

Agenda Title:

**The Behavioral Economics of Transportation
Travel Time, Mode Choice, and Carbon Impact**

Revised Title:

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

Steven R. Hursh, Ph.D.
President and Adjunct Professor



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

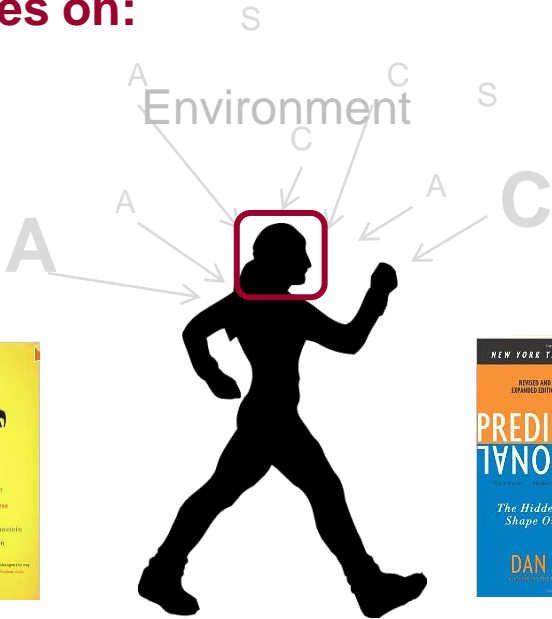
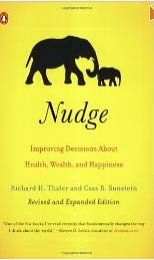
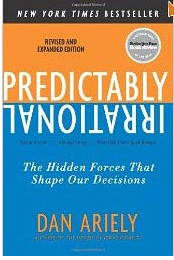
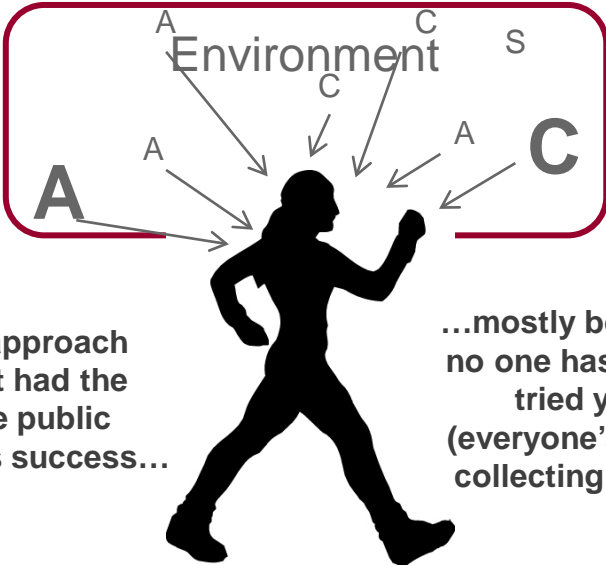


So why did we change our title?

- 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***



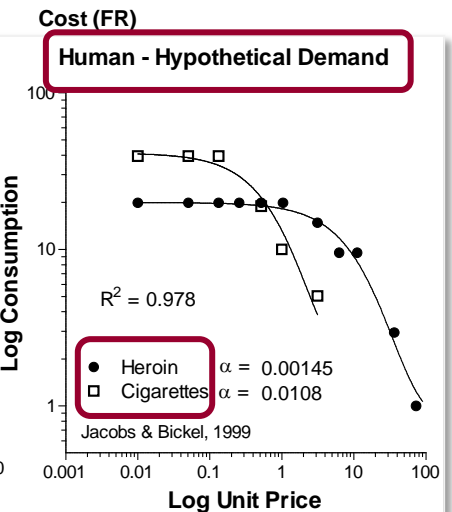
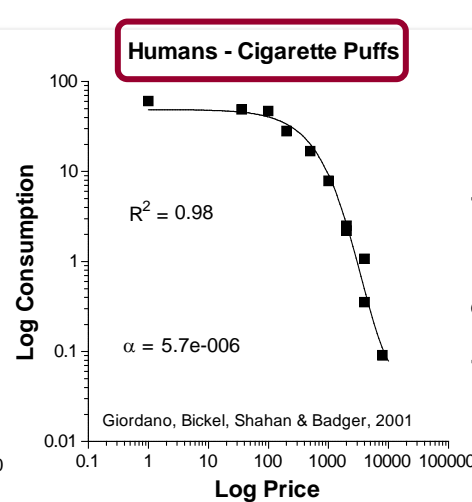
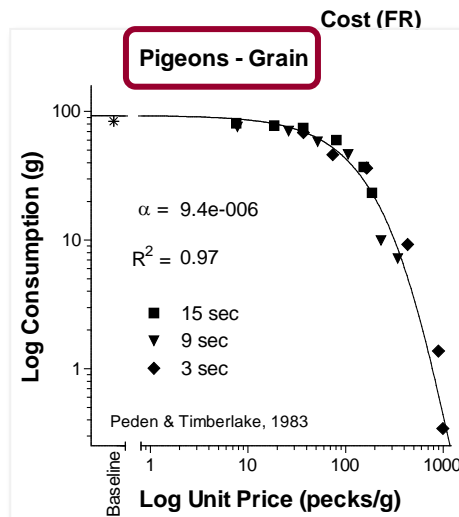
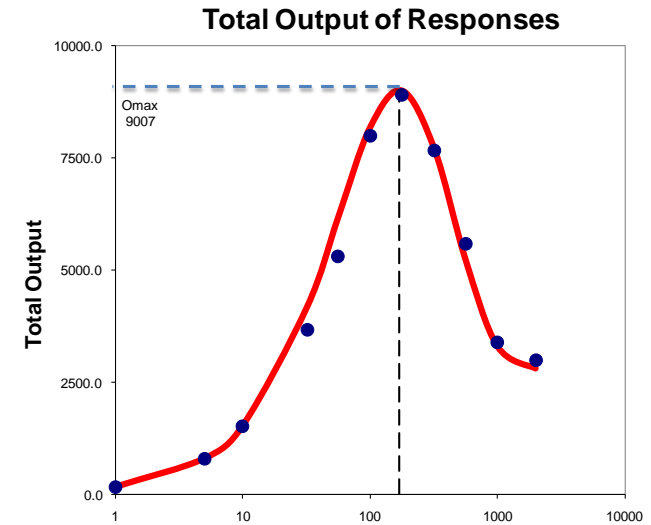
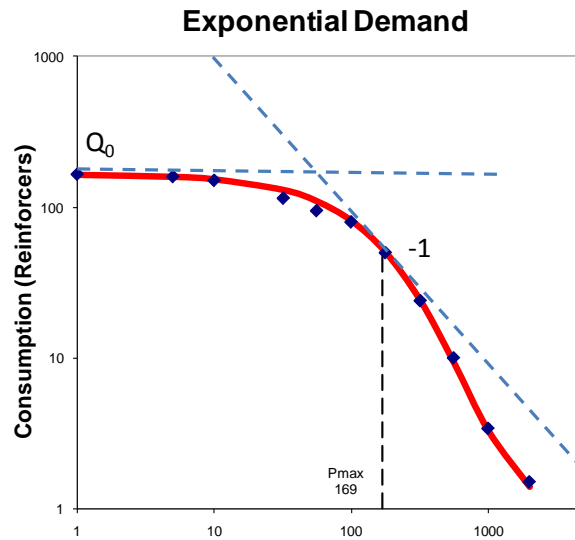
You've probably heard of Behavioral Economics, but did you know there are two different perspectives?

"Cognitive" Behavioral Economics	"Behavioral" Behavioral Economics
<ul style="list-style-type: none"> • Focus in on taking advantage of cognitive biases that most people learn over the lifetime • Primarily deductive in approach • Predicts behavior with point estimates • Seminal writings: Kahneman & Tversky, (1979); Thaler & Sunstein (2008) 	<ul style="list-style-type: none"> • Focuses on demonstrating direct influences of the environment on observable behavior • Primarily inductive in approach • Predicts behavior with functional relationships • Seminal writings: Rachlin, Green, Kagel, & Battalio (1976); Hursh (1978, 1980, 1984)
<p>Focuses on:</p>   	<p>Focuses on:</p>  <p>This approach hasn't had the same public relations success...</p> <p>...mostly because no one has really tried yet (everyone's busy collecting data!)</p>

The behavioral approach is being successfully applied to a variety of socially-important behaviors

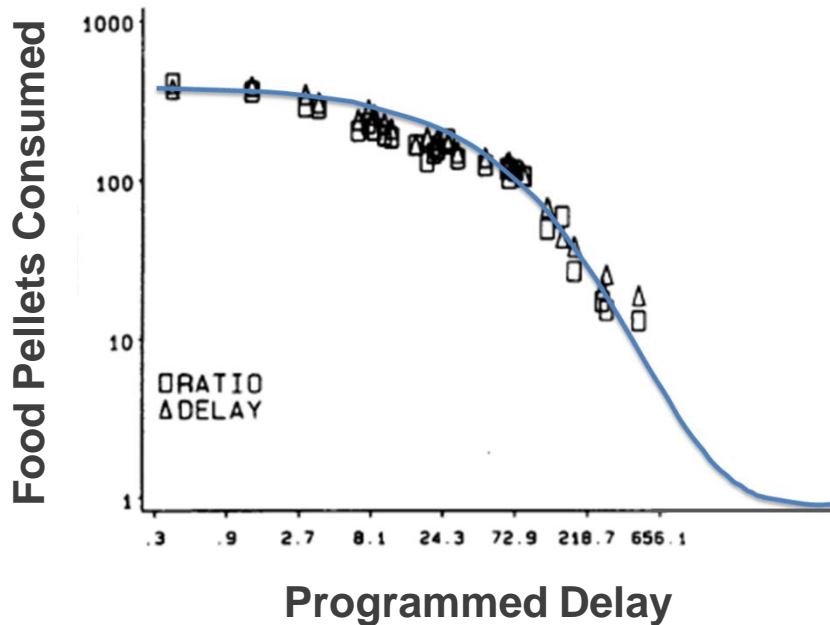
Basic Principles

Behavioral Economic Analysis of...

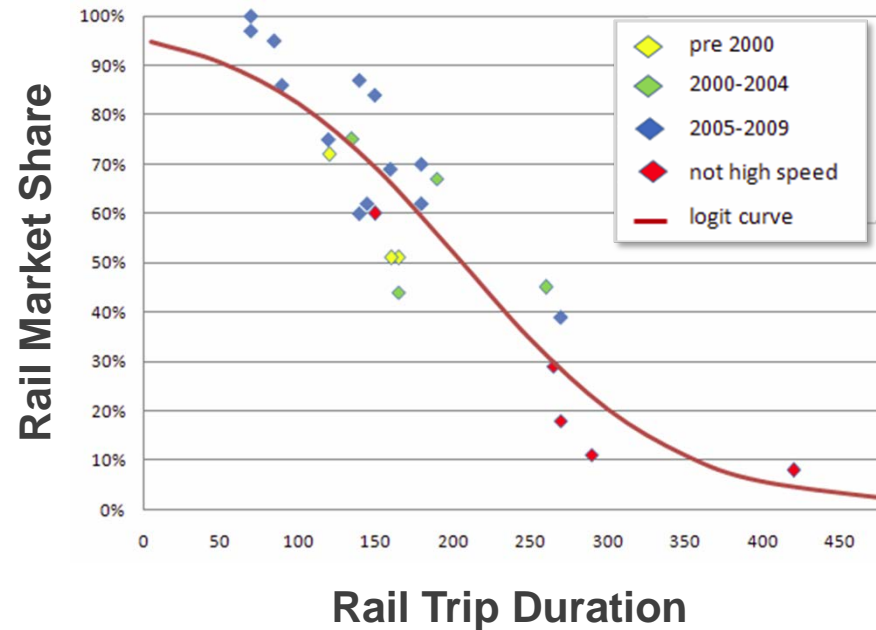


There's no reason to think that transportation mode choice is substantially different from other choices

A Single Rat Working for Food

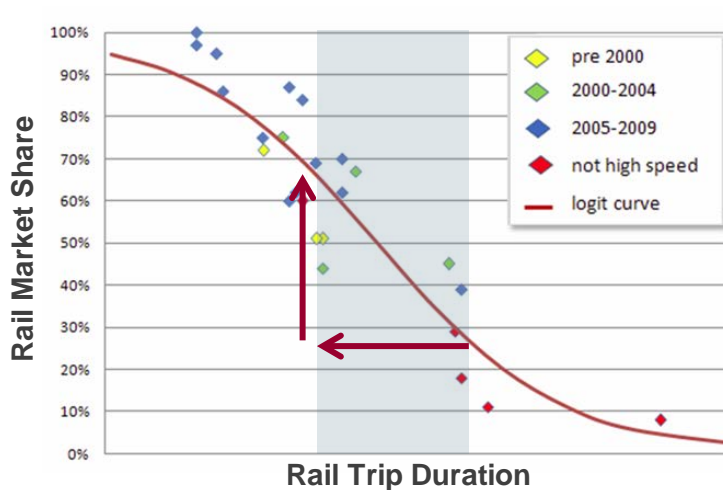


European HSR Rail "Consumption"

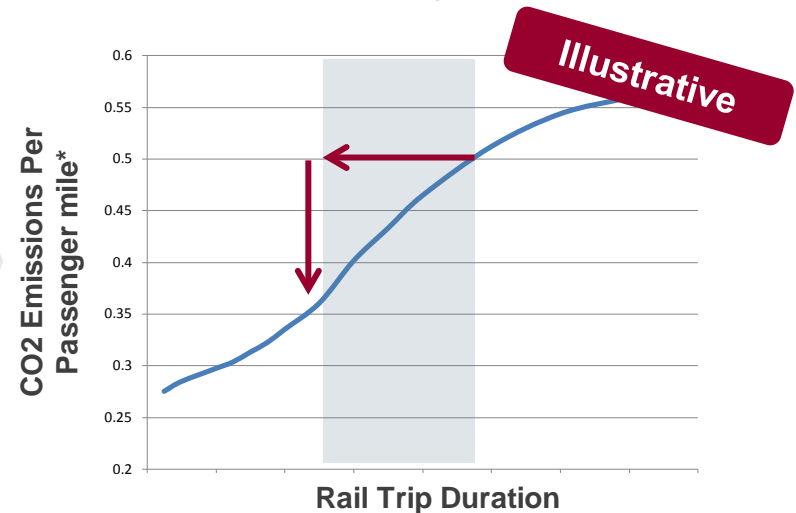


We believe data generated with this model can integrate with the existing transportation literature and data

European HSR Rail “Consumption”



Carbon Emissions by Trip Duration



- 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)

- 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

Illustrative

Behavioral Principle	Implications for Research and Policy
Behavioral Measurement	Our field has been measuring observable behavior across species and settings for decades
Consequences/Reinforcement <ul style="list-style-type: none"> Type (e.g., feedback vs. tangibles) Frequency Immediacy/Delay 	<i>Not all consequences are equal!</i> Decades of behavioral research have taught us how to maximize the strength of reinforcement for more effective public policy solutions
Stimulus Control	Behavior is controlled by "signals", but effective signals are more than information; they build on sound principles of stimulus control
There's a lot more...	Let's talk!

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
srhursh@ibrinc.org
410.752.6080, ext 150