Behavioral Economics as a Framework to Compliment Existing Transportation Choice Research Strategies and Policy Solutions

Steven R. Hursh, Ph.D.
President and Adjunct Professor
Institutes for Behavior Resources, Inc.

Mike Magoon, Ph.D.
Research Scientist
Security, Energy, and Environment

NORC at the UNIVERSITY of CHICAGO
So why did we change our title?

• Though we are not new to behavior change research and technology, we are new to Transportation Choice

• Going in to this we did not fully know the “known knowns” or the “known unknowns” of the Transportation Choice literature

• As we got further into the literature, we started to see that there is a lot of good work already being done on:
  - **Travel Time and Mode Choice:** Homan (2010); Tanaka (2010); Pita & Anton (2001)
  - **Ridership Forecasting:** Oster, et al. (2011); Cambridge Systematics (2005)
  - **Carbon Impact:** Kosinski, Schipper, & Deakin (2010); CCAP & CNT (2006)
  - **All Three!:** California HSR Authority (2005); Regina Clewlow—this session!

• We know *we have an extremely robust framework based on decades of behavioral research* that we believe can add value to the conversation

• **Our challenge:** *Bring the literatures together in a way that provides objective data—based on well-established behavioral principles—that can lead to effective solutions*
You’ve probably heard of Behavioral Economics, but did you know there are two different perspectives?

<table>
<thead>
<tr>
<th>“Cognitive” Behavioral Economics</th>
<th>“Behavioral” Behavioral Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Focus in on taking advantage of <strong>cognitive biases</strong> that most people learn over the lifetime</td>
<td>• Focuses on demonstrating <strong>direct influences of the environment</strong> on observable behavior</td>
</tr>
<tr>
<td>• Primarily <strong>deductive</strong> in approach</td>
<td>• Primarily <strong>inductive</strong> in approach</td>
</tr>
<tr>
<td>• Predicts behavior with <strong>point estimates</strong></td>
<td>• Predicts behavior with <strong>functional relationships</strong></td>
</tr>
</tbody>
</table>

Focuses on:

- **Environment**
- **C**
- **S**
- **A**

This approach hasn’t had the same public relations success...

...mostly because no one has really tried yet (everyone’s busy collecting data!)
The behavioral approach is being successfully applied to a variety of socially-important behaviors.

**Basic Principles**

**Behavioral Economic Analysis of...**

![Graphs showing Exponential Demand, Total Output of Responses, Log Consumption vs Log Unit Price, Log Price, and Log Unit Price for different scenarios.](image)
There’s no reason to think that transportation mode choice is substantially different from other choices.
We believe data generated with this model can integrate with the existing transportation literature and data.

**European HSR Rail “Consumption”**

- For a constant trip length (within certain parameters), as rail trip duration decreases, market share will increase
  - Peterman, Frittelli, & Mallett (2009)
  - Pita & Anton (2001)
  - California High Speed Rail Authority (2005)

**Carbon Emissions by Trip Duration**

- For the same trip, as trip duration decreases and thus rail market share increases, overall emissions will decrease
  - Kosinski, Schipper, & Deakin (2010)
  - Estimates between 2 and 10 MT CO2 per year
  - Represents between .5% and 2% of yearly US CO2 emissions

*But you already know this, so what’s new?*
Behavioral economics provides a framework for studying the impact of environment/behavior-based interventions on choice.

<table>
<thead>
<tr>
<th>Behavioral Principle</th>
<th>Implications for Research and Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Measurement</td>
<td>Our field has been measuring observable behavior across species and settings for decades</td>
</tr>
<tr>
<td>Consequences/Reinforcement</td>
<td><em>Not all consequences are equal!</em> Decades of behavioral research have taught us how to maximize the strength of reinforcement for more effective public policy solutions</td>
</tr>
<tr>
<td>• Type (e.g., feedback vs. tangibles)</td>
<td></td>
</tr>
<tr>
<td>• Frequency</td>
<td></td>
</tr>
<tr>
<td>• Immediacy/Delay</td>
<td></td>
</tr>
<tr>
<td>Stimulus Control</td>
<td>Behavior is controlled by &quot;signals&quot;, but effective signals are more than information; they build on sound principles of stimulus control</td>
</tr>
<tr>
<td>There’s a lot more…</td>
<td>Let’s talk!</td>
</tr>
</tbody>
</table>

We are looking for collaborators to work with us on some of the “known unknowns” and the “unknown unknowns” (and maybe even looking again at some of the “known knowns!”)
Thank You!

For more information, please contact:

Mike Magoon
magoon-mike@norc.org
301.634.9569

Steve Hursh
srhurst@ibrinc.org
410.752.6080, ext 150