Modeling & Transportation Planning

- Traditional transportation planning approach to modeling
  - Measure & predict traffic volumes
  - Identify bottlenecks
  - Develop & test mitigation strategies

- Goal: Enhance ability of transportation system to support every day activities
  - Home-based work, Home-based shopping, etc
Emergency Management Considerations

- SAFETEA-LU: Transportation Security introduced as stand-alone planning factor
- Transportation in Incident Management:
  - Evacuation
  - Critical Facility Access (e.g. PODs)
  - Emergency Response
- Incidents related to or resulting from transportation
  - Freight & HazMat Transport
  - Transit Planning & Training
Modeling as Part of EM Toolkit

Emergency Management: Decision-making & Implementation

Transportation Modeling: MOEs & Scenario Testing

GIS Support
Example: Building an Evacuation Model

- Key Data Needs:
  - Population & demographic data
  - Road network data
  - Behavior survey (if available)
Example: Building an Evacuation Model

- Trip Generation
  - Only one purpose!
  - Break demand into segments by behavior
    - Behavioral Survey
    - Empirical Data
  - Distribute temporally
    - Type of event

- Trip Distribution
  - EM Plans
  - Empirical Data
Example: Building an Evacuation Model

- **Mode Choice (if applicable)**
  - EM Approach

- **Assignment**
  - Break into time intervals
  - Evacuation time is key result

- **Scenarios**
  - Variations in incident scenario
  - Variations in EM approach
  - Assumption sensitivity analysis
Output: Evacuation Times
Next Step: Evacuation as Protective Action

- Clearance times do not directly measure effectiveness of evacuation
- Need to compare against alternatives (e.g. shelter-in-place)
- Solution: Combine hazard model with traffic model
Questions/Discussion?

Justin Krometis
IEM
http://www.iem.com
3131 RDU Center, Suite 120
Morrisville, NC 27560
(919) 840-1191 (O)
(919) 840-1197 (F)
Justin.Krometis@iem.com