

Florida's Travel Time Reliability Perspective

Research Contacts

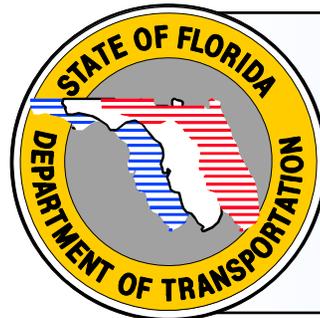
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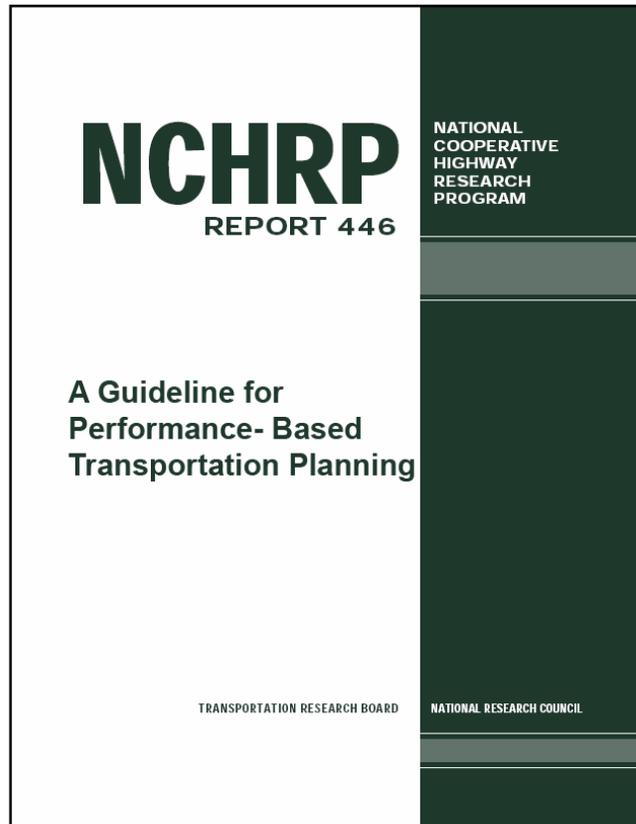
Reliability

- Is this important?

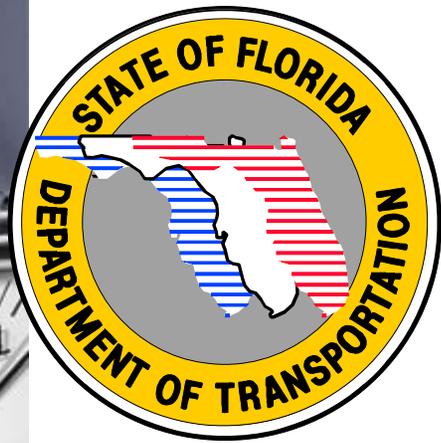


Recommendations

Performance-Based Transportation Planning



- Comprehensive mission statement
- General goals and objectives
- More specific performance objectives
 - Objective
 - Quantifiable
 - Measurable
- Identification of performance measures to assess each program activity
 - Outputs
 - Service levels
 - Outcomes



FDOT's Mission Statement

The Department will provide a safe, interconnected statewide transportation system for Florida's citizens and visitors that **ensures the mobility of people and goods**, while **enhancing economic prosperity** and sustaining the quality of our environment.

SIS Florida's Strategic Intermodal System



Dimensions of Mobility

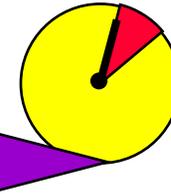


To adequately address mobility, all four dimensions should be emphasized and multiple performance measures used.

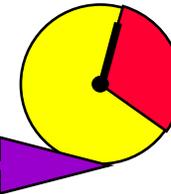
Recommended Quality Performance Measures (FDOT Multimodal Task Team)



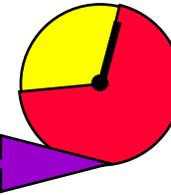
Travel time



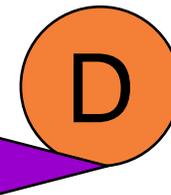
Delay



Reliability



Level of service A-F concept



FDOT/UF Reliability Research

Problem statement

How to measure, quantify, and predict reliability has proved to be elusive.

Objective

Develop new or enhanced models for determining and predicting travel time reliability for travelers and freight.

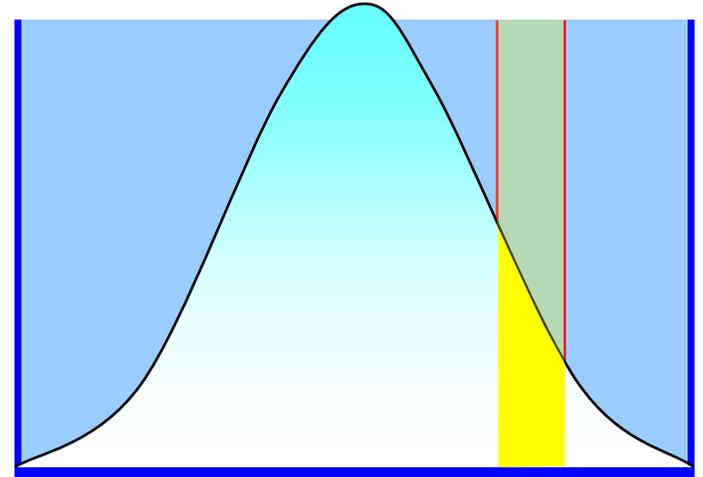
Contract begins – 3/05	Initial freeway model developed – 6/06	Initial arterial model developed; freeway model refined – 6/07	Initial aviation, rail, transit, water models developed; arterial model refined – 6/08	Reporting, network analyses
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UF's Interim Report (1/06)

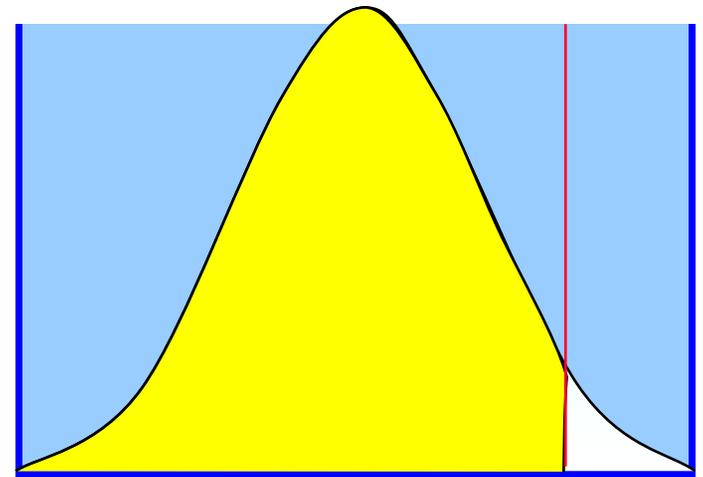
- Overview of definitions and approaches
- Overview of previously developed travel time estimation and prediction models
- Recommendations for travel time estimation framework based on field data

Reliability Approaches

VARIABILITY



ON-TIME ARRIVAL





ON-TIME

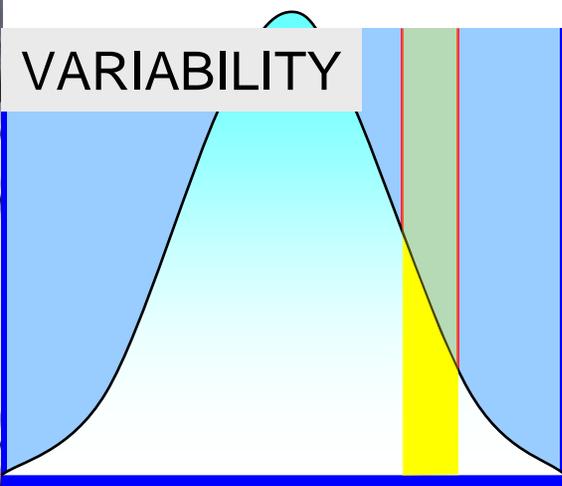
10 MILES
@ 20 MPH
= 30 MINUTES

Advantages

- **More appropriate for tracking performance of a facility over time**
- More easily understood by the public
- Correlates well with congestion occurrence
- Consistent with non-highway modes and other engineering disciplines
- Developing predictive models
 - Current conditions for entire networks
 - Future conditions
- **Project prioritization**
- **Can be directly tied into and calculated from FDOT's current data bases and delay calculations**

Disadvantages

- Not very relevant for travelers planning trips
- No "schedule" for travel time on highway facilities



Advantages

- Useful to travelers planning trips
- More consistent with definitions being developed by FHWA

Disadvantages

- Not as appropriate for use by an agency to monitor facility performance with respect to congestion
- Concepts not as easily understood

FDOT/UF Reliability Research Preliminary Recommendations

- Reliability is a desirable performance measure
- On-time arrival is the most appropriate reliability approach for FDOT to use
- Tie reliability analyses into current reporting system
- Preliminary model based on four components

FDOT's Preliminary Performance Measure for Reliability



- Reliability is percent trips that reach a destination over a designated facility within a given travel time.

Variations

- % Trips at a given speed or higher
- % of time in which trips arrive on time



FDOT/UF Reliability Research Preliminary Recommendations – Steps in Model Development

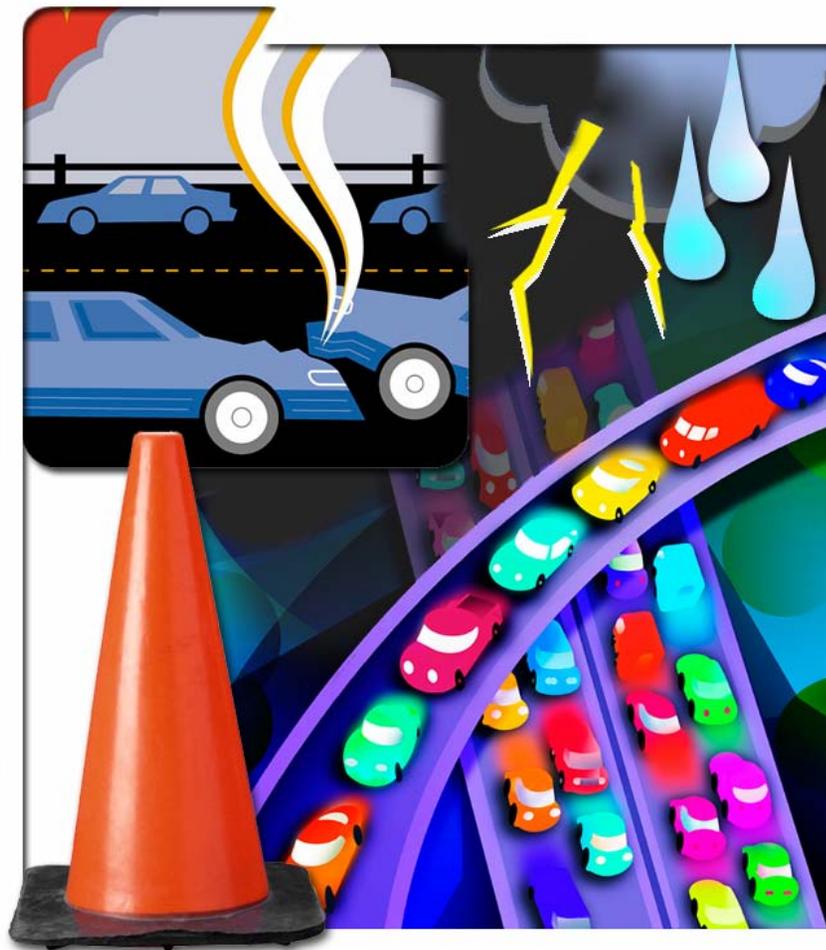
- Establish appropriate components affecting travel time reliability
- Develop a list of scenarios and estimate travel time for each from actual data
- Develop a travel time estimation model for each scenario
- Develop the expected travel time model
- Determine travel time reliability for the facility



FDOT/UF Reliability Research Preliminary Recommendations – Data for Model Development

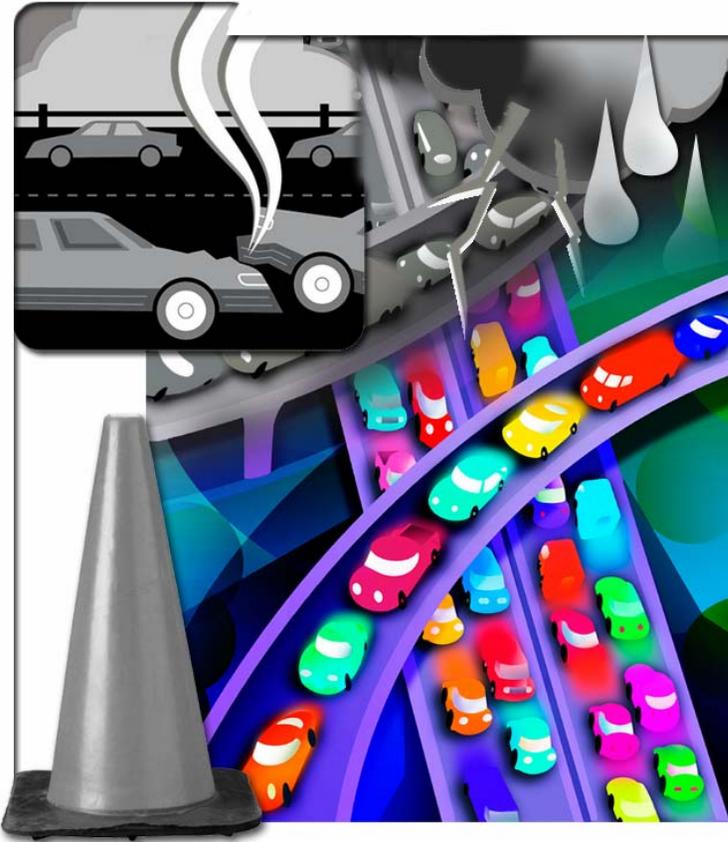
- Draft model - Philadelphia, PA (II-III/04, 8 detectors, only data source that has)
 - Actual travel speeds/times
 - Information on all
 - Congestion
 - Weather
 - Incidents
 - Work zones
- Refined model – Ft. Lauderdale, FL (data to be obtained and analyzed II/06)

FDOT/UF Reliability Research Preliminary Recommendations – Reliability Components



- Congestion (demand to capacity)
- Weather effects
- Incidents
- Work zones

Congestion (Basic Recurring)

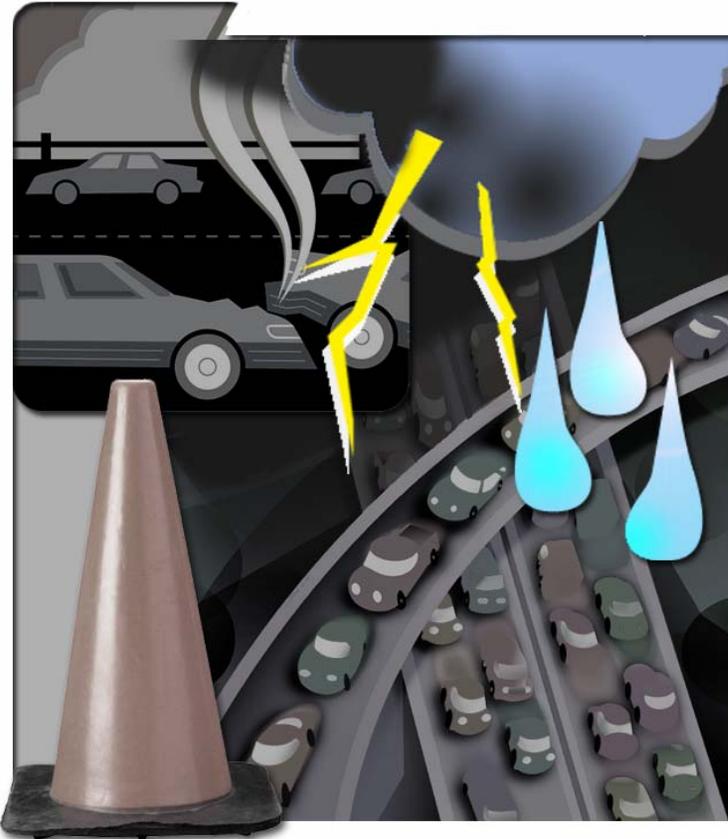


- Non-congested
(e.g., $v/c < 0.90$)
- Congested
(e.g., v/c near 1.00)
- Heavily congested
(e.g., $v/c > 1.20$)

Sources

- FDOT's central data base
- Time of day

Weather



- Good
- Light rain
- Heavy rain

- Sources
 - AccuWeather
- Break down
 - County
 - Time of day

Incidents



- Duration
- Incident capacity
- Number of lanes/shoulder involved

Sources – FDOT's crash rates broken down by

- Facility type
- Congestion level
- Weather

Work Zones



- Duration
- Work zone capacity
- Number of lanes/shoulder involved

FDOT/UF Reliability Research Preliminary Recommendations –

- Reliability becomes a function of the probability



- Degree of congestion
- Weather
- Incidents
- Work zones

- On-time arrival becomes % trips over a facility that travel a given speed or higher
 - Still under investigation
 - (e.g., ≥ 20 mph for urban freeways)