2001 and 13.7% of car trips; visits to friends and relatives accounted for another 10.8% of miles traveled by car and 6.7% of car trips. Americans also seem to be complaining more than ever about how much they drive – or, more accurately, how much everyone else is driving: congestion regularly tops the list of issues of greatest concern to residents of metropolitan areas in the U.S. (e.g. Nguyen 2003).

Yet the available evidence suggests that a notable share of their driving may be by choice rather than necessity. Although many reasonable explanations for why Americans are forced to drive so much have been put forth (e.g. the spread of the suburbs, the lack of good transit alternatives), the categories of travel increasing the most are those that tend to be more flexible and optional. Americans made 86.5 more trips for social and recreation purposes, 68.9 more trips for shopping, 85.9 more for family and personal business, and 17.5 more for visiting per year on average in 2001 than in 1990 (Liss et al. c. 2003). Other evidence suggests more directly that a significant amount of driving takes place by choice. In an attitudinal survey in the U.K., drivers reported that less than 50% of their annual driving was "essential," with around 10% rated as "not at all important" and another 18% as "not very important" (Jones and Sloman 2003). Handy and Clifton (2001) found that as much as 50 percent of driving associated with trips to the supermarket in Austin could be attributed to the choice to shop at stores other than the one closest to home.

The distinction between choice and necessity is not always clear, however. What if that more distant supermarket offers some product, service, or quality that the closest supermarket doesn't? What about driving the kids to school or to soccer practice? The distinction between driving by choice and by necessity is further complicated by the fact that day-to-day decisions about travel are shaped by long-term

decisions about residential location, job location, and activity participation. Each one of these decisions involves some degree of choice, although some individuals have more choices than others, depending on their constraints of income, social ties, knowledge, etc. But once these decisions are made, they create a certain necessary level of daily driving and may considerably narrow the flexibility in trip frequency, destination, mode, and route.

The distinction between choice and necessity, though not always clear, is important for policy makers. For necessary trips, planners can explore ways of reducing the need for or length of the trip or ways of enhancing alternatives to driving, and everyone benefits if the planners are successful. For driving by choice, the policy implications are much trickier and touch on basic concepts of freedom of choice: "What we need to do is make certain that we're able to get [energy] resources… into the hands of consumers so they can make the choices that they want to make as they live their lives day to day," proclaimed White House spokesman Ari Fleischer in May 2001 (White House 2001). An understanding of the boundary between driving by choice and driving by necessity can help to clarify these philosophical issues and define the policy alternatives.

The goal of the research summarized in this paper was to explore the choices that individuals and households make about driving, in particular, the boundary between driving by choice and driving by necessity, and through this exploration both contribute to a deeper understanding of travel behavior and provide a basis for developing policy proposals directed at reducing the growth in vehicular travel. The paper first proposes a conceptual framework for categorizing what might be called "excess" driving by the reasons for excess driving and the source of excess driving. The paper then summarizes results from a series of in-depth interviews conducted in May and June 2003 in Austin, TX that used this framework to characterize patterns of excess driving. Finally, the paper concludes with a discussion of potential policy implications and questions for further research.

PROPOSED FRAMEWORK

As noted, the distinction between driving by choice and driving by necessity is not entirely clear. One way to clarify this distinction is to ask, in what ways are people driving more than they really need to, thereby generating what might be called "excess" driving? As a starting point, excess driving is defined here as driving beyond that required for household maintenance *given* choices about residential location, job location, and activity participation. The required level of driving can be defined more specifically as the minimum number of trips using the shortest routes to the closest destinations possible and using modes other than the car as often as possible. Excess driving is then defined as driving above and beyond the required level and can be generated by the choice of longer routes, farther destinations, greater use of the car, and more frequent trips than the minimum required. Of course, these minimum requirements can be difficult to define, particularly the minimum requirements for destination and frequency. Each individual has her own set of minimum requirements, given her own needs and constraints, that is not readily observable. To complicate matters further, even seemingly necessary trips – the commute to work, a trip to the grocery store – might involve some element of choice with respect to route, mode, destination, or frequency that contributes to excess driving.

A series of reasons for the four sources of excess driving (more frequently, longer route, more by car, farther destination) differ with respect to the degree of conscious choice involved (Table 1). Driving purely for the sake of driving is clearly a choice, as are driving because of the value of activities while driving and driving for the sake of variety. Excess driving because of habit or poor planning does not result from a conscious choice as much as it does from a lack of conscious thought. Misperceptions and lack of information, in contrast, are unconscious influences that may lead to excess driving. Excess driving can thus be intentional (as is the case for driving for the sake of driving, for the value of activities while driving, or for the sake of variety) or unintentional (as is the case for excess driving because of

habit, poor planning, misperceptions, and lack of information). Similarly, these potential reasons for excessive driving differ in their degree of apparent "rationality": from the standpoint of traditional assumptions in travel behavior theory, driving for the sake of driving and other intentional excessive driving appear "irrational," in that individuals are consciously choosing not to minimize their travel time (Goodwin and Hensher 1978).

<Table 1 goes about here>

Within the conscious choice category are the value that drivers derive from the act of driving itself and the value that drivers derive from the activities they can participate in while driving – watching the scenery, listening to the radio, getting out of the house, clearing one's head, etc. Mokhtarian, et al. (2001) found significant evidence for these motivations in a majority of their sample, although participants in their study found it difficult to distinguish between the value of travel itself and the value of the activities while traveling. The "positive utility" of driving might lead to the choice of longer routes (cells A2 or B2 in Table 1) and farther destinations (A4 or B4) than are necessary, either to extend the time spent driving or to enable more time for activities that one enjoys while driving. The positive utility of driving might also generate more driving trips than are necessary (A1 or B1), driving trips that are purely optional, such as a Sunday drive in the country. As Mokhtarian and Salomon (2001) have articulated, for these kinds of trips, driving itself is the purpose of the trip; Heinze (2000) calls such trips "original demand," in contrast to derived demand. Even for some trips that involve a destination, driving is the primary purpose of the trip, and the destination is of secondary importance, nothing more than an excuse for the drive. The positive utility of driving might also contribute to more use of the car than is necessary (A3 or B3). Given that the car is often faster than other modes, any positive utility to driving is likely to be frosting on the cake, so to speak, when choosing between modes.

A desire for variety also falls into the category of conscious choice. Ratner, et al. (1999) have found evidence that individuals sometimes switch away from their preferred option to less-preferred options purely for the sake of variety. With respect to travel behavior, variety-seeking behavior may influence the choice of routes (C2), the choice of destinations (C4), and the frequency of trips (C1), leading to excess driving. As Mokhtarian and Salomon (2001) have noted, it is difficult to distinguish between the positive utility of travel and variety seeking as motives, that is, whether the motivation is a desire for more time in the car or for variety in scenery. It can also be difficult to distinguish between pure variety seeking behavior and variable needs that might lead an individual to choose different destinations on different occasions. In the latter case, variable needs lead to variable levels of minimum required driving, which affects the level of driving that could be defined as excess. It is also possible that variety seeking leads to different mode choices on occasion (C3); when driving is the usual mode, variety seeking would tend to reduce rather than increase excess driving.

The remaining factors that can contribute to excess driving are not intentional: habit, poor planning, misperceptions, and lack of information. With these factors, drivers do not consciously choose to drive more than they need to, but they could make different choices that would reduce their driving. The Travel Blending® Program, described by Rose and Ampt (2001), focuses on the potential for reducing driving by raising awareness and providing information. In a pilot study, driving declined by about 10% after participants were made aware of alternatives to their current patterns of driving. A review of other voluntary travel behavior change programs in the U.K. found evidence of similar declines in driving (Jones and Sloman 2003). These programs address all four of these sources of excess driving.

Excess driving due to habit perhaps involves a larger element of choice than excess driving due to poor planning, misperceptions, and lack of information. Garling and Axhausen (2003) define habitual behavior as that which involves no or little deliberation and no formation of intention – it involves little in the way of conscious thinking; choices evolve into habitual behavior over time and are only infrequently

re-evaluated (Heggie 1979). Individuals may regularly travel longer routes (D2), visit more distant destinations (D4), and drive rather than use other modes (D3) without thinking about their choices, even when they are aware of alternatives. Habit may also contribute to more frequent trips than necessary for a particular activity (D1). For many people, choices made by habit may come to seem a necessity, although in some cases, behavior that appears to be a matter of habit is actually forced on individuals by institutional constraints (Jones 1978). The key to undoing habitual behavior is to get individuals to deliberate their choices once again (Bamberg et al. 2003; Fujii and Kitamura 2003; Garling and Axhausen 2003; Goodwin and Hensher 1978; Heggie 1979). The willingness to reconsider habitual behavior may depend on a variety of characteristics of the individual, including gender (Matthies et al. 2002).

For excess driving due to poor planning, choice also plays a role, though a lesser one; a lack of conscious thought is the main culprit. Poor planning for an activity such as grocery shopping may lead to additional trips for a particular activity (E1). Poor planning with respect to trip chaining may lead to more frequent trips (E1), more distant destinations (E4), or longer routes (E2). Because transit service has a fixed schedule, poor planning might also lead to more use of the car than is necessary (E3). A factor closely related to that of poor planning is poor anticipation of needs. If an individual accurately anticipates future needs for goods or activities, these needs can be met as a part of an existing trip, thereby eliminating the need for a later trip.

The final two categories, misperceptions and lack of information, represent unconscious influences on excess driving. In neither case can the individual make different choices without some help. Mistakes in perception are behind many of the discrepancies between actual behavior and economic theory, particularly when individuals are choosing between unfamiliar alternatives (McFadden 2002). Misperceptions might include an individual's incorrect belief about what is the shortest route (F2), the closest destination (F4), or the quickest mode (F3). In this case, the individual believes he is making the choice that minimizes driving when he is not. Misperceptions about the availability of activities at particular times and locations might also lead to extra trips (F1).

Lack of information may have similar effects. In this case, the individual simply doesn't know about other alternatives that would minimize driving. Again, he believes he is making the choices about route (G2), destination (G4), mode (G3), and frequency (G1) that minimize driving. As Heggie (1979) notes, individuals generally have limited information about alternative modes, routes, and destinations. Efforts by public agencies to provide information about routes, destinations, and modes to the general public aim at these sources of excess driving. For example, parking information systems in European cities that direct drivers to the nearest available parking help to reduce excess driving in congested areas. However, simply providing information isn't always enough. As noted by Sharps and Martin (2002), individuals often make decisions without making use of important information, even when that information is readily available.

Gray Areas

This framework leaves many significant "gray areas," where it is hard to pin down exactly what constitutes driving by choice versus driving by necessity. Two factors in particular that contribute to levels of driving but were excluded from the definition of excess driving presented earlier may merit further consideration: assessment of destination attractiveness and choice of activities.

According to travel behavior theory, individuals choose the option that provides them with the greatest utility. For destination choices, researchers assume that utility is determined by the cost of reaching the destination and the attractiveness of the destination. In our definition of excess driving, the individual's assessment of the attractiveness of potential destinations was taken as a given. However, some of the qualities that contribute to the attractiveness of potential destinations are clearly more important than

others. Should all qualities contributing to the attractiveness of a destination qualify as contributing to the necessity of that choice and thus to the necessity of travel? Or should the more expendable factors, the ones with higher cross-elasticities with travel costs, be considered in defining excess travel? Kemperman, et al. (2002) suggest that the utility of a destination can decline over time simply as a result of repeated visits; if so, is the variety offered by a more distant destination a necessary or unnecessary quality? Mayo, et al. (1988), for example, found that "the far-off destination has a special allure about it simply because it is far off," at least for vacation travel – should that count as a necessary quality? The difficulty is in knowing where to draw the line.

In addition, excess driving was defined earlier as driving above and beyond the minimum required, *given* choices about residential location, job location, and activity participation. Residential location and job location are relatively inflexible in the short run and may be highly constrained even in the long run and so seem appropriate to exclude from consideration in defining excess travel. However, choices about activity participation may be quite flexible, at least for some activities on some occasions. It may be appropriate, then, to also consider activity choice to some extent in defining excess driving. Again, the challenge is in deciding where to draw the line. What appears to be a question of choice to an observer may be perceived as a matter of necessity by the individual. Finding an objective way to make these distinctions may simply be impossible.

METHODS

Although qualitative techniques do not yield statistically significant results, they are ideally suited for exploratory research such as this (Clifton and Handy 2003). As a first step toward testing and refining the proposed framework, we held three focus groups at the University of Texas at Austin in May and June 2002. The purpose of the focus groups was to look for evidence of excess travel, test alternative ways of asking about excess travel, and identify other issues or themes related to excess travel. The results of the focus groups provided a basis for the development of an interview guide, which we used to conduct in-depth one-on-one interviews in Austin, TX in May, June, and July 2003. In the interviews, we looked for further evidence of excess driving and used the results to begin to assess which categories of excess driving are most pervasive and how excess driving varies across the population. The following discussion is based on the results of the one-on-one interviews.

Participants were recruited through an email message sent to a random sample of university employees, including faculty, staff, and student employees drawn from the published directory. Interviews were held on campus (or at satellite facilities for the university) at a time and location chosen by the participants, who were offered a $10 gift certificate at the university bookstore as an incentive. Three research assistants were trained to conduct the interviews, which were audiotaped and later transcribed. Using these transcripts, the research assistants coded the comments of the participants according to the framework described above to identify examples for each of the cells in Table 1. The coding was reviewed by two of the authors for consistency. A total of 43 interviews were completed over a period of eight weeks.

University employees are diverse, though not necessarily representative of the population of Austin as a whole. Most obviously, all participants are employed, at least part-time; several participants were also students (Table 2). The participants ranged in age from 23 to 67, with an average age of 43.9 years, and 58.1% were women. The majority of participants live with at least one other adult, though these households are about equally split between those that have children and those that don't. Commute length ranged from 5 to 90 minutes, with an average length of 27.8 minutes; many participants live outside of the City of Austin. One indication that the participants may not be representative of the population of the region as a whole is that 12 out of the 43 participants explicitly mentioned listening to National Public Radio (NPR) while driving, considerably higher than the overall market share for NPR of

around 5 percent (Clemetson 2004).

<Table 2 goes about here>

The interview guide consisted of three sections. In the first section, the interviewer asked the participants to recount their trips on the previous day. For each trip, the interviewer then asked about possible alternatives in terms of mode, destination, and route, and whether the trip was necessary. The purpose of this section was to assess the flexibility of travel choices and identify examples of excess driving. In the second section, the interviewers asked the participant a series of questions designed to elicit examples of each type of excess driving, as outlined in Table 1. Examples of these questions are included in Table 3. Some types of excess driving are easier to directly identify; for others, more indirect questions were used. Thus, the results may to some degree reflect differences in the effectiveness of our questions. The third section included three questions intended to assess the participants' own perspectives on the extent to which they drive by necessity and by choice, as well as their general feelings about owning a car.

<Table 3 goes about here>

RESULTS

The interviews offered interesting illustrations of the proposed framework but also demonstrated the complexity of identifying excess driving and distinguishing between driving by choice and necessity. We first discuss findings from the first and second sections of the interview guide on the different categories of excess driving (see Table 1). Following this discussion we review the results from the third section of the interview guide. Counts and statistics are provided as a way of summarizing the results and identifying patterns only; they do not provide an accurate portrait of excess driving for the population as a whole.

Evidence on Types of Excess Driving

Value of Driving Itself. In the interviews, we looked for evidence of the value of driving itself as well as the impact of this value, if any, on the amount of driving. The value of driving proved difficult to separate from the value of activities while driving. When asked whether they ever went for a drive for the sake of driving, many participants said they had (Table 4). But participants often then gave examples of going for drives to see the wildflowers or other scenery, in other words, for the sake of activities while driving rather than for the sake of driving itself. One way we approached this problem was to ask participants if they would still enjoy driving if they couldn't do the things they enjoy doing while driving, such as looking at the scenery or listening to the radio; few said that they would. Thirty-three out of 43 participants said that they would "beam up" rather than drive if they could ("Hell, yes!" said one participant). But 10 participants said they would not want to "beam up" for all of their trips and noted that they would miss traveling if they did; three of these participants explicitly mentioned that they would give up their driving trips but not their biking and walking trips, but seven others said that they would miss driving itself. A few comments suggest that at least for some people, there really is something about driving itself that they value (Table 5, Comments 1 through 5). Many participants noted that while they now rarely go for a drive for the sake of driving, they more often did when they were younger, suggesting that the value of driving itself may depend on lifecycle stage (Comments 6 and 7).

<Table 4 goes about here>
<Table 5 goes about here>

Whatever the source of enjoyment, the level of enjoyment depended on several factors. First, participants enjoyed driving more or less depending on the destination of the trip. In general, trips associated with

optional activities were more enjoyable than trips associated with going to work, although the transition time between home and work was also important for some participants. Another important factor influencing the enjoyment of driving is the conditions in which the drive occurs, in particular, levels of traffic. This factor may partly explain the lack of enjoyment of driving to work. Rather than the increase in travel time that results from congestion, participants seemed to be reacting to the fact of traffic itself and the frustrations associated with not being able to move freely. Several participants complained about the behavior of other drivers on the road. Not surprisingly, then, participants talked about the enjoyment of driving in the country rather than the city. This enjoyment undoubtedly has to do with scenery (as discussed below) but is also tied to traffic conditions.

The most obvious contribution of the value of driving itself to excess driving is on the generation of additional driving trips (A1 in Table 4), although these are infrequent. Only one participant pointed to the value of driving itself as leading to the choice of a longer route (A2). On the other hand, some participants noted that they will sometimes take longer, more scenic routes in order to enjoy driving more – the reverse direction of causality. We found no examples of the value of driving itself leading to the choice to use the car over other possible modes. We also found no examples of the choice of further destinations than necessary because of the value of driving itself, although participants sometimes noted that they will stop somewhere when going for a drive for the sake of driving. In this case, the destination is ancillary to the drive itself.

Value of Activities While Driving. Activities while driving seem to provide more value to participants than driving itself. The interviews produced examples of several different kinds of activities the participants enjoy while driving, and everyone seemed to enjoy something about driving on at least some occasions. Participants most often mentioned watching the scenery and listening to the radio or to tapes as things they enjoy doing while driving (Comments 8 and 9). Talking with friends and family members was also frequently mentioned. Others mentioned the importance of having time to oneself or time to think. Several participants noted that they enjoy what might be called "checking things out" – seeing what's going on in the community, watching progress on construction projects, exploring a new neighbourhood (Comments 9 and 10). Only one participant confessed to regularly talking on a cell phone while driving. More unusual activities included courting (Comment 12) and praying (Comment 13).

The contribution of these different activities to excess travel varies considerably, however. Looking at the scenery, getting to know a community, and sight-seeing clearly generate additional trips (B1) and often contribute to the choice of longer routes (B2). But other activities – checking things out, talking, thinking – do not and instead seem to be more of a way of compensating for the negatives of driving, of making the time spent driving more useful and enjoyable. The compensation value seemed especially clear for listening to tapes or to the radio (Comment 8). Although deriving some positive utility from such activities while driving does not always lead to excess driving, a little positive utility may be enough to lessen the motivation to reduce driving.

Variety Seeking. Participants had less trouble identifying excess driving associated with a desire for variety. Most participants said that they will sometimes take a different route just for a change of pace, and nearly half of participants said that they sometimes take a longer route (C2). A third of participants agreed that they sometimes take a trip just to get out of the house or for a change of scenery (C1). These trips were sometimes motivated by curiosity but also sometimes by a desire to get away from home or just to do something (Comments 14 through 16). One participant suggested that varying one's route (C2) is important for getting out of a rut (Comment 17). The impact of a desire for variety on mode choice (C3) is more complicated, however. Most commonly, participants who usually drive said that they will sometimes choose to walk, leading to a decrease in driving and suggesting that driving for these trips is not always necessary. A few participants who usually walk, bike, or take transit said that they will sometimes decide to drive just for a change of pace, in this case leading to an increase in driving.

Determining the impact on excess travel of the choice of farther destinations because of a desire for variety was also complicated. If the farther destination truly offers a quality that a closer destination does not, then the additional driving involved in getting there would not fall into our definition of excess driving. However, several respondents suggested that they sometimes chose more distant destinations, most often a restaurant, because they felt like getting away or wanted to visit a particular area.

Habit. The interview questions designed to identify excess driving due to habit focused on two relatively habitual trips, the trip to work and the trip to the grocery store. Habit seemed to have its clearest impact on trip frequency (D1). A number of participants said they grocery shop once a week or more out of habit (Comment 18) and, when pressed, said they could make fewer trips than they do, at least with better planning. Thus, excess driving due to habit was difficult to separate from excess driving due to poor planning. On the other hand, two participants who grocery shop almost every day offered justifications that suggest an element of need: a preference for fresh food in one case (Comment 19), and an enjoyment of being with people in the other. Although driving is the regular mode for almost all participants, only two said they could use an alternative mode but continue to drive out of habit (D3; Comment 21). Only two participants said that they use a more distant store out of habit when a closer one would do (D4; Comment 22). Of course, it is possible that other participants are not consciously aware of their habitual behavior, or rationalize it as being necessary or desirable rather than just an automatic pattern.

The route to work is evidently a matter of habit for participants (D2), many of whom said they had experimented with different routes before finding the one they liked best. Some participants admitted that their habitual route might be somewhat longer in terms of distance than the alternatives, but it was either shorter in terms of time or involved fewer traffic lights or less traffic or was otherwise more comfortable for them. Many participants make it a habit to sometimes use alternative routes depending on the time of day or if traffic is particularly bad that day, but the alternative route was shorter or not significantly longer than the usual route in most cases. Thus, habitual routes did not seem to generate excess driving, although one participant suggested the possibility (Comment 20).

Poor Planning. Participants split about equally into those who confessed to driving more than they needed to because they are poor planners (Comments 24-25) and those who claimed to have largely minimized the driving they do because they are good planners (Comments 26-30). These differences seemed to be a matter of personality as much as of demographics, although parents often expressed a need to be efficient because of time pressures associated with family responsibilities. Location also plays a role: participants who live farther away from stores make a point of planning their trips to minimize their driving (Comments 32 and 33).

When asked about grocery shopping, participants admitted to extra driving because of poor planning in two ways. First, they didn't always plan their shopping well enough to make it through to their next regular shopping trip, leading to extra trips beyond their regular shopping trips (E1) or to the lack of any kind of regular shopping schedule. Nearly three-quarters of participants could name such an occasion, generally within the last week or two. Many participants confessed to extra trips to deal with an emergency, take care of unanticipated needs, or satisfy cravings (Comments 34 and 35). A number of participants gave examples of trips to satisfy the demands of their children (Comments 36 and 37), although one mother said she resists such pressure (Comment 38). Trips to deal with an emergency can be classified as necessary, but trips to satisfy cravings or the demands of children are less clearly a matter of necessity. However, not all participants chose to make an extra trip when faced with such a situation. In particular, participants who lived farther from a grocery store often said that they simply make do or do without. Others said that they will make an extra stop on the way home from somewhere else or go to a nearby store rather than the usual store. Those who live very close to a store are more likely to make extra trips (Comment 31), though in these cases the participant sometimes chooses to walk rather than drive.

Second, participants often did not stop on the way home but instead went home first and then back out, thus missing an opportunity to reduce driving through trip chaining (E1). Participants were about equally split between those who make an effort to do all their shopping on the way home from work or other locations, so as to eliminate the need to go back out again, and those who choose to get home more quickly and deal with shopping later. Many participants said they consciously plan their errands so as to maximize what they accomplish on one trip and so as to minimize the amount of driving involved (Comments 27-30). Over a quarter of respondents claimed to be such good planners that their shopping trips are as efficient as they can be. However, only three participants said that with better planning, they could use a mode other than driving for at least some of their trips (E3; Comments 39 and 40).

Misperceptions. Questions in this section focused on situations that participants could recall in which they drove more than they needed to because of misperceptions. Because participants may not always be aware of such situations, the results may underestimate the amount of excess driving generated. Into this category, we put examples that reflected misperceptions, forgetfulness, and other mental mistakes. In contrast to excess driving due to a lack of information, discussed below, these examples represent situations in which participants had the information necessary for driving less but did not use it or in which they believed the wrong thing. As two participants acknowledged, what they believe is not necessarily accurate (Comments 41 and 42). The most common examples were trips to a destination that the participant believed would be open at that time but was closed, leading to a second trip at a later time (F1; Comment 46); in these cases, as a number of participants noted, a phone call ahead of time would have eliminated the extra driving (Comment 47). Several participants also mentioned examples of forgetting to pick something up or leaving something behind, necessitating a return trip as well (Comment 45). Others described mental lapses that led to longer trips than necessary (F2; Comments 43 and 44), or relying on the wrong person for information (Comment 48). However, most participants claimed that such incidents are rare or extremely rare.

Lack of Information. Questions in this section focused on situations that participants could recall in which they drove more than they needed to because of a lack of information. As was the case for misperceptions, participants do not always know when they are driving more than they need to because of a lack of full or accurate information; the results may thus underestimate the extent of excess driving. Lack of information is difficult to separate from misperceptions; in this category, we included examples where the participant had no information or the wrong information for a reason not of their own doing. In one of the most common examples, participants took longer routes to get to a new destination because they were unfamiliar with the area (Comments 48 through 50). In addition, many participants said that they simply don't know enough about bus service to consider taking transit (Comments 52-53); it was not clear from the interviews whether bus service would in fact be a viable option for these participants, however. Participants also suggested the importance of experiential knowledge with respect to riding the bus: some are willing to experiment to see if it works for them (Comment 55) and some are not (Comment 54).

Driving By Choice or Necessity?

Although we did not measure the amount of excess driving as a part of this study, we can use the number of different types of excess driving for which participants provided evidence as an indicator of the extent of excess driving. On average, participants provided evidence of 5.2 different types of excess driving. Every participant offered at least one example of at least one type of excess driving, and some offered examples of as many as nine different types (Figure 1). Another indicator is whether participants had any flexibility in their trips on the previous day to drive less than they did. When asked, 27 out of 43 participants said they had some flexibility to not make the trip, use a shorter route, use a mode other than driving, or go to a closer destination for at least one of their trips. Both indicators suggests that

participants engaged in a measurable level of excess driving, though how much in either absolute or proportional terms cannot be quantified based on the interviews.

When asked directly about whether they drive more than they *need* to, 19 participants said "yes" and 24 participants said "no" (Table 6). Those saying no were slightly older and had longer commutes on average than those saying yes, perhaps reflecting an association between efforts to minimize driving and both age and residential location. Those saying yes provided evidence of 6.1 different types of excess driving on average and 37% admitted to making extra trips to satisfy cravings. Those saying no provided evidence of 4.5 different types, a statistically significant difference from those saying yes, and only 13% admitted to making extra trips to satisfy cravings. It is interesting that even those *not* driving more than they need to provided some evidence of excess driving according to our definitions. This inconsistency suggests either some discrepancy between our definitions and theirs or an ability on the part of participants to discount in their own minds the extent of their excess driving. As a result, a conservative assessment of excess driving would focus on the difference between those not driving more than they need to and those that do, rather than on absolute levels.

<Figure 1 goes about here>
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When asked whether they drive more than they *want* to, 34 participants said "yes" and only nine said "no" (Table 6). A much higher share of those saying yes were female compared to those saying no – 61.2% versus 44.4%, respectively; average age and average commute distance did not vary significantly. This result points to the possibility that women have a lower preference for driving overall. Those saying they drive more than they want provided evidence of 4.8 different types of excess driving on average, compared to 6.8 different types for those saying they do not drive more than they want. Similarly, only 21% of those driving more than they want confessed to extra trips to satisfy cravings, compared to 33% for those not driving more than they want. These seemingly contradictory results, where those who are happy with the amount of driving they do drive more than those who aren't, also point to fundamental differences in preferences towards driving: those who do not drive more than they want to must have a much higher tolerance for driving than those who do drive more than they want.

We also asked participants which statement better characterizes how they feel about their cars: "Owning a car gives me freedom," or "Owning a car is a significant burden." Nearly two-thirds of respondents agreed with the first statement, while nearly a third said that both statements are true for them; only two participants said that owning a car is solely a burden for them. Participants mentioned the ability to go where they want when they want to as providing an important sense of freedom. "Driving is a necessity to make my life happen," said one participant. "I feel like I get freedom because if I didn't have a car, my social life on the weekends would be very curtailed," said another. The feeling of freedom was clearly tied to driving by choice, while the feeling of burden was tied to driving by necessity. As one participant put it, "Freedom is when it's a choice… The burden is when you have to commute to work." This sentiment was implicit in the comment of another participant, "I hate errand driving. I like open road drives." For the participants, the freedom associated with owning a car outweighs the burdens: "It can be a burden, too, but it is a gladly accepted burden."

Interestingly, participants who said that they do not drive more than they *need* to were more likely to say that owning a car gives them freedom but is not a burden, compared to participants who said they do drive more than they need to (Table 6). In other words, those driving more than they need to also feel a greater burden of owning a car. This result is somewhat surprising, in that those driving more than they need to may do so at least partly out of choice. It makes more sense if the extra driving increases the burden of owning a car because of costs associated with additional wear-and-tear. Participants not driving more than they *want* to were more likely to say that owning a car gives them freedom but is not a burden,

compared to participants driving more than they want to. In other words, those driving more than they want to also feel a greater burden of owning a car. This result is not surprising.

Cross-tabulating whether participants drive more than they *need* to and whether they drive more than they *want* to yields interesting results (Table 7). Nearly a third of participants fall into the category of driving more than they need to but also driving more than they want to. These participants are apparently driving by choice to some degree but they are not happy about the driving they do out of necessity: they prefer to reduce certain kinds of driving. Close to half of participants fall into the category of not driving more than they need to but still driving more than they want to. These participants do not drive by choice and they would also like to reduce the driving they do out of necessity: they prefer to reduce all kinds of driving. Only 9 participants said that they do not drive more than they want to, and these split almost equally between those that said they drive more than they need to and those that don't. The former group is driving to some degree by choice, while the latter group is not, but both groups are satisfied with the situation. The differences between these four groups point to different policy approaches.

CONCLUSIONS

Although these findings are exploratory, they begin to suggest the need for a combination of policies to address both individual- and community-level concerns (Table 8). For those not driving more than they need to but driving more than they want to, policies must work to further reduce the need for driving. Policies that provide alternatives to driving or that reduce the length of driving trips would help. Such policies might include improved transit services and improved bicycle and pedestrian infrastructure. Land use policies that bring activities closer together could increase the viability of walking and biking and also reduce necessary driving distances. These policies would also benefit those driving more than they need to and more than they want to, as would approaches such as voluntary travel behavior change programs, which help households one-on-one to reduce their driving, and certain applications of Intelligent Transportation Systems (ITS), particularly Advanced Traveler Information Systems (ATIS).

For those not driving more than they need to or than they want to, issues arise at the community level though not at the individual level. These individuals have little internal motivation to reduce driving, yet the driving that they do out of necessity has impacts on the community. Policies that provide alternatives to driving or that reduce necessary driving distances might lead to less driving for these individuals and thus benefits for the community, assuming that individuals do not make up for a reduction in necessary driving with an increase in driving by choice. Pricing policies that increase the cost of driving would also encourage these individuals to take advantage of these alternatives and drive less if they can. Finally, for those driving more than they need to but not more than they want to, two different policy approaches are possible. If the larger goal is to reduce environmental impacts and manage congestion, then pricing policies could help to discourage driving by choice. If the larger goal is to accommodate the desires of individuals to drive more than they need to, then additional road capacity may be appropriate. The fact that few of the participants in this study fall into this category supports a move towards less traditional transportation policies to address both individual- and community-level concerns.

Proposed transportation projects are often evaluated in terms of the travel-time savings they will yield and the estimated value of those savings to travelers. Although this study did not directly address the concept of the value of travel-time savings, it provides useful insights into the challenges of measuring it. In particular, the results show that not all travel-time savings would be equally valued by drivers. Most obviously, drivers would value a reduction in time spent on necessary driving more than time spent driving by choice. On the other hand, drivers mostly dislike driving in congested traffic, so that any reduction in time spent driving in heavy traffic would be valued more than an equal savings in time spent driving in uncongested conditions by both those driving by choice and those driving by necessity. An

approach to measuring the value of travel-time savings that is sensitive to such differences might influence the decision-making process for transportation projects in significant ways.

Besides providing evidence of excess driving, this initial exploration of the question of driving by choice versus necessity suggests the need for further research to categorize the potential sources of excess driving, develop effective techniques for identifying excess driving, and quantify both the amount of excess driving and the contribution of various explanatory factors. The results from the in-depth interviews can serve as the basis for the development of a survey instrument to address these issues quantitatively. Future efforts should focus on ways of distinguishing between the value of driving itself and the value of activities while driving and on ways of searching for excess driving caused by habit, misperceptions, and lack of information. The gray areas associated with destination choice and activity choice merit further consideration, as do the even grayer areas associated with residential location choice and job choice. In addition, an exploration of the decision-making processes underlying excess driving might yield important new insights into travel behavior. A better understanding of the magnitude of excess driving and its sources will help in the formulation of policies designed to slow the growth in vehicular travel.

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Table 1. Typology of Excess Driving

Reason for Excess Driving			Sources of Excess Driving: More Frequently	Longer Route	More by Car	Farther Destination
Value of driving itself	CONSCIOUS CHOICE	INTEN-TIONAL -	A1 e.g. a Sunday drive in the country	A2 e.g. to spend more time in the car	A3 e.g.	A4
Value of activities while driving			B1	B2	B3	B4
Variety seeking			C1	C2	C3	C4
Habit	LACK OF CONSCIOUS THOUGHT	UNINTEN-TIONAL -	D1	D2	D3	D4
Poor planning			E1	E2	E3	E4
Misperceptions	UNCON-SCIOUS INFLUENCE		F1	F2	F3	F4
Lack of Information			G1	G2	G3	G4

Table 2. Characteristics of Interview Participants

	Number	Percent
Gender		
Male	18	41.9%
Female	25	58.1%
Household Structure		
1 Adult - No Children	10	23.3%
1 Adult - 1 or More Children	2	4.7%
2 Adults - No Children	15	34.9%
2 Adults - 1 or More Children	13	30.2%
3 or more Adults	2	4.7%
Employment Status		
Full-time	36	83.7%
Part-time	7	16.3%
Student Status		
Full-time	3	7.0%
Part-time	4	9.3%
Not a Student	35	81.4%

	Mean	SD
Age	43.9	11.0
Length of Commute (minutes)	27.8	17.7

Table 3. Interview Questions

Reason for Excess Travel	Sample Questions*
Value of Driving Itself	Remember Star Trek, how Captain Kirk could beam himself instantly from place to place? If you could beam yourself up for all your trips, would you do it? Do you ever go for a drive just for the sake of driving? If you couldn't [do the things you like to do while driving], would you still enjoy driving? Why or why not?
Value of Activities While Driving	What do you like to do while you drive? Do you ever go for a drive to be able to [do this]? Can you give me an example? Do you ever pick a route because it is better for [the things you like to do while driving]? Can you give me an example?
Variety Seeking	Do you ever choose a different driving route because you're bored with the old one? Can you give me an example? Do you ever choose to take the bus or walk or use some mode other than driving just for a change? Can you give me an example? Do you ever drive somewhere just for a change of scenery? Can you give me an example? Do you ever pick a store or restaurant or other place farther from home than your usual one just for a change of pace? Can you give me an example?
Habit	OK, let me ask about your drive to work. Do you have a usual route you take? Is this the shortest possible route? Do you ever think about taking a different route? Now let's talk about grocery shopping for a minute. Do you have a usual store where you do most of your food shopping? Is there a closer store where you could grocery shop? Tell me more about your grocery shopping routine. Do you go on a particular day every week? Do you think you could make do with grocery shopping less frequently than this?
Poor Planning	Do you ever have to run to the store because you forgot something or ran out of something? When was the last time this happened and can you tell me a little about it? Do you ever make a trip to the store because you decide you need something and can't wait until the next trip? When was the last time this happened and can you tell me a little about it? Do you ever stop to do your shopping on the way home from work? Do you think you could do more of this than you do? Are there any other ways you think a little planning could help you reduce how much you drive?
Misperceptions and Lack of Information	Can you think of a time you went somewhere and found it closed and had to go home? Can you describe what happened? Can you think of a time you drove more than you needed to because you didn't know about a shorter route? …a closer store or other kinds of destination? Can you describe what happened? What do you know about the options for taking the bus to work?

*The actual interview guide included additional follow-up questions to these.

Table 4. Number of Participants With Examples of Excess Driving

	Sources of Excess Driving			
Reason for Excess Driving	More Frequently	Longer Route	More by Car	Farther Destination
Value of driving itself	A1 14	A2 1	A3 0	A4 0
Value of activities while driving	B1 15	B2 17	B3 0	B4 0
Variety seeking	C1 14	C2 20	C3 13	C4 13
Habit	D1 14	D2 1	D3 2	D4 2
Poor planning	E1 30	E2 0	E3 3	E4 0
Misperceptions	F1 21	F2 12	F3 1	F4 2
Lack of Information	G1 4	G2 19	G3 0	G4 5

Table 5. Examples of Comments

Reason for Excess Travel		Examples
Value of Driving Itself	1	"I enjoy driving. I love driving. I just enjoy it."
	2	"One does trips sometimes for the sake of traveling, rather than for the sake of getting somewhere."
	3	"I could have flown [to Tulsa] but, you know, it was something that I used to do, the drive, and I have been itching for a road trip, so I decided to drive."
	4	"You can experience the wind, the smells [in my MG convertible]. If you pass flowers you will actually smell them... "
	5	"It wasn't a very long drive, but it had a spirit of adventure – you know, pack everything in the car and go, even though it doesn't take very long."
	6	"And I think when you're younger, too, you also like driving more."
	7	"If I was driving in a Corvette that might be a different thing, but I don't have anything exciting that I am driving in and I'm 37 years old.. now being married, responsibility with kids..."
Value of Activities While Driving	8	"I wanted to hear the rest of this book that I was listening to. So, I got in the car and drove to the store and bought something and came back. But it was really an unnecessary trip."
	9	"I guess [I would miss] the scenery, not seeing all the new construction, keeping up with the latest in the road's changes [if I 'beamed' up for all my trips]."
	10	"My wife… likes to look at the houses in the neighborhood so she will take more of an indirect route, where I am very much more, what is the best route to get."
	11	"I usually watch the traffic."
	12	"When I was driving her home [before we got married], we'd just take a long drive. She didn't know Austin very well, so it was a pretty good trick."
	13	"I gave up the radio for Lent… I pray while driving… I mean it's not the best way to pray, but, you know, it's an option"
Variety Seeking	14	"I don't know, just sometimes I want to go some place different."
	15	"Now my husband is just the opposite – he'll try to get out for any reason."
	16	"When I was younger… I had a lot of roommates, and so the only place I actually had any real privacy was in my car."
	17	"I also think it's a good thing to vary your route occasionally, especially to and from work, just to keep from getting in the rut of driving on autopilot…. something different, a break from the normal."
Habit	18	"I just have a habit of buying a week's worth of stuff."
	19	"I go everyday… I could [shop less than once per day] by eating canned peas for the rest of my life, but I'm not going to… My can opener is for cat food."
	20	"You know there is something shorter but you take the way you know because it works."
	21	"I am sure [I chose driving yesterday] out of habit…[I used to have reasons to drive] now it's just kind of out of habit."
	22	"I just love HEB. It's just my store. I never think about going anywhere else."
	23	"I have a collection of restaurants that I go to and some are further away than others."

Table 5. Examples of Comments - Continued

Reason for Excess Travel		Examples
Poor Planning	24	"Poor planning is the main thing that makes us have to drive, basically."
	25	"I could plan better to do more things in one trip rather than making a trip and then making another trip and then making another trip. It is probably because of not planning."
	26	"We plan pretty well because we don't like driving around."
	27	"I plan to try to be as efficient with the car [as possible]"
	28	"... I was in the army several years in army transportation corps… it probably has had some effect on me as far as driving around and planning because that is what I did in the army."
	29	"If I need to go get groceries and maybe need to pick up something else from another store, I'll do it on one trip. Rather do that than a bunch of separate trips."
	30	"I'm actually pretty conscientious about planning my routes so I'm making a circuit or driving in a pattern that makes sense."
	31	"… I could be home and say, 'Oh, we need that,' then I'll run back since it is just a mile down the road."
	32	"I tend to, when I drive, I do multiple errands . When I lived in Austin, I used to do what I call 'spoke driving' – just go to a store, come back, just jump in the car and go do one thing and come back. Because I don't live convenient to things now, when I drive I plan everything."
	33	"It's pretty difficult – it's not like we can go to the corner…. You try not forgetting things… We don't have the luxury to say 'I'll run out and do this' or 'I'll run out and do that'. We have to really plan what we do and make the trip count."
	34	"I am writing my dissertation and I think, 'I've got to have some Pepperidge Farm cookies,' and it won't go away till I go there."
	35	" I've lost about 30 pounds over the last year and half because we have stopped [running to the store for ice cream] as much."
	36	"Maybe three weeks ago, the girls wanted some ice cream and I had to go get them some. I didn't have to, but, you know, they give you that, 'Dad.'"
	37	"… my little girl said that she needed a tea party, and it became – became a big deal…. And so we just made a special trip to the store to buy her fancy tea. I figured if happiness could be acquired at HEB for a dollar and a quarter, why not?"
	38	"I'm good at telling the boys no."
	39	"Well, definitely if I did more planning in terms of taking the bus to work. That would certainly reduce some driving."
	40	"… if I planned more the work drive, I could almost eliminate that.. So, if I plan more in the morning I could do that."

Table 5. Examples of Comments - Continued

Reason for Excess Travel		Examples
Misperceptions	41	"I am not sure that I took the shortest route. I perceive it to be the shortest route. "
	42	"… sometimes you think you know but you don't"
	43	"I get lost or distracted or whatever."
	44	"I think I wandered… So I am not very reasonable. Why did I do that? I don't know."
	45	"I picked up the groceries but forgot to pick up the prescription. I unloaded the groceries at home and didn't find it. I had to go back to the store in Austin."
	46	"So they close on Mondays and we've forgotten that like three or four times. So we've made that mistake before."
	47	"I didn't know on Sundays that they closed at 6.… I should have called to see and make sure that they were open before I went."
	48	"I had heard a rumor that it had closed but someone else told me that it hadn't. So I decided to believe the person that said that it hadn't."
Lack of Information	49	"… I am going to some new destination and I really don't know how to get there very well."
	50	"Yeah, almost every drive I did when I first came to Austin [I drove farther than I needed to]."
	51	"I am the queen of not knowing where I am."
	52	"If I might have thought ahead and called and found out what the bus routes were…"
	53	"I don't know anything about the bus timing and how to get there."
	54	"I'm trying this experiment; I'm gonna ride the bus. I'm gonna get it down and see if I can do it."
	55	"I could have taken the bus, but it takes too long… I am not willing to experiment with it… "

Table 6. Want and Need Comparisons

	More Than You Want - Yes	More Than You Want - No	More Than You Need - Yes	More Than You Need - No
Number	34	9	19	24
Percent Female	61.8%	44.4%	57.9%	58.3%
Age	43.2	46.3	40.3	46.8
Length of Commute (min)	28.7	24.4	23.9	31.0
Average Number of Types of Excess Driving*	4.8	6.8	6.1	4.5
Percent of Participants Who Make Trips for Cravings	21%	33%	37%	13%
Percent of Participants Who Say Owning Car is Freedom	59%	89%	58%	71%

*Between group difference is statistically significant.

Table 7. Driving More Than You Want vs. Driving More Than You Need

	Driving More Than You Need To					
Driving More Than You Want To	Yes		No		Total	
Yes	14	32.6%	20	46.5%	34	79.1%
No	5	11.6%	4	9.3%	9	20.9%
Total	19	44.2%	24	55.8%	43	100.0%

Table 8. Policy Implications

	Driving More Than You Need To	
Driving More Than You Want To	Yes	No
Yes	Alternatives to driving, voluntary travel behavior change programs, and Intelligent Transportation Systems	Alternatives to driving, including transit, bike/ped, land use policies
No	Pricing policies or additional road capacity	Alternatives to driving and pricing policies