L35-B
Local Methods for Modeling, Economic Evaluation, Justification, and Use of the Value of Travel Time Reliability in Transportation Decision Making

Research Goals
- Select and defend a value or range of values for travel time reliability for the Maryland State Highway network.
- Use the VTTR in the Maryland SHA project development process to prioritize operational and capital improvements and determine if (and how) the ranking of projects changes due to the addition of VTTR.
- Report for the benefit of others the step-by-step process used to develop, justify, apply, and assess the use of VTTR in the Maryland SHA project evaluation and decision process.

Overview of Existing Processes

Step 1: Diagnosis

Step 2: Analysis
- Many Project DM Processes Involved
- Travel Time Reliability Becoming Increasingly Popular
- TTR Used in One Current Project Prioritization Process

Methodology to Select VTTR
- Survey Based Methods
- Literature Review
- Real Options (PSRC, L11, L17)

Data Driven Approach

Step 3: Selection

Overview of L11
- Criticisms
  - Analogy: Premium set for an insurance policy on guaranteed speed levels.
  - Speed is not directly related to travel cost, therefore speed cannot be discounted! Speed is not normally distributed.
  - Solution: Closed form Black-Scholes

Deviation from ETA
- Cost = max(VOT * (Travel Time - ETA), 0)
- Any other function can be adopted!
  - Socio-economic attributes
  - Trip purpose
  - Time of day

Case Studies
- US-295/95/MD-295
  - Direction
    - Northbound
    - Southbound
  - Peak Period
  - AM
  - PM

The ratio of the Value of Reliability (VOR) to the Value of Travel (VOT) time, known as the Reliability Ratio (RR) ranges from 0.3 to 0.8 for distances of about 2.5 to 25 miles for the PM Peak period – pretty consistent with literature values of about 0.3 to 1.5.