When is Getting There Half the Fun? Understanding the Positive Utility of Travel

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Introduction

"Travel is a derived demand" underlies

- assumption of travel as a disutility
- assumption of saved travel time as a benefit
- policies to reduce congestion:
  - increasing the cost of travel
    - congestion pricing, fuel taxes, parking pricing
  - bringing origins and destinations closer:
    - land use policies, ICT substitution
- current activity-based approach to modeling travel demand

Introduction (cont'd)

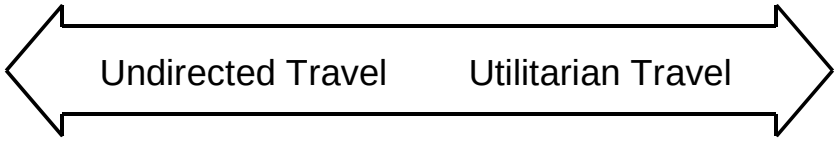
- However, an intrinsic utility for travel has been noted by transportation scholars from diverse disciplines and countries, spanning at least 3 decades:
  - Reichman (geographer, Israel), 1975
  - Jones (CE/planner, UK), 1978
  - Houseman (political scientist, US), 1979
  - Hupkes (consultant, Netherlands), 1982
  - Marchetti (anthropologist, Italy), 1994
  - Garling (psychologist, Sweden), 2000

Why Would Travel be Intrinsically Desirable?

- Curiosity, variety-, adventure-seeking
- Exposure to the environment
- Enjoyment of a route, not just a destination
- Pride in skillful control of movement
- Conquest
- Sensation of speed or even just movement
- Symbolic value (status, independence)
- Escape, buffer
- Physical/mental therapy
- Synergy

FIGURE 1: RELATIVE DEGREES TO WHICH DESTINATION AND TRAVEL ARE PRIMARY

Recreational Walking | **Driving Cross-Country** | **Medical Appointment**



Travel Completely Primary
Destination Completely Ancillary

Destination Completely Primary
Travel Completely Ancillary

Mokhtarian & Salomon (2001)

Premise

- Many characteristics of undirected travel that contribute to its positive utility apply to more directed travel as well (to degrees differing by person and circumstance)
- Result: "excess travel"
- Or as the psychologists would say, some travel is "autotelic" – undertaken for its own sake (auto = self; telos = goal or purpose) – as opposed to "instrumental"

The Tripartite Nature of the Utility of Travel

The utility of travel has 3 elements:

1 Activities conducted at the destination

- the conventional, “derived demand” component

2 Activities conducted while traveling:

- listening to music, talking with companions, ICT activities (mobile phone, laptop, DVD), reading, sleeping, contemplating

3 The activity of traveling itself

6/7/99 Newsweek
inside back cover

The sky keeps its true color

Escape. Serenity. Relaxation. The 1999 Toyota 4Runner Limited puts them all well within your reach.

a secret, and only shares it with

With features like a leather-trimmed interior, a CD sound system as well as more than a dozen

those who climb the mountain.

new refinements, you might actually find the journey to be as rewarding as the destination.

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Escape. Serenity. Relaxation. … 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.

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The Quest now offers a driver's-side sliding door. A roomier cabin. A redesigned cockpit. More usable cargo space. A more powerful engine. And so many diversions your kids may actually be disappointed at how quickly you arrive at your destination.

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Family life is busy, and time with your kids is never enough. Car time can be a great chance to chat, heart to heart, about some of the things your children face. Like pressure to try cigarettes.

Talking it through often can help kids resist the pressure they face. Grab the moment while you can. They'll be out on their own all too soon.

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ncer, Heart Disease, And Emphysema.

Family life is busy, and time with your kids is never enough. Car time can be a great chance to chat, heart to heart...

LA 9-15, 2000

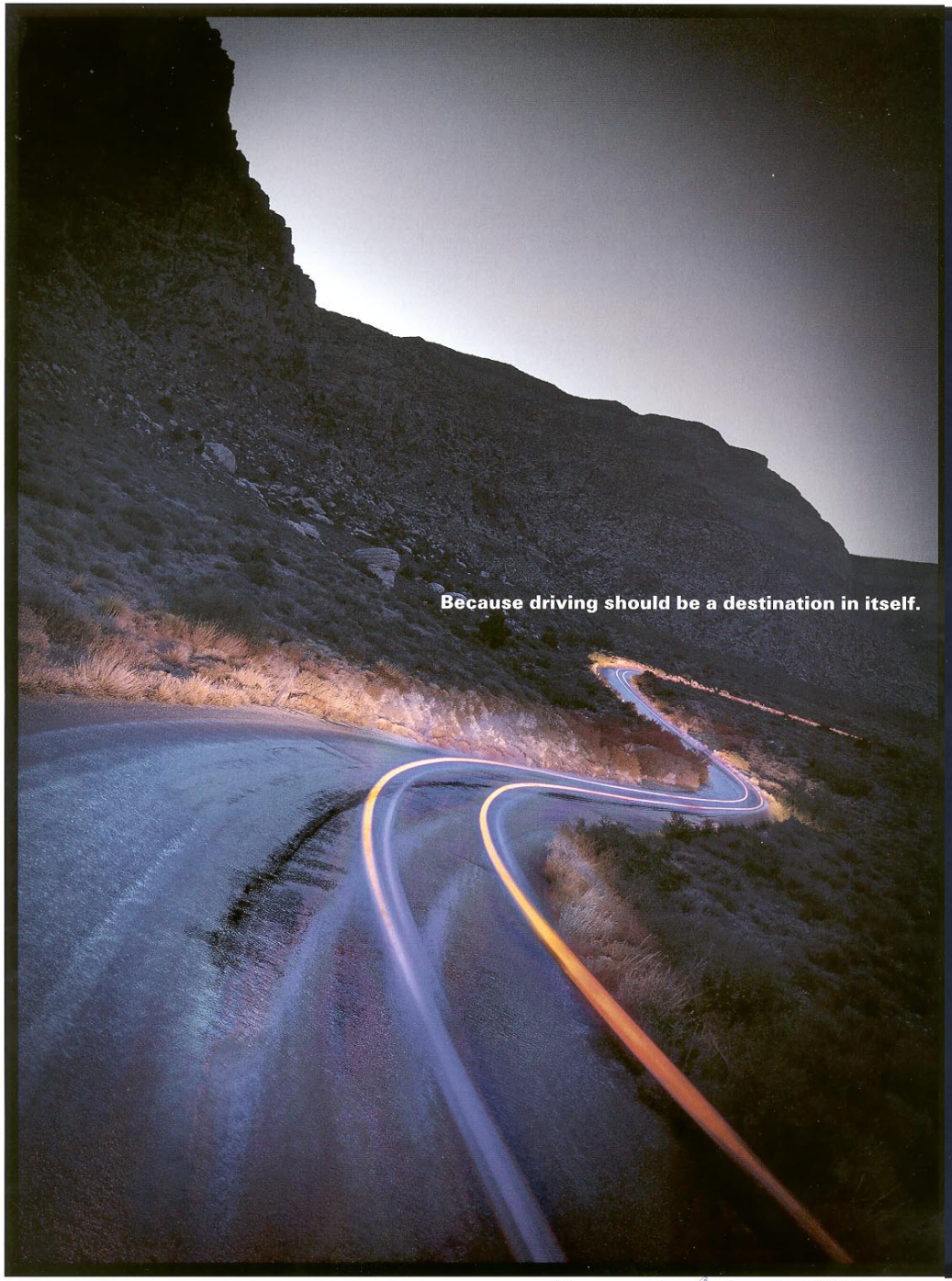
It didn't matter where you were going. All you needed was an open road and a full tank of gas. The world streaming by your window, wind in your hair, sun through the trees, tires humming and the radio on… Not a care in the world… The pure joy of a long drive, a great car and no particular place to go.

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.



Because driving should be a destination in itself.

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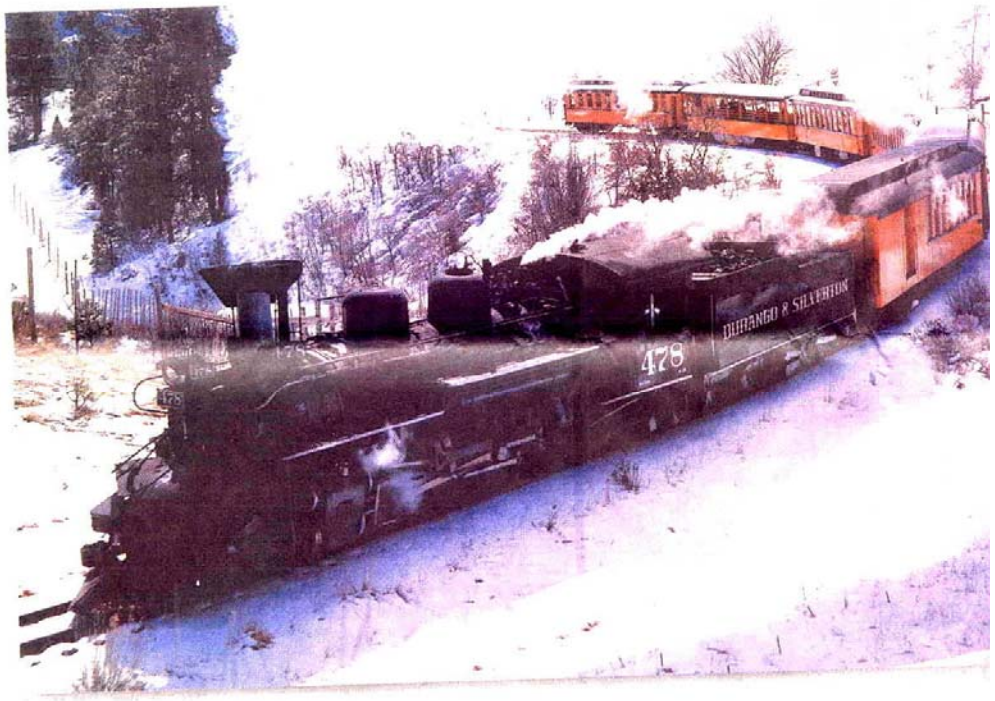
Newsweek Oct. 18, 1999

אלפא, לאנשים שנוסעים כדי לנסוע



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who travel to travel

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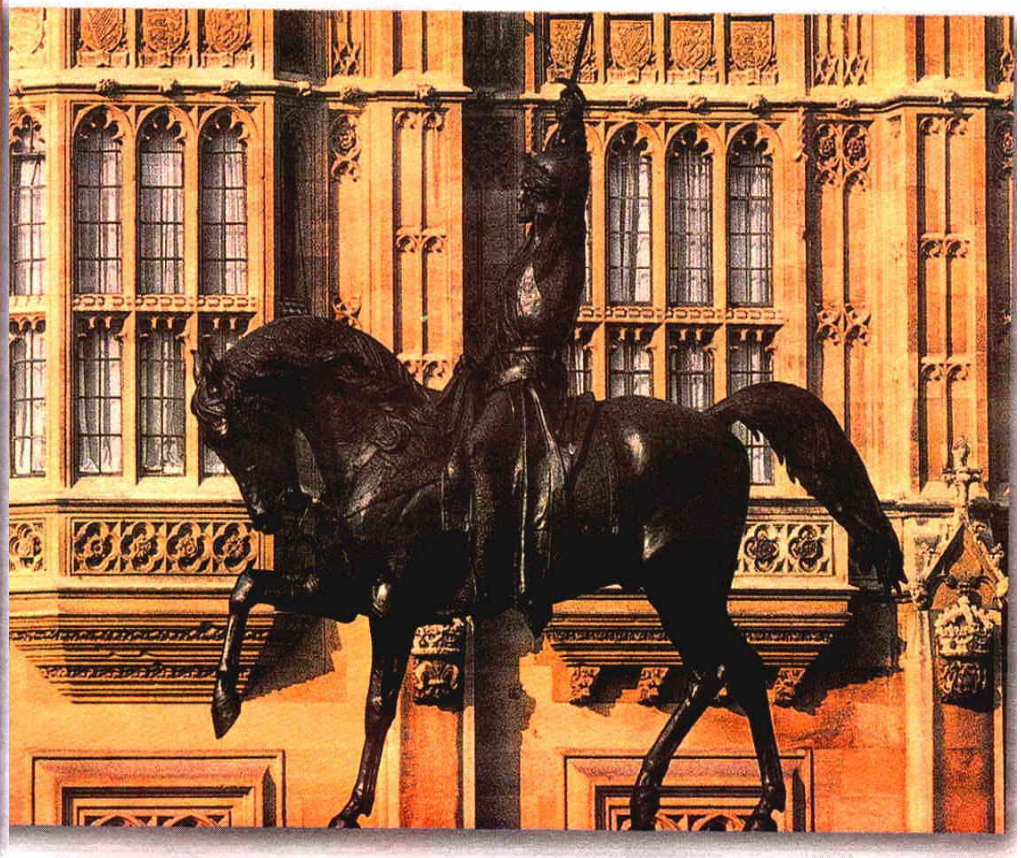

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Potential Impacts on Travel Choices

- Active
  - Adds utility
  - Positive liking
  - Generates travel
- Passive
  - Diminishes disutility
  - Ameliorates unpleasantness
  - Fails to reduce travel

Potential Impacts on Travel Choices (cont'd)

- Trip generation:
  - New trip created; existing trip not eliminated
- Destination choice:
  - More distant one chosen (than predicted from attractiveness alone)
- Mode choice:
  - Elements 2 & 3 add utility/reduce disutility
  - For *some*, this will outweigh time/cost favoring another mode

Potential Impacts on Travel Choices (cont'd)

- Route choice:
  - For a fixed destination, a longer route than necessary is chosen
  - For scenery, variety, companionship
- How much "excess travel" are we talking about?
  - < 1%? 5%? more?
- What do we "do" about it?
  - Try to reduce it?
  - Channel it to benign modes?

Empirical Evidence

- Direct questioning
- VOTT obtained from utility-theoretic inverse demand systems
- Random coefficients of travel time in mode choice models
- Route choices other than the minimum path

"Differently-wired Consumers"

- "While the consumer's wiring may produce patterns of market behavior that in many cases can be approximated well by the standard [economic, utility-maximization] model, when we approach the consumer from a different angle, asking direct and unusual questions about beliefs or values, we find alarming variations from the standard economist's story" (McFadden 1999)

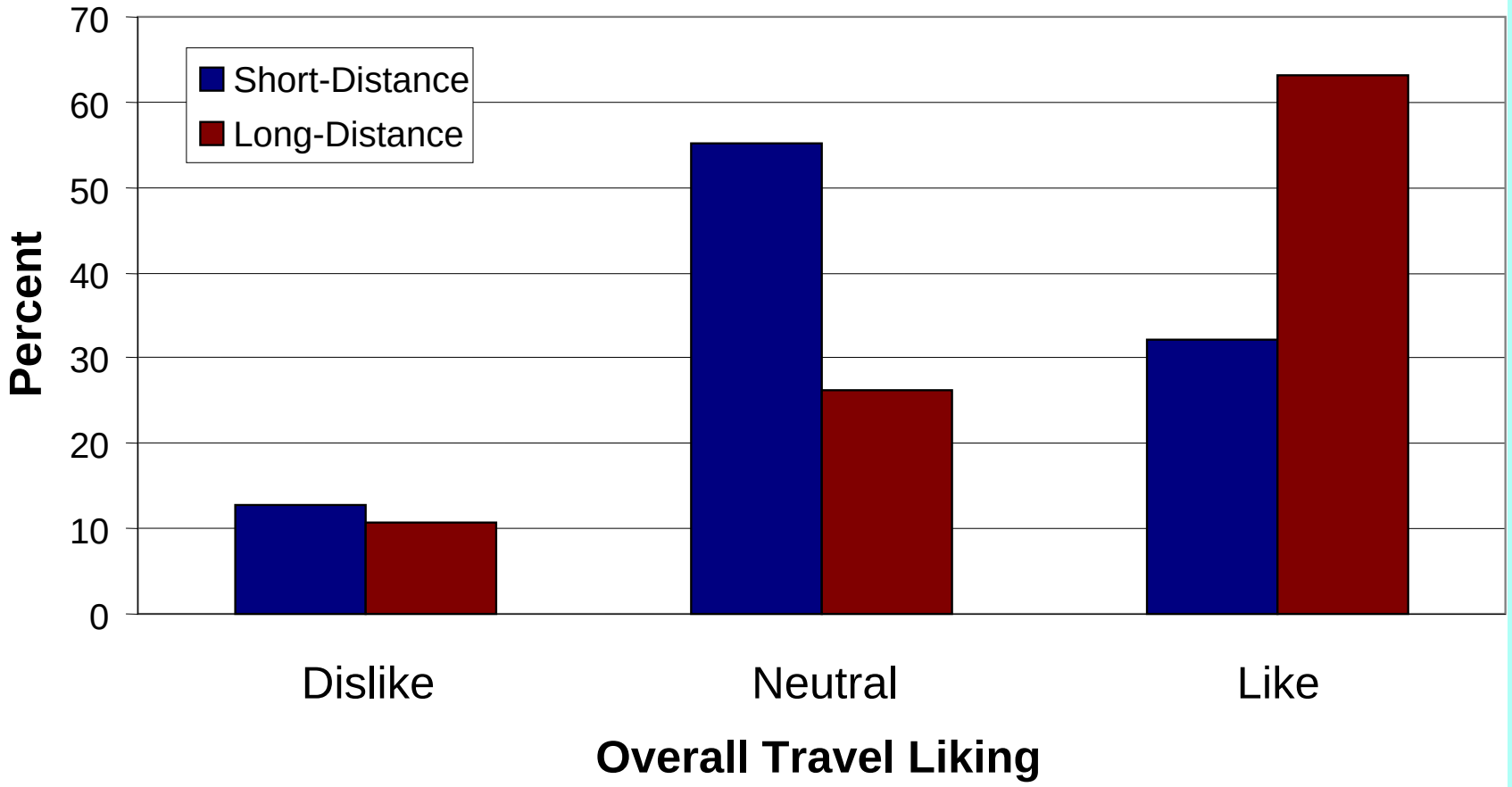
Direct Questioning

- 14-page survey
  - attitudes toward travel; affinity for travel;
  - objective, perceived & (relative) desired amts of travel;
  - personality; lifestyle; demographics
- 3 San Francisco Bay Area nbhds: urban (NSF) and suburban (Concord, Pleasant Hill)
- 1,904 usable responses (25% response rate)

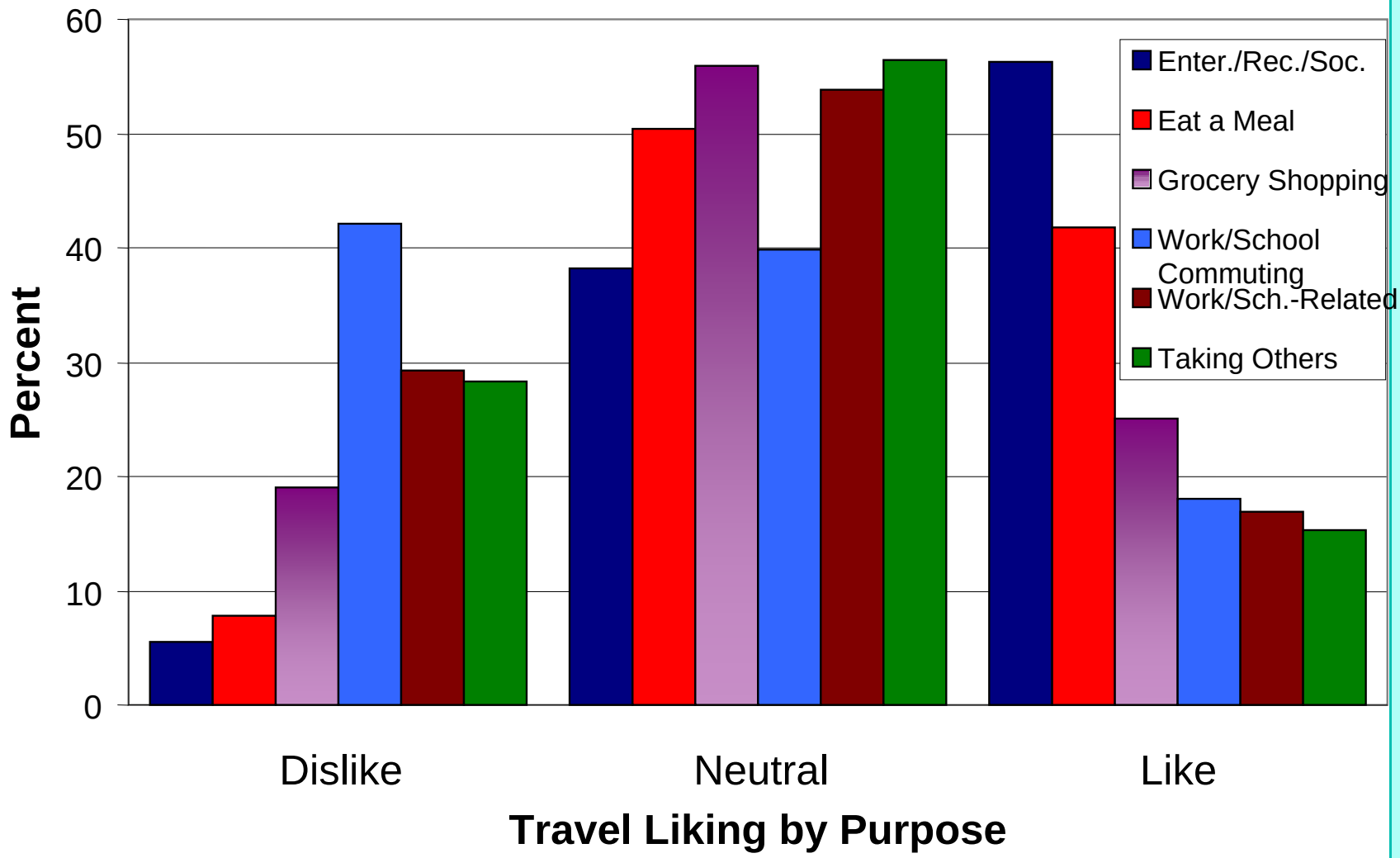
Travel Liking

- "How do you feel about *traveling* ..."
  - overall, and by purpose, mode, distance (S & L)
- 2/3 like LD travel, 1/3 like SD travel, similar levels of dislike (11-13%) for both
- Travel liking higher for ent/rec/soc purpose (S & LD); for personal vehicle and walking (SD); for plane (LD)
- Even "chore" trips are liked by 15-25%

OVERALL TRAVEL LIKING BY DISTANCE CATEGORY (N=1904)



LIKING FOR SHORT-DISTANCE TRAVEL BY PURPOSE (N=1904)



Reader's Digest - September 1999

Chrysler Concorde LXi makes even the most mundane drives seem extraordinary… driving a Concorde becomes more of a thrill than a chore.

Reader's Digest Aug. 1999

Sometimes you forget the milk. Sometimes you forget

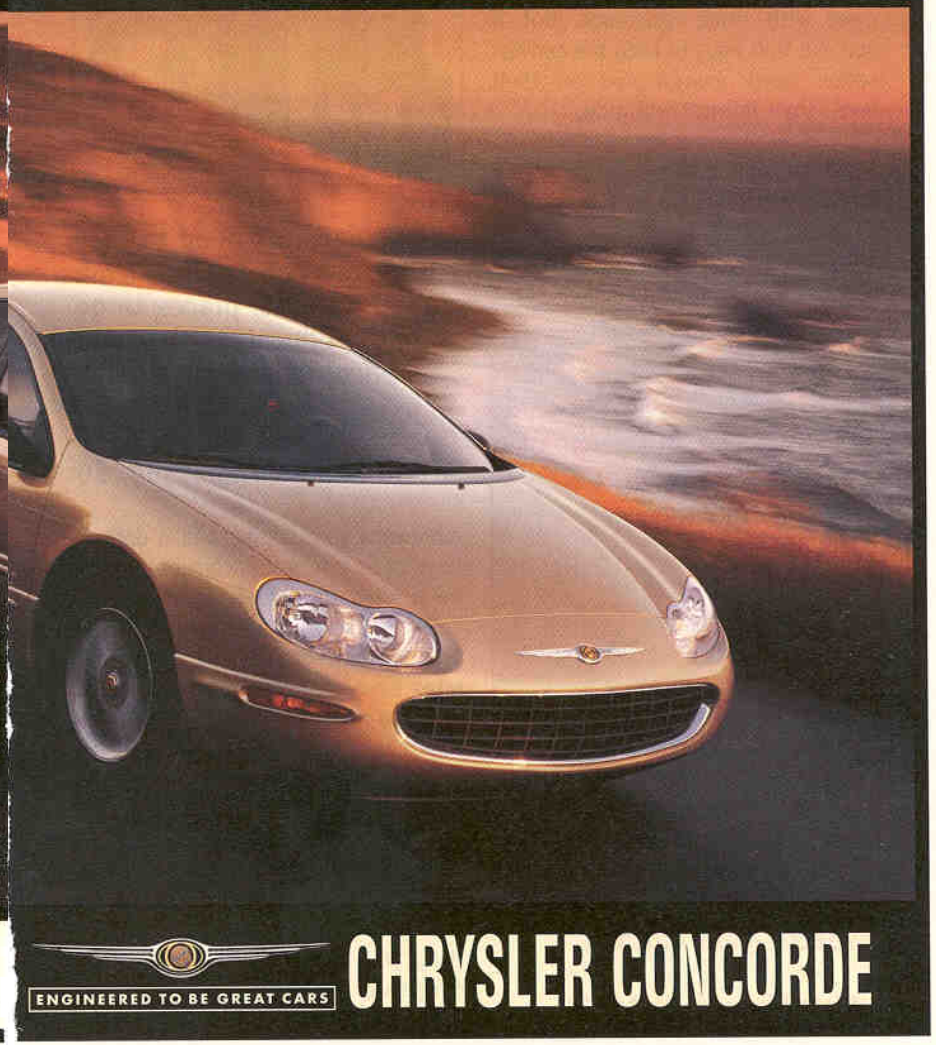
Whether you are going to the store, to work or the dry cleaners, every trip you take in a Concorde LXi inevitably

Sophisticated sensors on the 3.2 liter V6 eliminate damaging engine knock that can occur with more conventional technology.

becomes a joyride. With every corner you become lost in the stability of its cab-forward architecture and low-speed traction control. As your thoughts begin to race, Chrysler Concorde LXi's smooth 4-speed automatic, a fully adaptive electronically controlled transaxle, actually begins to learn your driving style and tailors its internal shift patterns for you. Soon your fingers grip the leather-wrapped steering wheel and your mind hums along to the purring sounds of a

Base MSRP's include destination, exclude tax

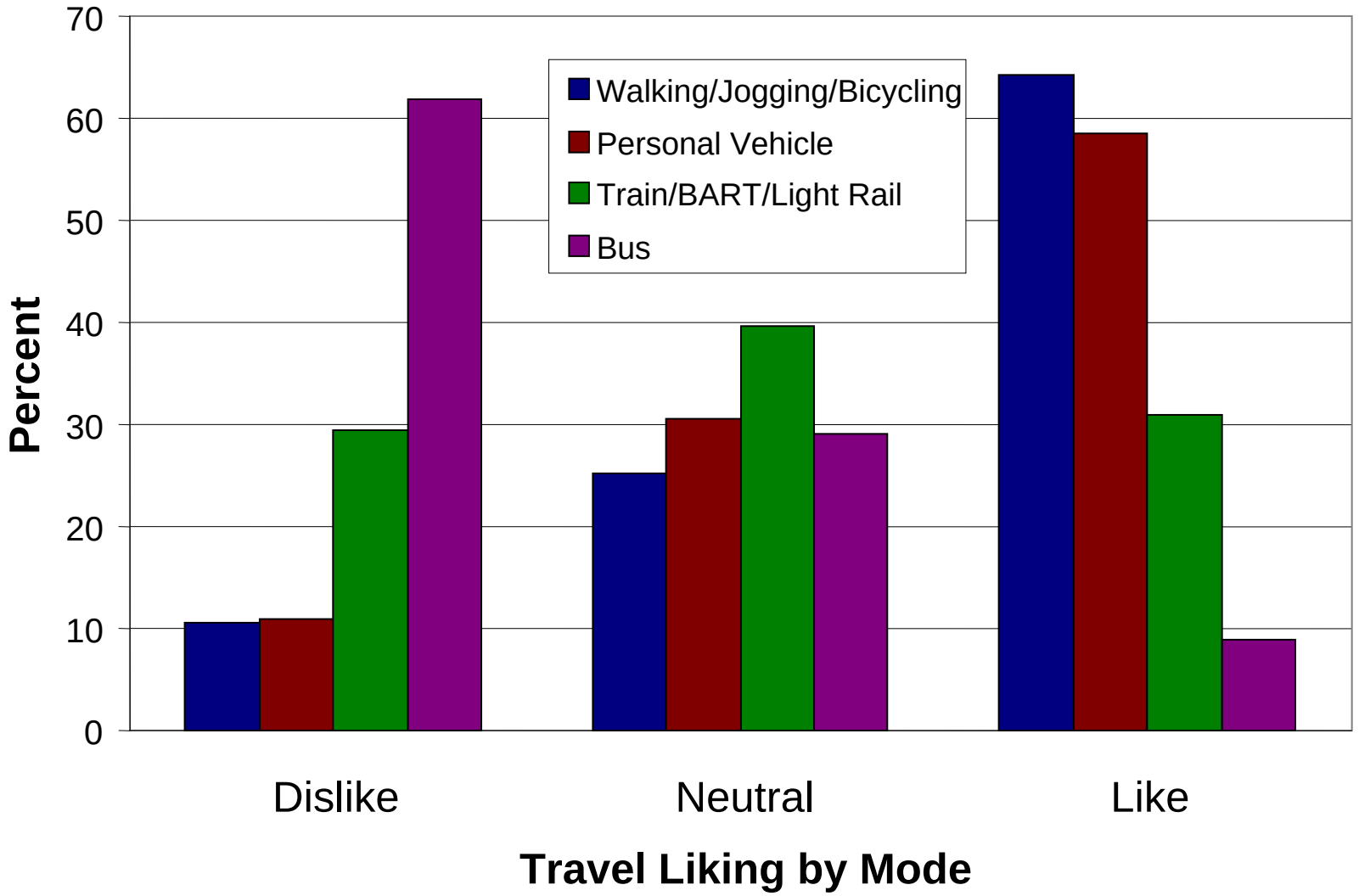
Sometimes you forget the bread. the store altogether.



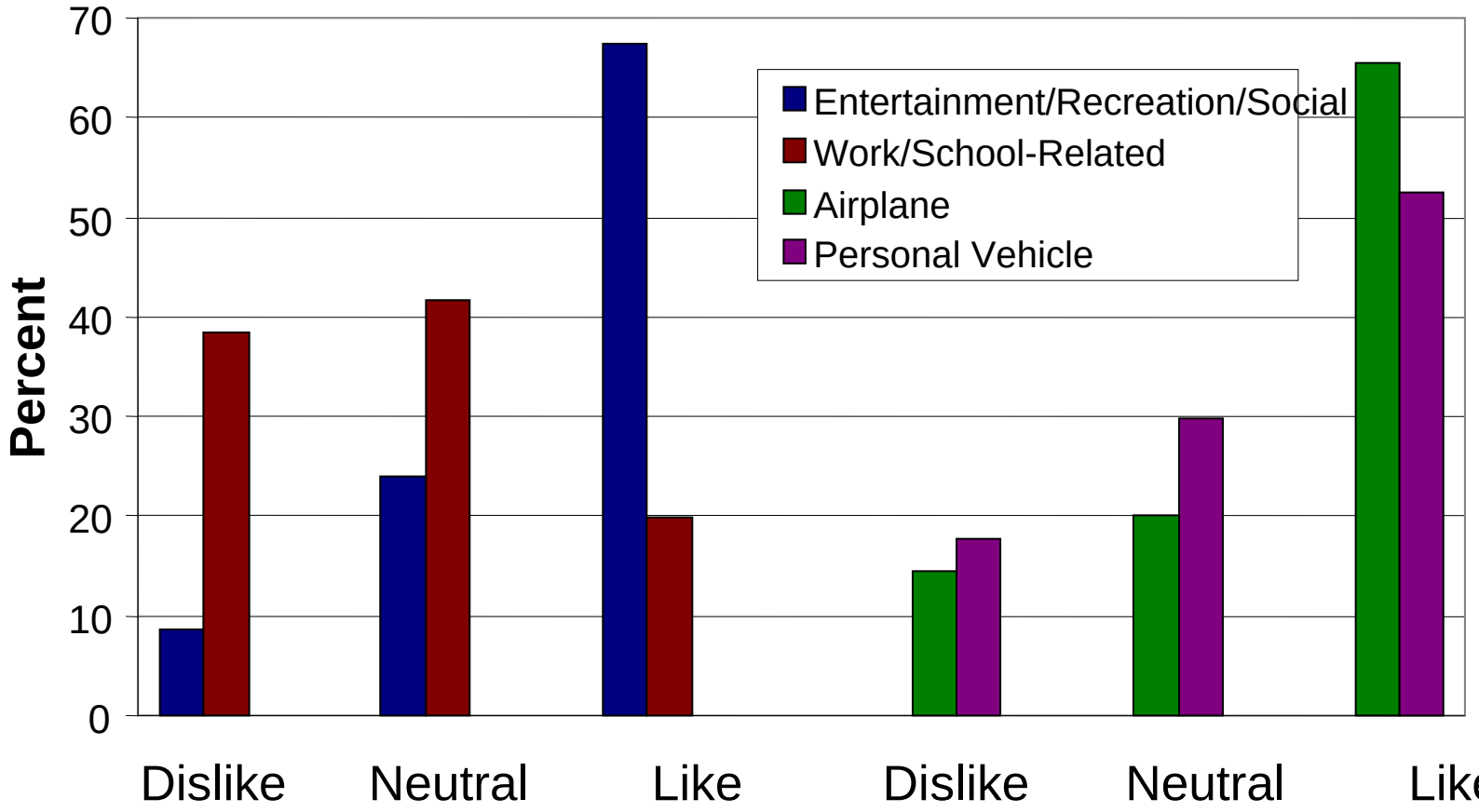
ENGINEERED TO BE GREAT CARS **CHRYSLER CONCORDE**

Whether you are going to the store,
to work or the dry cleaners, every trip
you take in a Chrysler Concorde LXi
inevitably becomes a joyride...
Now then, where are you going again?

LIKING FOR SHORT-DISTANCE TRAVEL BY MODE (N=1904)



LIKING FOR LONG-DISTANCE TRAVEL BY PURPOSE AND MODE (N=1904)



Aren't People Just Responding with Respect to their Attitude toward the Destination Activity?

- EVEN if so, these attitudes have travel implications
- BUT further, we saw liking not just for *purposes*, but *overall* (first in each section of the survey) and by *mode* -- people can apparently like "generic" travel

Just Responding with Respect to the Destination Activity? (cont'd)

- Liking can legitimately vary by *purpose*, separately from the destination activity
- Liking can legitimately vary by *route / destination*, separately from the activity at the destination

Just Responding with Respect to the Destination Activity? (cont'd)

- In sum, the quality of the travel experience can differ by a number of factors besides the destination activity
- We've already discussed lots of reasons why travel *could* have intrinsic positive utility
- Thus, the question is not *whether*, but *how much*

Ideal Commute Time

Following a series of attitudinal statements relating to positive ("I use my commute time productively") as well as negative ("Traveling is boring") aspects of travel:

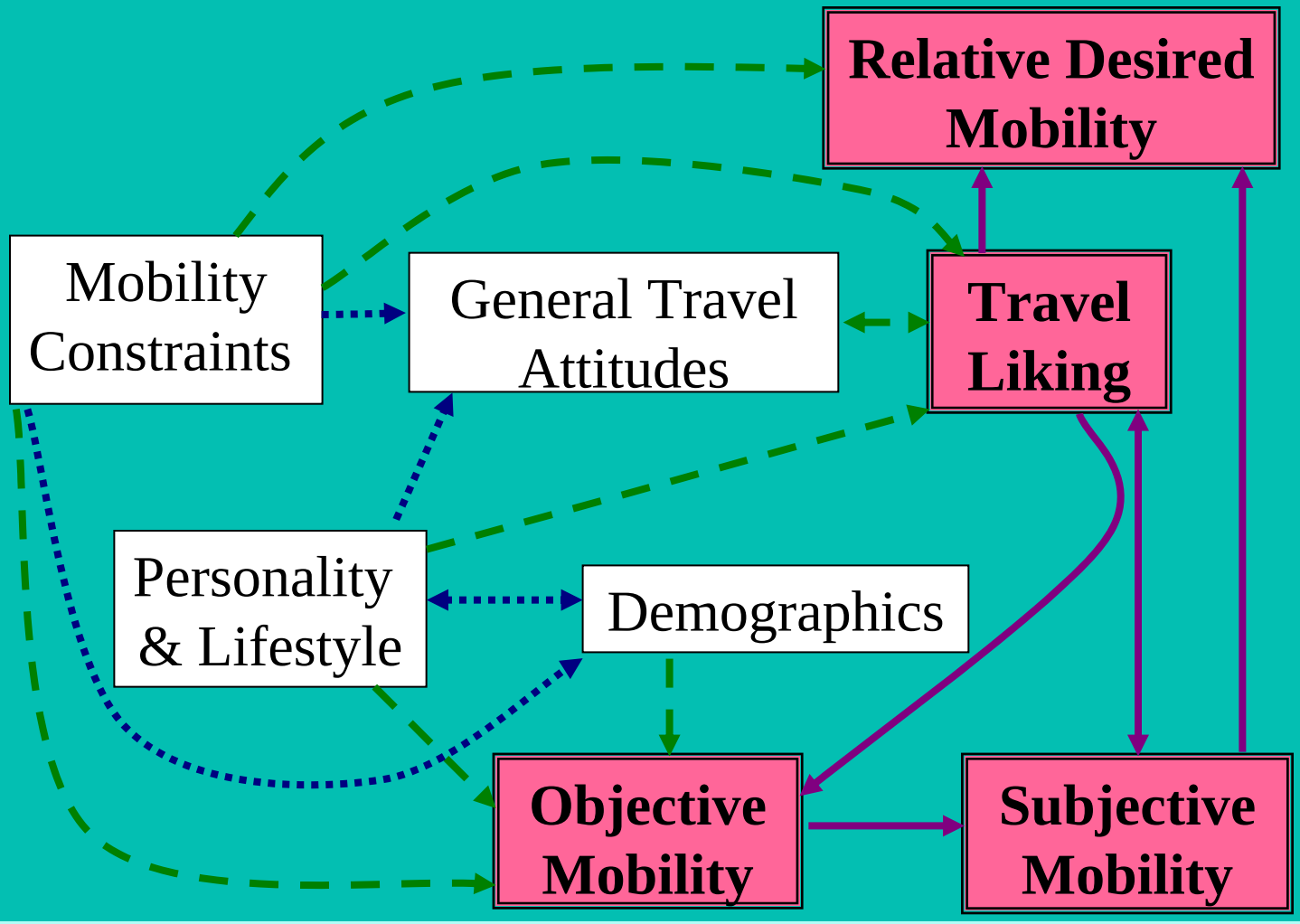
- "Some people may value their commute time as a transition between work and home, while others may feel it is stressful or a waste of time. For *you*, what would be the ideal *one-way* commute time?

  _____ minutes"

Ideal Commute Time (cont'd)

- Why isn't it always 0?
  - may value amenities of work loc. (element 1)
  - may value transition bet. hm and wk (element 2)
  - may value movement or status auto (element 3)
- Average: 16 mins one-way (1,384 workers)
- only 3% wanted 0-2 mins
- ~1/2 wanted 20 mins or more

Conceptual Model



"If Travel is Desirable, Why Does TT Always Have a Negative Coefficient?"

- Non-conforming models are discarded!
- It may have a positive coefficient for some portion of the population, but the "average" coefficient overall is negative
- Even if the coefficient is negative for all, it does not disprove the premise. It is not necessarily time itself, but other aspects of travel (whose mean effects are captured by the constant term, and whose random effects appear as ε in the utility function) that have a positive utility. If those outweigh the disutility of TT, total utility can be positive

Empirical VOTT Studies

- A utility-theoretic inverse demand model application to recreation (Larson & Lew 2005):
  - 2/3 of sample had positive utility of travel;
  - for 1/3, the PUT was needed for the entire trip (including time onsite) to have positive utility
- Hensher & Rose (2005) analyzed the hypothetical choice between tolled versus free routes for non-commuting trips, and explicitly asked respondents which attributes of the choice scenario they ignored in stating their preference:
  - only 78% reported considering travel time

Empirical VOTT Studies (cont'd)

- Several studies (Richardson 2003; Hess *et al.* 2005; Cirillo & Axhausen 2006) using mixed logit models of mode choice have found ~10-15% of the sample to have a *zero* or even *positive* coefficient of travel time

What about Value of Travel Time Savings???

- I am not suggesting that more travel time (TT) is inevitably better!
  - There is probably a non-linear relationship, with an optimum amount -- more OR less than that optimum is less desirable
  - People probably don’t have a high positive utility for TT in congestion, so for congested circumstances, TT savings may serve as a reasonable first-order proxy for the benefit

What about Value of Travel Time Savings??? (cont'd)

- More TT not necessarily better (cont'd):
  - Some economists argue that more TT is NEVER better: People would always rather save time for higher-value (or even just more of the same) activities
  - However, TT may often be serving as a proxy for some of these other benefits of travel, and hence appear to be positively-valued

What about Value of Travel Time Savings??? (cont'd)

- Granted: assuming a random coefficient to be normally-distributed (and hence sometimes positive) doesn't make it so
- But conversely, what damage do we do when we force the data to tell us something it doesn't want to? (I.e. force a coefficient to be always negative)

What about Value of Travel Time Savings??? (cont'd)

- Research challenges:
  - How to choose the best distribution for randomly-distributed coefficients?
  - If positive coefficients of travel time are due to TT acting as a proxy for missing variables, how to capture those variables, or what to do if we "can't"?

Route Choice Evidence

- Bekhor *et al*. (2006) tested 16 objectives involving travel time and cost singly or in combination, which travelers were hypothesized to minimize
  - "Minimum" path matched the chosen routes in at most 34% of the cases, or 45% if the definition of a "match" were relaxed to require only 80% or better overlap (in terms of length) between the minimum and chosen paths
  - In 15% and 28% of the cases, *none* of the 16 objectives produced an optimum path with 80+% or complete overlap with the chosen route, respectively.

Route Choice Evidence (cont'd)

- Combining GPS and survey data, Parkany *et al*. (2006) found that one-third of their sample of 106 Lexington, Kentucky drivers chose routes having travel time at least 10% higher than the minimum
- Research question:
  - To what extent are these results due to utilitarian reasons (imperfect information about the shortest path, or other criteria such as safety) versus autotelic reasons?
- Focusing on route choice only captures excess travel between fixed points A & B – i.e. assumes trip would have been made, to that destination

Real-World Suggestions: Modifying a Standard Travel/Activity Diary

- Elicit entire trips made for their own sake
  - Recreational walking, jogging, cycling, etc.
    - » Stress there may not be a "destination"

    Distinguish
    - » travel TO recreational opportunities (driving TO the park)
    - » travel AS recreation (jogging IN the park)
    - » stationary recreational activities (reading in the park)
  - Add "Just because I wanted/needed to" to the list of trip purposes
    - » To capture trips that look "destination-oriented" but where the destinations were actually invented to justify the trip
    - » Includes reasons such as need to escape, desire to get away & think/relax, show off car, cabin fever, curiosity

Modifying a Standard Travel/Activity Diary (cont'd)

- About a randomly-selected subset of activities (to be practical), ask:
  - Even if not your first choice, could you have satisfactorily performed this activity without traveling (e.g. by teleworking instead of commuting, or using the phone instead of meeting in person)? *(generation)*
  - From the location of the previous activity, is this the nearest place at which *this* activity could have been satisfactorily performed? *(destination)*

Modifying a Standard Travel/Activity Diary (cont'd)

- Did you reach this location in the fastest practical way? *(route)*
- What activities did you perform while traveling, and what role did they play? *(mode)*
  - » I did it just to pass the time
  - » It helped me save time elsewhere
  - » It contributed to the enjoyment of the trip
  - » It contributed to the usefulness of the trip

Modifying a Standard Travel/Activity Diary (cont'd)

- To a randomly-selected subset of activities, apply the teleportation test:
  - "If you could instantaneously teleport yourself to the destination, would you?"
    1. if mostly value the destination: YES
    2. if mostly value the multitasking: MAYBE
    3. if mostly value the travel: NO
  - Offers insight into reaction to real changes that reduce travel time
  - In the aggregate, people seem to travel more

Modifying a Standard Travel/Activity Diary (cont'd)

- Permit post hoc classification of recreational activities based on motion/speed, physical activity, and range:

				range	
				low	*high*
motion	*low*	***physical activity***	*low*	reading crafts cooking	RV trip cruise
			high	gardening building	hiking x-country skiing leisure cycling
	high		*low*	racing on a track (non-human-powered veh) amusement rides	driving trip high speed rail sailing flying
			high	downhill skiing swimming/diving dancing field sports	Tour de France marathons

Real-World Activities

- France's 2007-08 national personal travel survey (N= 15,000) has some questions related to the positive utility of travel, for a randomly-selected trip (Papon et al., 2007):
  - activities conducted during the trip;
  - pleasantness of the trip;
  - tiringness of the trip;
  - which was the most important aspect of this trip: destination, activity during trip, or feeling during trip
- Purposes now include "promenade without precise destination"

Summary

- Most of the demand for travel is derived
- But we do have an intrinsic desire to travel
  - based on variety-seeking, curiosity, love of movement (speed), control, enjoyment of beauty, etc.
- and we do accrue utility from activities conducted while traveling (ICT and others)
- which together lead to
  - undirected travel activities
  - excess travel in connection with directed trips

Implications

- Generally: Reaction to policies intended to reduce travel will depend on
  - relative weights of 3 elements of travel utility
  - whether more or less mobility is desired
- Specifically: What about value of travel time savings???
  - constitutes by far the largest component of the benefit of infrastructure improvement

Recommendations

- Begin to think of travel as a “good”, not just a “bad”, and model the demand for that good, as we do for other goods
  - (“Excess consumption” with respect to *automobiles*)
  - Allow for positive-valued distributions of TT coefficients in mode choice models,
  - Recognizing that a positive coefficient of TT reflects something other than TT, and therefore that it cannot be used to compute VTTS

Recommendations (cont'd)

- Explore in more detail the extent to which "excess travel" is occurring, e.g.,
  - improve the measurement of relevant variables
  - apply the teleportation test
  - make simple changes to conventional travel/ activity diary surveys
  - conduct stated response surveys to distinguish 2nd and 3rd components of utility (Ettema & Verschuren 2007)
- Track attitudes over time, and work on modeling/forecasting them (Steg et al. 2001; Outwater et al. 2003)

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Questions?










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