2-24-2017

Exploring the Positive Utility of Travel and Mode Choice

Patrick Allen Singleton
Portland State University, singletonpa@gmail.com

Let us know how access to this document benefits you.
Follow this and additional works at: http://pdxscholar.library.pdx.edu/trec_seminar

Part of the Transportation Commons, Transportation Engineering Commons, Urban Studies Commons, and the Urban Studies and Planning Commons

Recommended Citation
http://pdxscholar.library.pdx.edu/trec_seminar/111

This Book is brought to you for free and open access. It has been accepted for inclusion in TREC Friday Seminar Series by an authorized administrator of PDXScholar. For more information, please contact pdxscholar@pdx.edu.
Exploring the positive utility of travel and mode choice

Patrick A. Singleton
Portland State University

TREC Friday Transportation Seminar
24 February 2017
Positive utility of travel

- Research questions
- Background
- Study design & data
- Results
- Implications
Research questions

A. What is the positive utility of travel (PUT)?
   – Literature review, synthesis, critique

B. How do we measure PUT?
   – Original survey data collection

C. What factors are associated with PUT?
   – Results for mode of transportation
Background

Activity demand \rightarrow Travel demand

- Travel as a disutility

Economics: associated with outcome of preference-satisfying decision

Psychology: pleasure, happiness, fulfillment, and subjective well-being

Motivations

- Extrinsic (instrumental) vs. intrinsic (autotelic)
- Hedonic (affective) vs. eudaimonic (symbolic)
The positive utility of travel (PUT) includes…

*any benefits accrued to the traveler through the act of traveling.*

Mokhtarian & Salomon’s (2001) “affinity for travel”

1. The activities conducted at the destination.
2. The activities that can be conducted while traveling.
3. The activity of traveling itself.

Destination activities

“The activities conducted at the destination.” (MS, 2001)

Definition: *Benefits from reaching a destination with activity potential.*

Travel as... A means to a productive end: going somewhere.

Motivations: Extrinsic, instrumental.

Examples:

[Image 1](https://www.flickr.com/photos/scottdavies/5671889074/)
[Image 2](https://www.flickr.com/photos/krawcowicz/4279213591/)
“The activities that can be conducted while traveling.” (MS, 2001)

**Definition:**  
*Benefits from activity participation during travel.*

**Travel as...**  
The setting for other activities.

**Motivations:**  
Extrinsic, instrumental.

**Examples:**

![Image 1](https://www.flickr.com/photos/giuseppemilo/1573434808/)

![Image 2](https://www.flickr.com/photos/ai-dealer/4616421207/)
Travel experiences

“The activity of traveling itself.” (MS, 2001)

**Definition:**
- Affective enjoyment of the travel experience.
- Symbolic expression or fulfillment from the travel experience.
- Travel as the activity.

**Travel as...**
- The setting for experiences.
- A means to a fulfilling end.
- An end in and of itself.

**Motivations:**
- Intrinsic, autotelic.
  - Hedonic, affective.
  - Eudaimonic, symbolic.

**Examples:**
- [Image of a snowflake](https://www.flickr.com/photos/divinedecay/5225460351/)
- [Image of a car](https://www.flickr.com/photos/aerialcamera/10238940444/)
- [Image of a person hiking](https://www.flickr.com/photos/divinedecay/5225460351/)
Study

Background – Positive Utility of Travel – Study – Results – Implications

1 Positive utility of travel factors

2 Traveler characteristics

Demographics
(age, gender, household size, race/ethnicity, mobility limits, etc.)

Socioeconomics
(income, employment, education, housing, vehicle ownership, etc.)

Attitudinal, personality, & lifestyle factors

3 Trip/mode attributes
(travel time, monetary cost, safety, security, discomfort, etc.)

Utility

Travel mode choice
Data

Commuting Survey 2016

Welcome!

You are invited to participate in a Portland State University research survey about your commuting experiences. The information you provide will be analyzed to better understand transportation and commuting behaviors.

The survey will take about 30 minutes to complete. If you complete the survey, you will have the opportunity to enter a drawing to win one of ten $100 Visa gift cards.

Click here to take the survey now!

https://portlandstate.qualtrics.com/SE/?SID=SV_3t2rJXyc3zav...

This research is completed under the guidance of Dr. Kelly Clifton, from the Department of Civil & Environmental Engineering at Portland State University. The research is part of a doctoral dissertation, with funding from the National Institute for Transportation and Communities, a program of the Transportation Research and Education Center for Portland State University. If you have any questions about the study, please email...
## Data

**Survey dates:**  
October 17, 2016 – December 16, 2016

<table>
<thead>
<tr>
<th>Mode</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>371</td>
<td>49%</td>
</tr>
<tr>
<td>Bus</td>
<td>175</td>
<td>30%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>114</td>
<td>16%</td>
</tr>
<tr>
<td>Walking</td>
<td>30</td>
<td>4%</td>
</tr>
</tbody>
</table>

Commute trips by mode, & mode shares  
(N = 690)

**2015 ACS (1-year):**

<table>
<thead>
<tr>
<th>Location</th>
<th>Car</th>
<th>Bus</th>
<th>Bicycle</th>
<th>Walking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland urban area</td>
<td>83%</td>
<td>8%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Portland city</td>
<td>70%</td>
<td>14%</td>
<td>8%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Can we measure a positive utility of travel?

- Yes, in various ways:
  - Travel-based multitasking
  - Travel experiences & well-being

What factors are associated with PUT?

- Commute mode
  - Walking and cycling commutes are more positive
  - Transit and auto commutes are less positive
Travel multitasking

Travel usefulness

- Wasted
- Neither
- Useful

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Wasted</th>
<th>Neither</th>
<th>Useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>87</td>
<td>0</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>94</td>
<td>0</td>
<td>0</td>
<td>57</td>
</tr>
</tbody>
</table>
Activities during travel (Automobile)

- Listening to music or radio: 79%
- Thinking; daydreaming: 39%
- Eating; drinking: 33%
- Viewing scenery or people: 31%
- Talking with friends or family: 16%

Percentage
Activities during travel (Transit)

- Texting; emailing: 56%
- Viewing scenery or people: 50%
- Thinking; daydreaming: 48%
- Reading electronically: 41%
- Using social apps: 34%
Travel multitasking

Activities during travel (Bicycling)

- Exercising: 89%
- Viewing scenery or people: 73%
- Thinking; daydreaming: 60%
- Listening to music or radio: 16%
- Talking with friends or family: 15%

Percentage
Travel multitasking

Activities during travel (Walking)

- Viewing scenery or people: 67%
- Thinking; daydreaming: 63%
- Exercising: 60%
- Talking with strangers: 30%
- Texting; emailing: 30%

Background – Positive Utility of Travel – Study – Results – Implications
Travel experiences

Travel liking

Percentage

<table>
<thead>
<tr>
<th>Liked</th>
<th>Neither</th>
<th>Disliked</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>96</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>57</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>53</td>
<td>21</td>
<td>0</td>
</tr>
</tbody>
</table>

Background – Positive Utility of Travel – Study – Results – Implications
Travel experiences

Travel affect (Transit)

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert</td>
<td>80</td>
</tr>
<tr>
<td>Calm</td>
<td>74</td>
</tr>
<tr>
<td>Attentive</td>
<td>71</td>
</tr>
<tr>
<td>Active</td>
<td>39</td>
</tr>
<tr>
<td>Stressed</td>
<td>36</td>
</tr>
<tr>
<td>Frustrated</td>
<td>29</td>
</tr>
<tr>
<td>Strong</td>
<td>25</td>
</tr>
<tr>
<td>Determined</td>
<td>24</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>24</td>
</tr>
<tr>
<td>Inspired</td>
<td>20</td>
</tr>
</tbody>
</table>

Background – Positive Utility of Travel – Study – Results – Implications
Travel experiences

Travel affect (Bicycling)

- Active: 98%
- Alert: 97%
- Attentive: 97%
- Strong: 86%
- Calm: 83%
- Vulnerable: 76%
- Excited: 72%
- Inspired: 65%
- Proud: 61%
- Determined: 59%

Percentage
Travel experiences

Travel affect (Walking)

- Active: 100%
- Attentive: 93%
- Alert: 83%
- Strong: 81%
- Calm: 77%
- Inspired: 67%
- Excited: 54%
- Proud: 54%
- Determined: 40%
- Bold: 31%

Percentage
Travel experiences

Travel well-being (Automobile)

- Independence: 53%
- Control: 52%
- Freedom: 51%
- Comfort: 49%
- A routine: 48%
- Privacy: 47%
- A buffer: 42%
- Safety: 34%
- Mental health: 22%
- Variety: 14%
Travel experiences

Travel well-being (Transit)

- A routine: 64%
- A buffer: 56%
- Environmentalism: 49%
- Safety: 31%
- Comfort: 31%
- Independence: 31%
- Mental health: 26%
- Freedom: 24%
- Stress relief: 24%
- Physical health: 22%

Background – Positive Utility of Travel – Study – Results – Implications
Travel experiences

Travel well-being (Bicycling)

- Physical health: 98%
- Mental health: 90%
- A buffer: 87%
- Environmentalism: 84%
- Freedom: 81%
- Stress relief: 76%
- Independence: 74%
- A routine: 67%
- Control: 62%
- Self-identity: 57%

Percentage
Travel experiences

Travel well-being (Walking)

- Physical health: 97%
- Stress relief: 79%
- Mental health: 79%
- A buffer: 76%
- Freedom: 69%
- Environmentalism: 69%
- Variety: 62%
- A routine: 62%
- Control: 59%
- Independence: 59%

Background – Positive Utility of Travel – Study – Results – Implications
Findings *

• Positive utility of travel...
  ★ – Exists and can be measured!
  ★ – Strongest for walking & bicycling, because:
    • Valuing exercise, physical and mental health
  ★ – Moderate for public transit, because:
    • Ability to relax and/or multitask
  ★ – Weakest for automobile, because:
    • Few activities; some negative affect (congestion?)

* Preliminary findings. Additional analyses use multivariate models to statistically control for other explanatory factors.
Implications

Autonomous vehicles (self-driving cars)

Background – Positive Utility of Travel – Study – Results – Implications
Value of travel time savings → Cost-benefit analysis

Mode Choice

Activity

Experience

Improving quality of service
Questions?

Patrick A. Singleton  patrick.singleton@pdx.edu