

Florida Statewide Model Mode Choice

presented by
Thomas Rossi, Cambridge Systematics, Inc.

July 30, 2019



Objectives



- Add mode choice modeling capacity to Florida statewide model
 - Long distance travel – Separate auto travel from travel by non-auto modes (air, rail)
 - Not super critical for existing conditions
 - But allows examination of possible scenarios with improvements for non-auto modes
 - Short distance travel – Separate auto travel from travel by non-auto driver modes (local transit, non-motorized)
 - Need to account for higher non-auto driver modes in more urban areas
 - Enhanced modeling of managed lanes/toll roads

Long Distance Mode Choice



- Insufficient data to estimate model for Florida (NHTS had very small samples of non-auto trips)
- Decision: Transfer model from another state
- Criteria (in descending importance):
 - Practical approach consistent with statewide model
 - Similar modes to those in Florida
 - As similar to Florida as possible (recognizing that Florida is unique)
 - Cube application
- **Decision: Transfer/adapt Virginia model**

Short Distance Mode Choice



- Motivations
 - Abstraction methodology used to compute local transit skims
 - Explicit coding of local transit not necessary
 - Appropriate for a statewide model
- Data
 - GTFS
 - 2009 NHTS
 - NTD

Short Distance Mode Choice



- Data Inputs
 - **Transfer areas:** the areas within which a person can travel
 - **Service areas:** the areas within which transit service is provided
 - **Level of Service:** a single number representing the quantity of local bus service
 - **Fare:** a composite value, indicating the typical fare paid by a customer

Short Distance Mode Choice



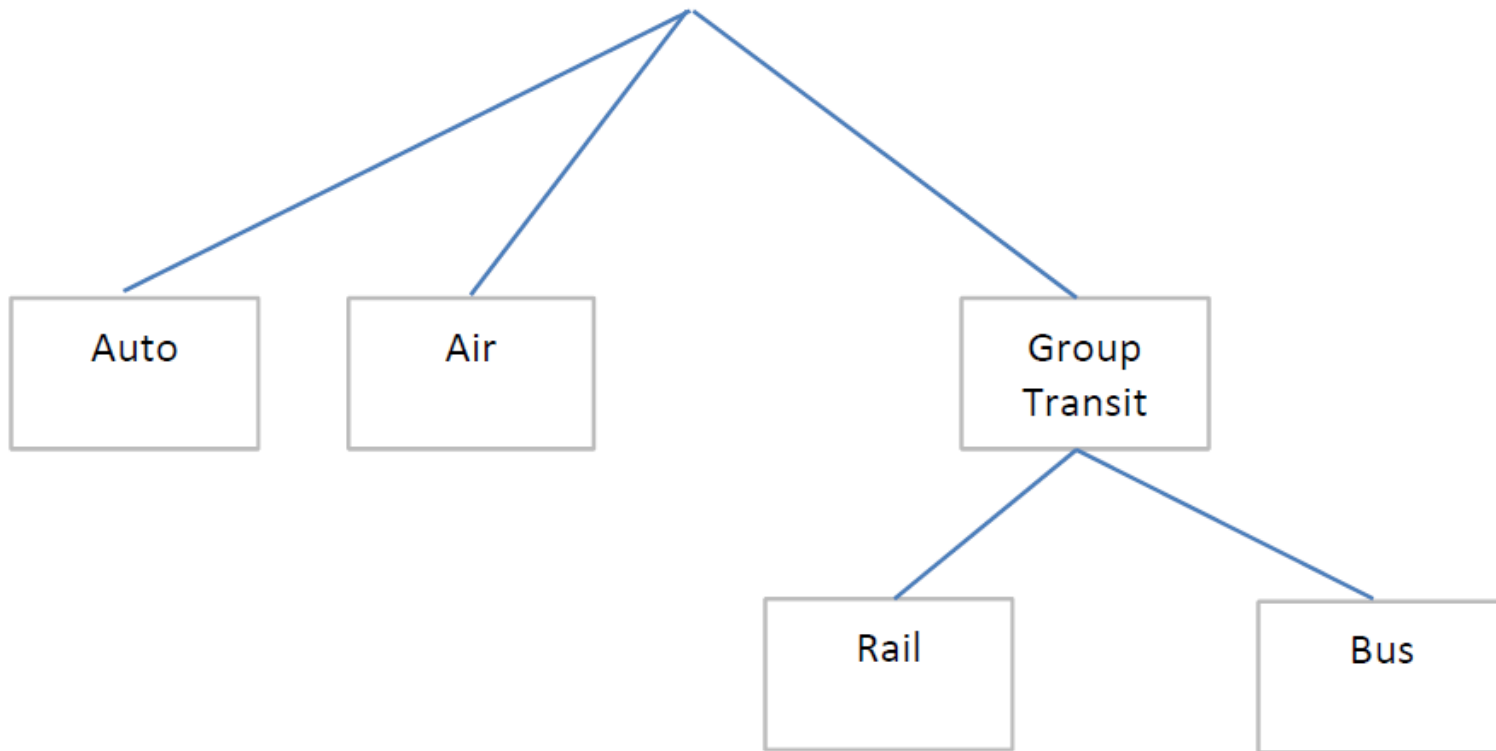
- IVT or OVT = $\text{fn}(\text{LU}, \text{TR})$
 - IVT/OVT: In-/Out-of-vehicle times
 - LU: Land use variables
 - TR: Transportation (highway) variables
 - Depends on catchment area
 - Geographical accessibility to transit

Short Distance Mode Choice



- Multinomial logit models
- Models by statewide model trip purpose
- Alternatives – Auto, transit, and non-motorized
- Variables – IVTT, OVTT, cost, distance, transit times
- NHTS 2009 add-on sample used in estimation
- The computed short distance auto share is used in subsequent model steps

Virginia Statewide Mode Choice Model



Virginia Model Adaptation



- Virginia model has separate LD trip purposes
 - Florida model has one LD purpose
 - Used “other” purpose for Florida model
 - Parameters close to averages for the Virginia purposes
- Added AV mode for potential future analyses
- Developed simple Amtrak rail network
 - Route between Jacksonville and Miami with intermediate stops
- Adapted Virginia model Cube application code

There Are Always Complications...



- Bus runs were difficult to enter as model inputs
 - Irregular headways
 - Overlapping routes
 - Skipped stops on many runs
- Intercity bus ridership is low
- **Decided to drop the bus mode**

Air Mode Coding



- Developed simple network for intra-Florida trips
- Airports included:
 - Miami, Fort Lauderdale, Key West, Daytona Beach, Orlando, Jacksonville, Tampa, Pensacola, Tallahassee
- Airlines serving intra-Florida trips:
 - American, JetBlue, Southwest, Silver Airways, Spirit



Comparison to Observed Base Year

Air:

- Observed – 3800
- Modeled – 4200

Rail:

- Observed – 600
- Modeled – 600

Enhanced Priced Roadway Modeling



- Segment auto trip tables by value of time
- VOT related to income

Group	Lower Bound	Share	Mean VOT	Inc1	Inc2	Inc3	Inc4	Inc5
VOT1	\$0.00	20.4%	\$1.72	44.1%	26.0%	17.0%	11.4%	1.8%
VOT2	\$2.50	58.2%	\$5.74	52.2%	64.3%	66.8%	65.6%	42.7%
VOT3	\$11.00	21.5%	\$21.01	3.6%	9.8%	16.2%	23.0%	55.4%



This slide is a test

If I don't have a slide that says "Questions?"
does that mean no one can ask any?

Finding out, starting now...