

UC Berkeley

Earlier Faculty Research

Title

How Derived is the Demand for Travel? Some Conceptual and Measurement Considerations

Permalink

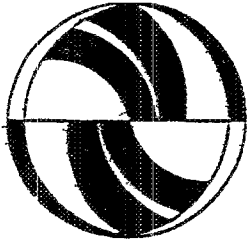
<https://escholarship.org/uc/item/7cx951n5>

Authors

Mokhtarian, Patricia L
Salomon, Ilan

Publication Date

2001-09-01



**How derived is the demand for travel? Some
conceptual and measurement considerations**

Patricia L Mokhtarian
Ilan Salomon

Reprint
UCTC No 521

**The University of California
Transportation Center**

The University of California Transportation Center (UCTC) is one of ten regional units mandated by Congress and established in Fall 1988 to support research, education, and training in surface transportation. The UC Center serves federal Region IX and is supported by matching grants from the U.S. Department of Transportation, the California Department of Transportation (Caltrans), and the University.

Based on the Berkeley Campus, UCTC draws upon existing capabilities and resources of the Institutes of Transportation Studies at Berkeley, Davis, Irvine, and Los Angeles, the Institute of Urban and Regional Development at Berkeley, and several academic departments at the Berkeley, Davis, Irvine, and Los Angeles campuses. Faculty and students on other University of California campuses may participate in

Center activities. Researchers at other universities within the region also have opportunities to collaborate with UC faculty on selected studies.

UCTC's educational and research programs are focused on strategic planning for improving metropolitan accessibility, with emphasis on the special conditions in Region IX. Particular attention is directed to strategies for using transportation as an instrument of economic development, while also accommodating to the region's persistent expansion and while maintaining and enhancing the quality of life there.

The Center distributes reports on its research in working papers, monographs, and in reprints of published articles. It also publishes *Access*, a magazine presenting summaries of selected studies. For a list of publications in print write to the address below.



University of California
Transportation Center

108 Naval Architecture Building
Berkeley, California 94720
Tel. 510/643-7378
FAX: 510/643-5456

DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the U.S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

**How derived is the demand for travel? Some conceptual and
measurement considerations**

Patricia L. Mokhtarian*
Ilan Salomon**

*Department of Civil and Environmental Engineering
Institute of Transportation Studies
University of California, Davis
One Shields Avenue, Davis California 95616
plmokhtarian@ucdavis.edu

**Department of Geography
Hebrew University, Jerusalem 91905, Israel
msilans@mscc.huji.ac.il

Reprinted from
Transportation Research Part A 35 (2001), Pergamon, pp. 695-719

UCTC No. 521

The University of California Transportation Center
University of California at Berkeley



PERGAMON

Transportation Research Part A 35 (2001) 695–719

TRANSPORTATION
RESEARCH
PART A

www.elsevier.com/locate/tra

How derived is the demand for travel? Some conceptual and measurement considerations

Patricia L. Mokhtarian^{a,*}, Ilan Salomon^{b,1}

^a *Department of Civil and Environmental Engineering, Institute of Transportation Studies, University of California, One Shields Avenue, Davis, CA 95616, USA*

^b *Department of Geography, Hebrew University, Jerusalem 91905, Israel*

Received 24 June 1999, received in revised form 20 January 2000, accepted 20 January 2000

Abstract

This paper contests the conventional wisdom that travel is a derived demand, at least as an absolute. Rather, we suggest that under some circumstances, travel is desired for its own sake. We discuss the phenomenon of undirected travel – cases in which travel is not a byproduct of the activity but itself constitutes the activity. The same reasons why people enjoy undirected travel (a sense of speed, motion, control, enjoyment of beauty) may motivate them to undertake excess travel even in the context of mandatory or maintenance trips. One characteristic of undirected travel is that the destination is ancillary to the travel rather than the converse which is usually assumed. We argue that the destination may be to some degree ancillary more often than is realized. Measuring a positive affinity for travel is complex. In self-reports of attitudes toward travel, respondents are likely to confound their utility for the activities conducted at the destination, and for activities conducted while traveling, with their utility for traveling itself. Despite this measurement challenge, preliminary empirical results from a study of more than 1900 residents of the San Francisco Bay Area provide suggestive evidence for a positive utility for travel, and for a desired travel time budget (TTB). The issues raised here have clear policy implications: the way people will react to policies intended to reduce vehicle travel will depend in part on the relative weights they assign to the three components of a utility for travel. Improving our forecasts of travel behavior may require viewing travel literally as a “good” as well as a “bad” (disutility). © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Travel attitudes, Travel time budget, Travel behavior, Excess travel

* Corresponding author. Tel. +1-530-752-7062, fax +1-530-752-7872, <http://www.engr.ucdavis.edu/~its/telecom/>
E-mail addresses: plmokhtarian@ucdavis.edu (P.L. Mokhtarian), msilans@mscc.huji.ac.il (I. Salomon).

¹ Tel. +972-2-5883345, fax +972-2-5820549

1. Introduction

Since the origin of transportation as a field of scientific inquiry, the tenet that “travel is a derived demand” has been accepted with little question. This view pervades modern transportation planning approaches. For example, in demand models travel is assumed to involve a disutility to be endured for the sake of achieving a desired destination, but one that is minimized. This disutility is modeled as a function primarily of time and cost, and is assumed to increase with each. In project evaluation, the assumed monetary value of travel time savings typically constitutes the largest share of the quantified benefits of a proposed improvement (e.g., Welch and Williams, 1997). Policies directed at the problem of urban congestion often attempt to reduce travel by increasing its cost (disutility) or by bringing destinations closer to origins (through denser and more mixed land use patterns or through information/communications technology (ICT) substitutes). And current efforts to improve regional transportation models take an “activity-based” approach whose premise is that to understand travel we need to understand the demand for the activities that generate the travel.

In a previous paper (Salomon and Mokhtarian, 1998), we reviewed some conceptual and empirical evidence challenging the derived demand paradigm as a behavioral absolute. This paper continues to reassess the assumption that the demand for travel is completely derived from the demand for spatially separated activities. It expands on and extends some of the concepts presented previously, and discusses some important measurement issues that need to be addressed if an intrinsic desire for travel is to be properly identified. As in that previous work, our discussion in this paper refers to personal travel rather than goods movement, but we place no restrictions on mode, purpose, or distance.

The organization of this paper is as follows. Section 2 discusses the phenomenon of undirected travel, and what it can tell us about more destination-oriented travel. Section 3 explores the role of the activity/destination in the demand for travel. Section 4 describes the tripartite nature of an affinity for travel and why it presents a measurement challenge, with survey respondents likely to confound their feelings about travel as an end in itself, with the benefits provided by travel as a means to an end. Section 5 illustrates those measurement difficulties while presenting some specific results, in the context of an ongoing empirical study of the desire for mobility. These results offer partial support for the claim of the existence of a desire to travel for its own sake, and point to productive directions for improving our ability to identify and understand that desire. Section 6 discusses non-travel alternatives for potentially achieving similar levels of utility, together with implications for the theory of a constant travel time budget (TTB). Section 7 summarizes the key points of the paper and makes some concluding observations.

2. The phenomenon of undirected travel

Clearly, the desire to engage in activities at different locations underlies a great deal of the demand for travel. But sometimes, can travel itself not be the activity that is demanded?

There are a variety of activities consisting of what might be called “undirected travel” Joy-riding (simply “taking the car out for a spin”) is one such activity,² but there are many others. Examples include traveling in an off-road vehicle, recreational boating or flying, taking a recreational vehicle cross-country, recreational walking/jogging/cycling/skating/skateboarding, horse-back riding, hiking, skiing, hang-gliding, scuba diving, spelunking, taking amusement park rides, and others. These differ widely in terms of distance traveled, typical location, mode used, and impacts on the environment and energy consumption, but they are fundamentally similar in one respect – that travel *is* the activity, movement *is* the object, and a destination, if there is one (or more) in the usual sense of the word, is to varying degrees incidental.³

Even sports such as auto racing (or horse racing, 10 K or marathon runs, the Tour de France, or any other form of racing involving a human being driving, riding, or providing the motive power) qualify as undirected travel. Although in those cases the destination (finish line) is arguably of crucial importance, it is an arbitrarily chosen point that is meaningless as a destination in its own right (in that people would not travel to the finish line independently of the race). It is *traveling* to that arbitrarily selected destination in the context of the race (whether faster than others, faster than one’s own record, or simply at all) that is the main point of the activity.

Vigorous physical effort is neither a necessary nor a sufficient condition for an activity to constitute undirected travel, although physical exercise may be one motivation for engaging in such an activity. To see that it is not necessary, note that in the list above, the activities involving operating or riding in a vehicle do not require much physical human energy. To see that it is not sufficient, note that there are essentially stationary alternatives to a number of the above activities (e.g., working out in a gym), which can involve considerable human energy expenditure. Movement through space, on the other hand, is a necessary but not sufficient condition for undirected travel. It is necessary, of course, because travel by definition involves movement through space. It is not sufficient because most travel, as has been repeatedly noted, is largely ancillary to reaching a desired destination and engaging in a desired activity. Thus, just “going for a walk” in the neighborhood after dinner is undirected travel, walking through the grocery store to purchase food is directed travel.

² Automobile advertisements still play to this phenomenon, sometimes in a nostalgic appeal. Consider the recent campaign for the Chevrolet Impala, appearing, for example, in a four-page foldout on the inside front cover of the 7 June 1999 issue of *Newsweek* magazine. “Remember how great it was just to get in your car and drive? We do. It didn’t matter where you were going. All you needed was an open road and a full tank of gas. The world streaming by your window, wind in your hair, sun through the trees, tires humming and the radio on. Hot summer days, dusty dirt roads. Not a care in the world. Whatever happened to that? The pure joy of a long drive, a great car, and no particular place to go. Isn’t it time somebody brought that back? The New Chevy Impala. Let’s go for a drive.” A similar theme is portrayed in a current television advertisement, with the 1964 Chuck Berry song “No Particular Place to Go” playing in the background. “Ridin’ along in my automobile/My baby beside me at the wheel/I stole a kiss at the turn of a mile/My curiosity runnin’ wild/Cruisin’ and playin’ the radio/With no particular place to go.”

³ In this context, it is important to distinguish between the general location of an activity and the micro-scale destination, or lack thereof, of the activity itself. For example, the general location at which scuba diving occurs is obviously not incidental: the Great Barrier Reef is preferable to the community swimming pool. But the actual activity of scuba diving may involve a more or less random path within a general area, with no particular spot being the target of the activity. Thus, travel *to* the Reef is directed, but the scuba diving activity itself represents undirected travel.

What characterizes undirected travel, then, is movement through space for which the *destination* rather than the travel is ancillary. Whereas the strict view of travel as a derived demand would hold that the destination is always 100% primary, we suggest that the set of all travel for which destination is primary is a fuzzy one (see, e.g., Smithson, 1987; Zimmermann, 1985). Stated another way, the relative proportions of “primariness” of the travel and the destination constitute a continuum, as shown in Fig. 1. These proportions can vary by person and situation, even for the same type of activity. For example, strolling through the shopping district of a foreign city may in one case be largely undirected (mainly to absorb the novel ambience), in another case largely directed (mainly to buy souvenirs), and in yet another case nearly equal parts of both. One message of this paper is that the relative degrees to which travel and the destination are ancillary are often difficult to measure, especially when the traveler/survey respondent herself may not have consciously articulated the distinction. As will be argued in Section 3, our predisposition to view travel as a derived demand may cause us to overestimate the degree to which travel is ancillary to the destination instead of a situation more toward the middle or even the opposite end of the spectrum.

Almost by definition, undirected travel is for the most part a leisure activity (except for the relatively few professional practitioners of each type). This is not however to dismiss its importance as an indicator of the positive utility of travel in general, for three reasons. In the first place, rather than diminishing that importance, it strengthens it to realize that so many people, for so much of their limited discretionary time, choose to spend it not just traveling to activities, but on traveling *as* an activity. Just how many people, and how much time, is difficult to determine from current data collection instruments that do not distinguish travel as a (leisure) activity from either travel to an activity or other leisure activities. It would be valuable to make that distinction in the future.

Second, contrary to popular complaint, leisure time in developed countries does not seem to be declining. For the US, Robinson and Godbey (1997) report that the average weekly hours of free time (which would include stationary free-time activities, undirected travel as an activity, and travel to free-time activities) rose from 35 in 1965 to 40 by 1985, remaining approximately stable since then. In Germany, Chlond and Zumkeller (1997) note that increases in paid vacation time and decreases in weekly work hours have resulted in greater leisure time. Further, total travel is growing and travel for leisure purposes appears to be a growing share of total travel. Anable (1999), Lanzendorf (1999) and Tillberg (1999) indicate that leisure activities currently account for

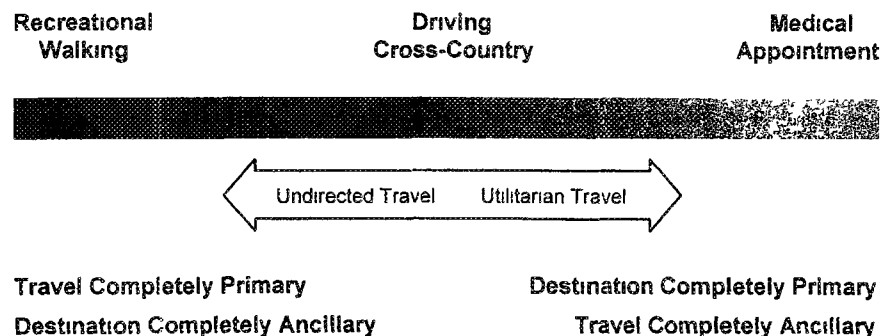


Fig. 1. Relative degrees to which destination and travel are primary.

half of total distance traveled in the UK, Germany, and Sweden, respectively. Robinson and Godbey find that only 3 h a week are spent on all free-time travel, out of 10 h a week total travel time, but as indicated above, much undirected travel is likely to be classified as an activity rather than as travel. Even so, the amount of time spent on undirected travel is doubtless small now, and apt to remain a small proportion of the total. However, it is also likely to increase in the aggregate over time, as rising incomes continue to result in rising amounts of leisure time and leisure travel (Schafer and Victor, 1997, Tanner, 1981).

Third, the fundamental nature of undirected travel may hold to some degree for more directed travel. The examples of undirected travel given above serve to illustrate some of the aspects intrinsic to travel that contribute to its positive utility: the sensation of speed, the exposure to the environment and movement through that environment, the ability to control movement in a demanding and skillful way, the enjoyment of scenic beauty or other attractions of a *route*, not just a *destination* (Hupkes, 1982). It is likely that those same positive aspects of travel apply, to some extent, to ancillary or directed travel as well. Many authors (Berger, 1992, Flink, 1975, Marsh and Collett, 1986; Sachs, 1992, Wachs and Crawford, 1992) have commented on the sense of independence, control, expression of status or identity, and mastery of a skill afforded by driving a personal automobile. Individuals who place a high value on those attributes may, for example, choose to drive to work in a congested central business district even when public transportation is actually both faster and cheaper. A desire for exposure to and movement through the environment is doubtless partially responsible for some people choosing not to telecommute even when they are able to do so (Mokhtarian and Salomon, 1997). The beauty or novelty or some other characteristic of a particular route may motivate an individual to travel that route even when it is not the shortest way to a desired destination. These outcomes are examples of excess travel in the sense that lower cost, time, and/or vehicle-kilometers-traveled alternatives are available but not chosen because of an intrinsic desire (or a positive utility) for travel. (We define excess travel more formally in Section 4.4. Here, we make the following semantic distinction: undirected travel is a subset of excess travel, but excess travel can also constitute or, more often, augment a trip that is basically directed or utilitarian, as in the examples above.)

3. Which came first, the activity or the trip?

In the previous section we pointed out that the destination of a trip may in some cases play a more ancillary role to the trip itself. In this section we discuss further the role of the destination in the demand for travel.

Conventional trip distribution (Papacostas and Prevedouros, 1993) or destination choice models (Barnard, 1987, Jones, 1978) consider the utility of a given destination to be inversely related to the generalized cost of reaching it and directly related to some measure of the attractiveness of the destination. Hence, a tradeoff between the disutility of travel and the utility of the activity at the destination is explicit, and the choice of a more distant destination is completely consonant with the concept of travel as a derived demand when the increased attractiveness of that more distant destination outweighs the increased disutility of travel required to reach it. Thus, for example, a more distant shopping center may be chosen if it has more variety or better

prices or a particular hard-to-find item. A more distant restaurant may be chosen when the decision-maker is in the mood for the kind of food it serves, or the atmosphere it possesses.

However, we suggest that there are situations in which a more distant destination is chosen, not entirely because the utility of its inherent attractiveness exceeds the disutility of travel, but because a positive component to the utility for travel contributes to making the net utility of that destination–trip combination the highest among the alternatives. Consider the situation in which, in a dense urban environment, there are a number of franchises of the same “favorite” restaurant or coffee house. Only one is “nearest.” Yet an individual may habitually visit more distant ones as well as the closest, not because of an intrinsic greater attractiveness of the more distant franchises (in fact they may look and “feel” virtually identical to the nearest one), nor even particularly because of a greater attractiveness of the neighborhoods in which the more distant facilities are located, nor because of trip chaining economies, but purely out of a variety-seeking impulse.

In this example, a variety-seeking orientation leads to excess travel. It should be understood that the attribute “contributes variety” is not entirely intrinsic to the destination itself nor to the vicinity of the destination -- to the extent that it is, variety can be considered part of the attractiveness measure of the destination. Instead, at one extreme, variety is a property of the route rather than the destination, and hence (apparently) excess travel is an inevitable accompaniment to the achievement of variety.

What about another prevalent human characteristic, curiosity? Curiosity (often, to be sure, mixed with more directed goals such as the search for physical resources or commercial opportunities) may be the trait that launched a thousand ships, and pedestrian forays, and horses, and covered wagons, and airplanes, and rockets. One could argue that novelty or uncertainty should be part of the attractiveness measure of the (often unknown) destination, but it seems at least equally useful to view curiosity (in its particular manifestation as an exploration impulse) as a generator of what must surely be considered excess travel. Today, curiosity still impels us to travel “out of our way”, whether to see a new development on the other side of town or to visit an intriguing location on the other side of the planet, and stimulates us to dream of traveling to the other side of the solar system and beyond.

Thus we see that there are several related traits such as variety- (or adventure- or novelty-) seeking and curiosity that have the result of increasing the utility of more distant destinations and/or inevitably generating travel in order to satisfy those traits. We suggest that in many of these situations, the demand for travel is not so much derived from the demand for a specific activity at a specific location, but that both the travel and the activity/location are derived from the demand to satisfy the impulse in question.

This in turn suggests that viewing the desire for a particular activity as antecedent to and causative of the demand for traveling to that activity may not always be accurate – although it is presumably the most common situation. But in some cases, as just indicated, the demand for both travel and activity may be caused by a third set of factors. And in other cases, the complete reverse of the usual situation may occur: the demand for an activity may arise *as a consequence* of the desire to travel.

Consider, for example, the choice to eat out instead of eating at home, even though ample food is available at home. In some cases, eating out may be preferred because a certain type of food or a certain neighborhood or a certain ambience is actively desired. In these situations, the decision to eat out and the destination may be chosen simultaneously, and the utility of a *particular*

destination–travel combination (the net of the positive attractiveness of the destination and the putatively negative utility of travel) exceeds the utility of the home alternative (the net of a lower attractiveness plus zero travel) In other cases, the disutility of cooking and cleaning up is the primary motivation for going out to eat, and the destination may be a secondary choice In the present context, it is a third type of situation that is of interest In these cases, also involving a sequential rather than simultaneous choice, the desire just to get out and go *somewhere* (another form of variety-seeking) manifests itself in deciding to eat out instead of staying at home The destination/activity becomes an excuse or justification for the desired travel. Many other such examples are possible, in which the (perhaps subconscious) decision to travel is made first, and then a destination/activity is invented to support that decision and yes, increase its utility The “Sunday drive”, which was so common during the early popularization of the automobile, probably often fit this situation, although a desire to see the scenic countryside was often a destination-specific motivation as well (Muller, 1986)

Such cases may arise more often than we realize, because we have not tried to measure them as such We see that a destination is reached and an activity is carried out, and we assume that activity to have generated the trip Instead it may be the trip that generated the activity!

4. The tripartite nature of the affinity for travel

If a positive utility for travel exists at all, it is important to understand it better than we do now How does such a positive regard for travel differ by personality type and other individual characteristics, by travel purpose, by mode and trip length? Can we identify the impact a positive utility for travel has on the objective amount an individual travels – that is, its contribution to excess travel?

Measuring an individual’s affinity or liking for travel is a fundamental first step in this process If travel affinity can be appraised in some generic way, it becomes possible to explore causes and effects of that affinity Obtaining a reliable measurement of travel liking, however, is a non-trivial matter This is because an individual’s expressed affinity for travel is likely to be a composite of positive utilities for three different elements, in unknown and varying proportions These three elements are conceptually distinguishable but empirically apt to be confounded They are

- 1 the activities conducted at the destination;
- 2 activities that can be conducted while traveling,
- 3 the activity of traveling itself

We briefly discuss each of these elements in turn, and then use them to define excess travel

4.1 Activities conducted at the destination

When a respondent reports that she “loves” vacation travel, it is unlikely that she is referring to the 15 h in one or more crowded and noisy airplanes, the 6 h waiting in uncomfortable airports eating overpriced and unpalatable food, and the 3 h of ground access travel in peak-period urban traffic It is more likely that a halo effect (Sommer and Sommer, 1997) is at work, so that she is confounding the positive appeal of the destination with the travel required to reach it (the halo effect is a type of response bias identified by survey researchers, in which the respondent bases the

answer to a specific question on a general impression about the subject). The implication, to which we return in Section 6, is that if she could forgo the travel to the destination, she would. However, it is also possible to be cognizant of the unpleasant aspects of travel itself but for those to be outweighed by the positive aspects of *travel* (not just the destination), such as those discussed in Sections 4.2 and 4.3.

4.2 *Activities that can be conducted while traveling*

In reporting an affinity for traveling, individuals may in part be considering the utility of activities they can conduct while traveling. In some cases, it is in fact the “anti-activity” (or the absence of other activities) that is important – that is, the ability to use the time for relaxing or thinking, including “shifting gears” mentally between the origin and destination activities and roles. As one analyst put it, “Thanks to the construction of interstate highways, the entry of women into the work force, and several other social revolutions, driving has become America’s most important source of quiet time” (Edmonson, 1998, p. 46). In other cases, the concomitant activity is external: making and receiving mobile phone calls (including shopping and checking stock quotes on or off the Internet, as well as engaging in conversation), reading, listening to music, talk shows, or books on CD, radio, or cassette, watching television or videos (not only in airplanes but now in some personal vehicles such as the Oldsmobile Silhouette Premier and the Ford Econoline Conversion Van). The phenomenon of “carcooning” is one manifestation of this aspect, in which the personal vehicle is customized for the traveler’s comfort, almost as a sanctuary-escape from the world (Crawford, 1992; Larson, 1998).⁴ But as the preceding list indicates, this aspect of a liking for travel is not restricted to the automobile, in fact some people prefer public transportation to the private auto precisely because not having to operate a vehicle offers the opportunity to engage in other activities while traveling. Cycling and walking as modes of directed travel also offer opportunities for quiet time, listening to music, and the additional benefit of physical exercise while traveling.

Several researchers have noted that for some people the commute to work fulfills various positive roles (Richter, 1990; Salomon, 1985; Shami, 1991; Mokhtarian and Salomon, 1997). Some of these roles relate to the utility of the commute as a desired transition between work and home, which allows for the types of activities and anti-activities described above. Work-related travel for mobile professionals often fulfills similar functions. Anecdotally, a number of such professionals have remarked that long trips represent “the only time for thinking” they have, or “the chance to catch up” on reading or other neglected but important tasks.

⁴ A recent advertisement for the Toyota 4Runner sport utility vehicle (appearing, for example, on the inside back cover of the 7 June 1999 issue of *Newsweek*) plays to this component of utility: “Escape. Serenity. Relaxation. The 1999 Toyota 4Runner Limited puts them all well within your reach. With features like a leather-trimmed interior, a CD sound system as well as more than a dozen new refinements, you might actually find the journey to be as rewarding as the destination.”

4.3 *The activity of traveling itself*

The third element of a liking for travel is a consequence of intrinsic aspects of travel itself. These include the characteristics discussed in Section 2: the sensation of speed, movement through and exposure to the environment, the scenic beauty or other attraction of a route. Arguably, only this element represents a true affinity for travel itself. Whereas in the other two categories travel is valued as a means to an end (either performing activities at a fixed destination or performing activities in transit), in this case travel is (at least in part) the end in itself (Reichman, 1976).⁵ For instance, an individual may in fact actively choose 24 h of traveling in an automobile or recreational vehicle over a much shorter time of travel in an airplane to the same farthest point, for the opportunity to see many sights on the way to a “final” destination. In cases where there is not so much a single major destination as many linked ones, the airplane may not even be a realistic alternative. This situation is discussed further in Section 6.1.

Traveling in response to a variety-seeking or curiosity impulse may represent a somewhat more indirect relationship, since those personality traits may be less specific to travel than attitudes directly related to characteristics of travel such as movement and speed. However, these personality and attitudinal impulses are similar in that (a) both have alternate, non-travel ways of potentially satisfying them (as discussed in Section 6.3), but (b) in both cases, travel for its own sake is likely to be an often-preferred way of satisfying them. Thus the personality traits of variety-seeking or curiosity are possible causal variables generating a liking of travel for its own sake, just as the attitudes of “loving speed” or “loving scenic beauty” are other possible causal variables for travel affinity.

4.4 *A definition of excess travel*

If it is considered desirable to try to quantify the impact that a positive utility for travel has on an individual’s objective amount of travel, then it is important to be clear about what constitutes such “excess travel.” Simply equating “excess” to “unnecessary” is problematic. Leisure activities are discretionary, and hence in some sense unnecessary. Is all travel for leisure activities excess? We do not adopt that extreme a view: we would not classify as excess a shortest-path trip generated by the pre-existing demand for a leisure activity, although it may be unnecessary.

Some examples of excess travel were offered in Section 2: cases in which lower-VKT (or lower-time/cost) alternatives were available but not chosen because of a positive utility for travel. This implicit definition can now be made more explicit based on the foregoing discussion of the components of an affinity for travel. Namely, we specify excess travel to be that portion of travel that is prompted by the second and third elements of an affinity for travel, that is, any travel not derived from the utility of the destination itself. Thus, excess travel would include the subset of leisure activities identified as undirected travel in Section 2, which are a manifestation of the third element – a positive utility for travel itself. But it would not include the travel *to* those activities,

⁵ Again, automobile advertisements frequently play to this concept. A 16-page Chrysler ad in the center of the 18 October 1999 issue of *Newsweek* included tag lines such as “Because driving should be a destination in itself” and “it does something no other minivan can: make you wish the journey were a bit longer.”

which is derived from the demand to be in a location where the undirected travel can be performed

This definition may make sense theoretically, but it is not easy to operationalize it. For one thing, without perfect knowledge of a person's choice set (the alternatives that are truly feasible under the circumstances), it is impossible to know whether the chosen alternative is in fact lowest-VKT or not – it may only appear to involve excess travel (a longer route, a non-optimal mode) to the analyst. Second, as indicated in Section 3, despite the utility of the destination itself, it may not always be the most important generator of the trip. This is especially true for leisure activities, but as previous examples have shown, it can also be true for mandatory activities (commuting even when telecommuting is feasible) and maintenance activities (eating out as a solution to “cabin fever”). Third, in assessing and reporting the attractiveness of a destination, a respondent may be partly influenced by his utility for the second and third elements of an affinity for travel. Thus, even some travel which appears to fit the derived demand paradigm may be “excess” in ways that are difficult to disentangle.

5. Empirical indications

5.1 Background

The preceding discussion has made clear some of the difficulties associated with empirically measuring the existence and impact of a positive utility for travel. Nevertheless, the importance of the issues raised here makes the measurement challenge worth undertaking. One goal may be to quantify the amount of excess travel that occurs, and under what circumstances. Such insight could inform the design of policies more responsive to natural inclinations (including policies that attempt to influence or channel inclinations in socially beneficial ways), and improve our predictions of the reaction to various policies.

Independently of attempting to calculate kilometers of excess travel, however, it is useful to explore further the general concept of travel affinity and its distribution in society. We have developed and administered a survey with that second goal in mind. As is often the case, our thinking has continued to evolve after the completion of the survey, so that many of the ideas presented here were not fully articulated at the time of data collection. Further, as is also often the case, in designing the survey we consciously traded off depth against breadth, in this context favoring breadth. That is, we chose to obtain somewhat general data on a large number of concepts of interest, rather than situation-specific data in a more narrowly-defined context. The latter approach is probably essential to a goal of quantifying the amount of excess travel, but the former approach is consistent with our goal of increasing understanding of general concepts (although with limitations even in that respect). As a consequence of these factors, we can (and do) suggest a number of ways in which future related studies can build on and refine the data collected in this one. Nevertheless, we believe that the preliminary empirical results reported here are still strongly suggestive, even if not definitive.

Our 14-page questionnaire collects data on general attitudes toward travel and related issues, affinity for travel, objective and perceived amounts of travel, satisfaction with one's amount of travel, personality traits, lifestyle orientation, and demographic characteristics. The questions

relating to affinity for travel and amounts of travel distinguish between short distance and long distance (more than 100 miles one way, consistent with the definition of long distance leisure travel in the American Travel Survey), and within each of those categories obtains an overall measure and separate measures for several different purposes and modes

Some 8000 surveys were sent to residents of three communities in the San Francisco Bay Area representing a variety of land use patterns. With an overall response rate of more than 25%, after discarding responses with too much missing data we retained about 1900 cases for further study. Due to sampling biases (in the selection of particular neighborhoods, although sampling within neighborhoods was entirely random) and self-selection in responding, the sample (and hence the distributions of variables discussed here) cannot be assumed to be perfectly representative of the general population. Nevertheless, the findings serve to support the existence of a positive utility for travel, even if the precise distribution of that utility across the population is uncertain.

Detailed analysis of the data is underway, and future papers will present results from a variety of empirical explorations. Here, we focus on a few summary results that illustrate some of the issues we have presented in this paper. As background to interpreting the results, it should be noted that in the cover letter to the survey, travel was defined as “moving any distance by any means of transportation – from walking around the block to flying around the world.” In questions relating to the amount of travel conducted or desired by respondents, they were asked (borrowing wording from the American Travel Survey) to exclude “travel you do as an operator or crew member on a train, airplane, truck, bus, or ship”

5.2 *Travel affinity*

To directly measure the affinity for travel, the question was asked, “How do you feel about *traveling* in each of the following categories? We are *not* asking about the activity at the destination, but about the travel required to get there.” Respondents were then asked to rate short and long distance travel, overall and by purpose and mode, on a five-point scale from strongly dislike to strongly like. Despite our attempt to alert respondents to distinguish the destination activity from the travel, it is likely that even many of those who actually read the instructions (and more of those who did not) were unsuccessful at doing so.

Clear differences between overall ratings for short and long distance travel emerge, as shown in Fig. 2(a) (where for economy of presentation the five-point scale has been collapsed to the three points dislike, neutral, like). Levels of dislike are similar for both short distance (13%) and long distance (11%) travel. But a majority (55%) of respondents are neutral about short distance travel, whereas an even larger majority (63%) are positive about long distance travel. Thus, there is clearly a stronger affinity for long distance travel, but even short distance travel is not viewed negatively.

Differences are also apparent by purpose and mode, in the expected directions. Figs. 2(b) and (c) show that, for short-distance travel, respondents have greater affinity for entertainment/recreation/social activity-related travel than for travel related to other kinds of activities, and greater affinity for travel by personal vehicle and walking/jogging/bicycling than for travel by public transportation. For long distance travel (Fig. 2(d)), respondents like travel for entertainment/recreation/social activities far more than travel for work, and travel by plane somewhat more than travel by car. Again, it is probable that respondents are partly confounding the utility

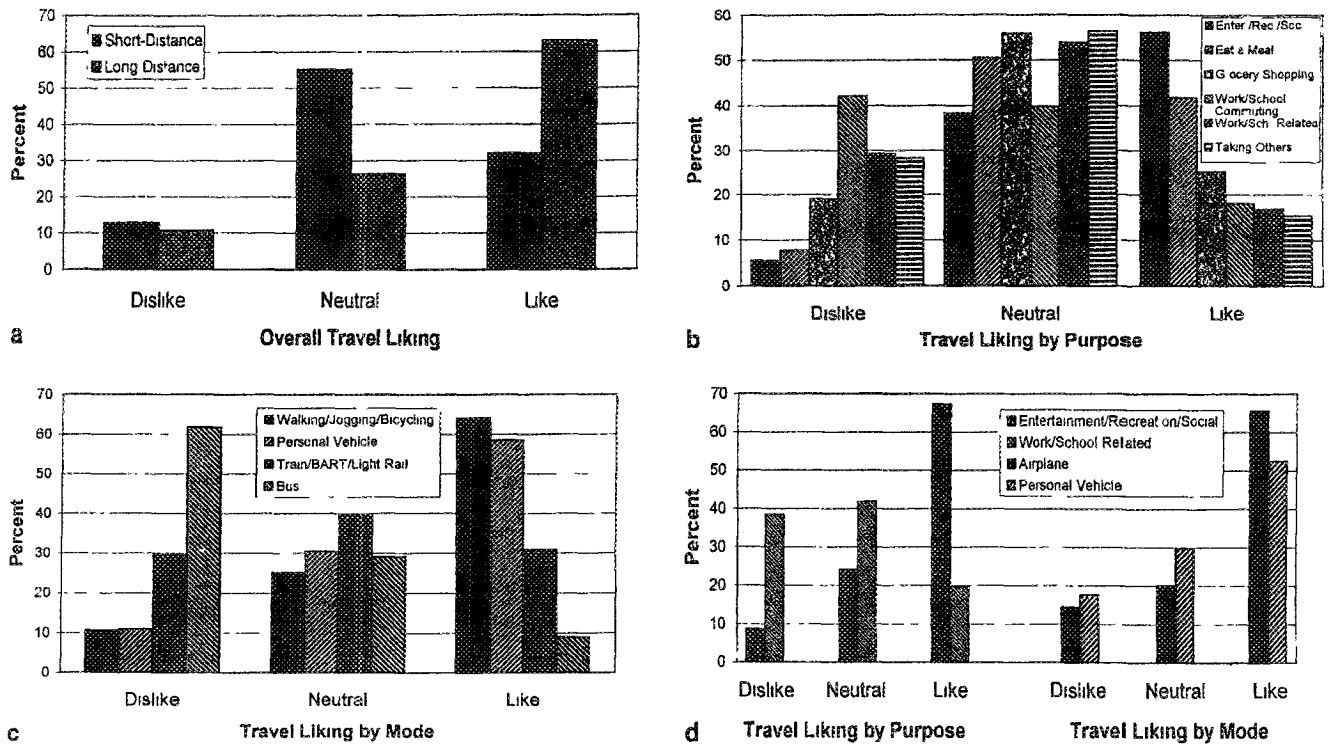


Fig. 2 (a) Overall travel liking by distance category ($N=1904$) (b) Liking for short-distance travel by purpose ($N=1904$) (c) Liking for short distance travel by mode ($N=1904$) (d) Liking for long-distance travel by purpose and mode ($N=1904$)

for the activity at the destination with the utility for the travel required to reach the destination, as well as potentially including the second element, utility for activities conducted while traveling. For example, vacation travel may be better liked than work travel if one brings work to do on the work trip but novels to read or knitting to do on the vacation trip. Being with family members on the vacation may also increase its utility for many.

It is tempting to argue that the mode-specific ratings are more indicative of a true travel affinity (the third element of utility) than are the purpose-specific ones. Theoretically, "travel is travel" – if differences in destination activity and in activities conducted while traveling are factored out, a 10-h flight is a similar physical experience whether it is for work or for leisure. Differences in liking for travel by auto and plane, on the other hand, may reflect genuine differences in comfort, convenience, control, and other attributes intrinsic to those modes. However, the situation is not that simple. First, even the mode-specific ratings are not immune to confounding with utility for activities conducted while traveling. For example, an airplane flight may be more conducive to relaxing or multitasking and hence have higher utility than a trip of comparable length as a solo automobile driver. Second, likely interaction effects between purpose and mode complicate making the appropriate inference. A higher expressed affinity for plane than for auto may be partly based on the fact that for the respondent in question, plane is more often associated with leisure travel and auto is more often associated with work travel. Conversely, a higher rating of leisure travel compared to work travel may reflect a higher content in leisure travel of those

undirected travel activities (often by unusual modes) described in Section 2, in which attributes intrinsic to travel contribute heavily to utility. But the desirability of obtaining ratings for each mode–purpose combination must be traded off against the added burden on the survey respondent.

Nevertheless, the extent of the affinity for travel across most of the categories is striking. We have already discussed some reasons why commuting may have positive utility, but even trips for activities that most people would consider chores (chauffeur-ing, grocery shopping) are liked by 15–25% of the sample. The most disliked type of travel is that which takes place in a bus, but even that is rated neutrally or positively by more than a third (38%) of the sample. (However, some proportion of the neutral responses may simply reflect a lack of experience of the respondents with that mode, rather than a considered opinion.)

5.3 Indicators of excess travel

Individuals with a liking of travel should manifest that predisposition in their travel behavior. To help assess that behavioral outcome, the survey asked respondents about their participation in 13 different indicators of excess travel. The question was kept as mode- and context-neutral as possible. Specifically, respondents were asked, “Keeping in mind that travel is going any distance by any means, how often do you travel _____” in each of the 13 ways shown in Fig. 3, with possible responses of never/seldom, sometimes, and often.

For two of the indicators shown in Fig. 3 – to explore new places and to see beautiful scenery – it could be argued that the utility of the destination is prompting the travel behavior. It may therefore not be particularly surprising that those were the two most popular choices based on combining the “sometimes” and “often” responses (only 13% of the sample “never” did each of those two indicators). Some other indicators (to relax, when time is needed to think, to clear one’s head, and mainly to be alone) are based on the utility of what can be accomplished while traveling. These represent the 6th, 8th, 10th, and 11th most common choices, respectively. The remaining seven indicators are intended to reflect a desire to travel for its own sake – and appear to be quite common although perhaps not universal. For example, traveling “just for the fun of it” was ranked 4th, done sometimes or often by three-quarters of the sample. Traveling “by a longer route to experience more of your surroundings” ranked 5th, done by nearly two-thirds of the sample. Going “to a more distant destination than necessary, partly for the fun of traveling there” was 7th, done by more than half of the sample.

Overall, more than half of the sample sometimes or often engaged in seven or more of these 13 indicators. More than one-fifth did 10 or more. Only 2% of the sample never did any of them. Focussing only on the seven measures most purely indicative of a desire to travel for its own sake, half of the sample engaged in four or more of those seven, and only 6% never did any of them.

5.4 Personality traits

The survey asked respondents to rate 17 personality characteristics in terms of how well each one described them. Again collapsing a five-point scale into a three-point scale, Fig. 4 presents the

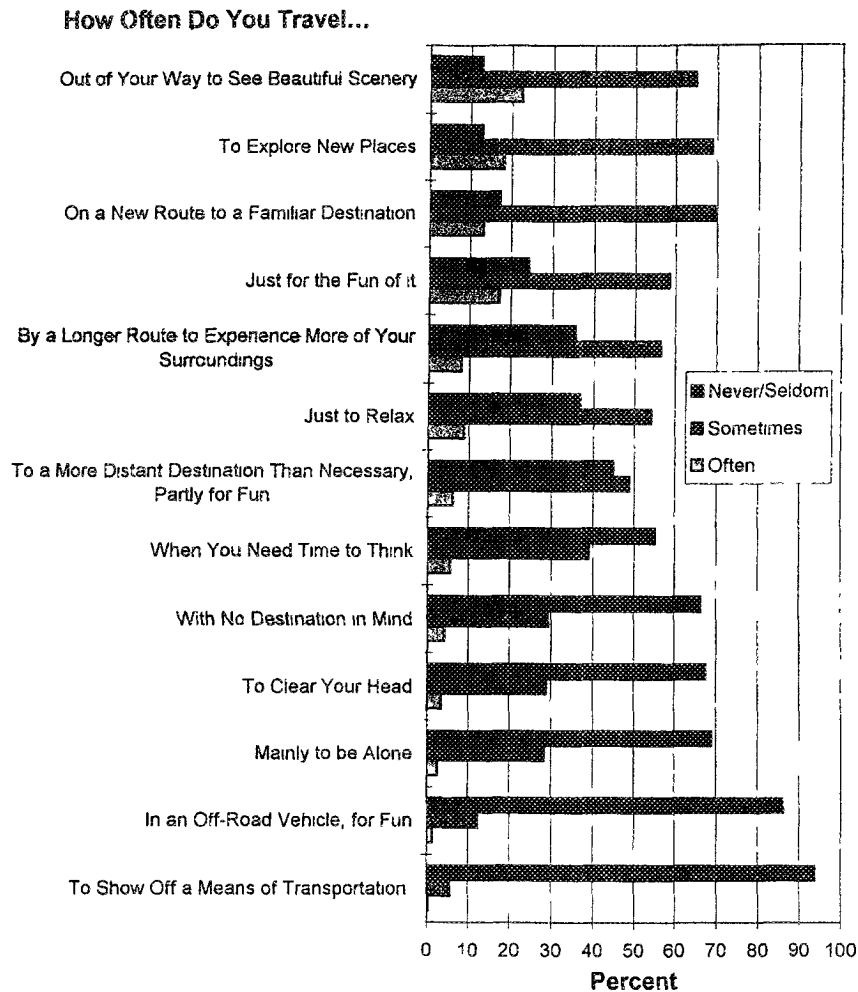


Fig 3 Engagement in excess travel ($N = 1904$)

responses to five of the traits most relevant to the discussion in this paper. More than half the sample felt that “variety-seeking” or “adventurous” described them very well or almost completely. A third described themselves as liking to move at high speeds, and nearly a fifth considered themselves restless. Only 18% “liked to stay close to home”, while more than a third of the sample felt that phrase described them not very well or hardly at all.

Apparently, the raw ingredients for an impulse to travel for its own sake are present in a sizable portion of the sample. The extent to which this is the case is probably overestimated due to a social desirability bias (Dillman, 1978) toward traits perceived to be positive. However, such a bias is unlikely to account for all the responses of that type, especially since sizable portions of the sample were willing to describe themselves in the opposite way (indicating the absence of such a bias for at least those respondents, and presumably others). In future research, a specialized survey could be designed to measure these traits more indirectly, through responses to a variety of questions or statements related to each trait. Such an approach would minimize response bias compared to the direct self-classifications elicited here.