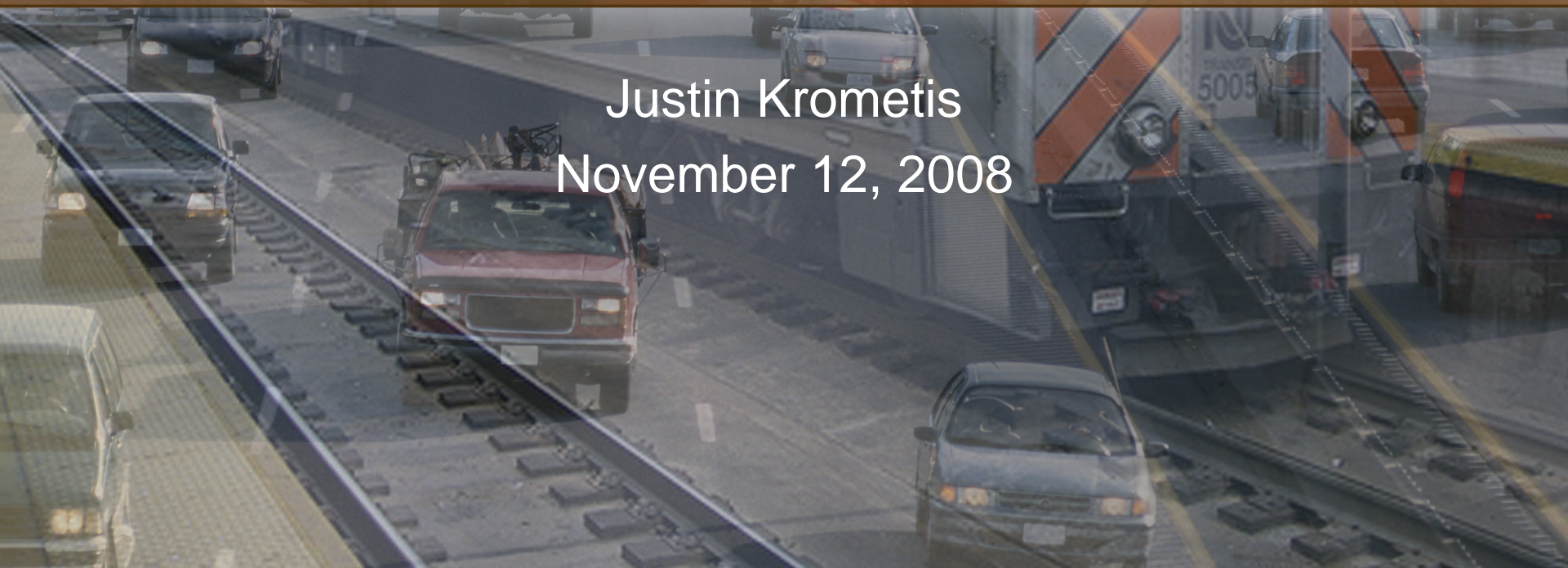




# Emergency Management Modeling: Transportation Security & Synergies with MPO Modeling



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November 12, 2008



# Modeling & Transportation Planning

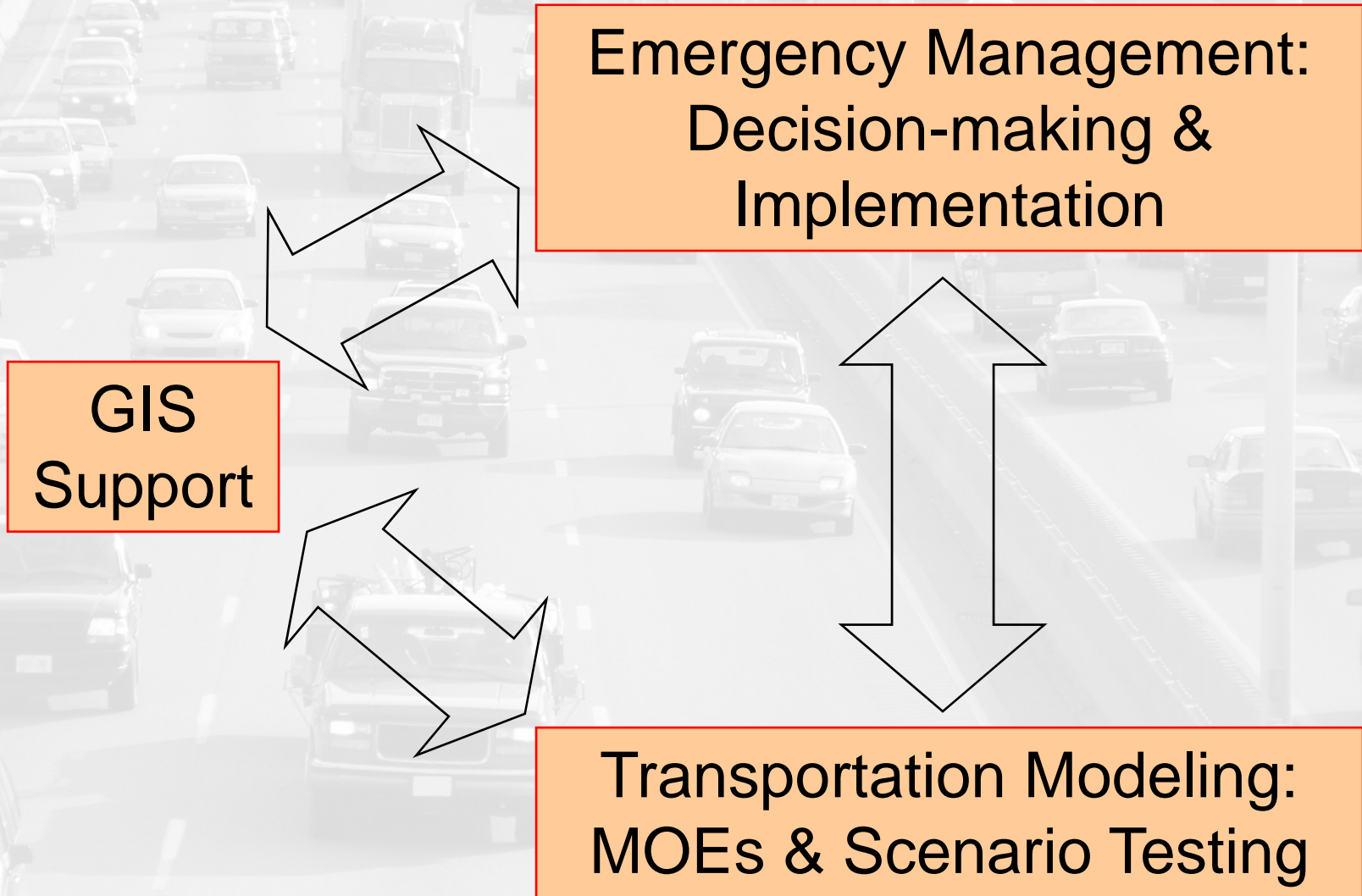
- Traditional transportation planning approach to modeling
  - Measure & predict traffic volumes
  - Identify bottlenecks
  - Develop & test mitigation strategies
- Goal: Enhance ability of transportation system to support every day activities
  - Home-based work, Home-based shopping, etc



# 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



# 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

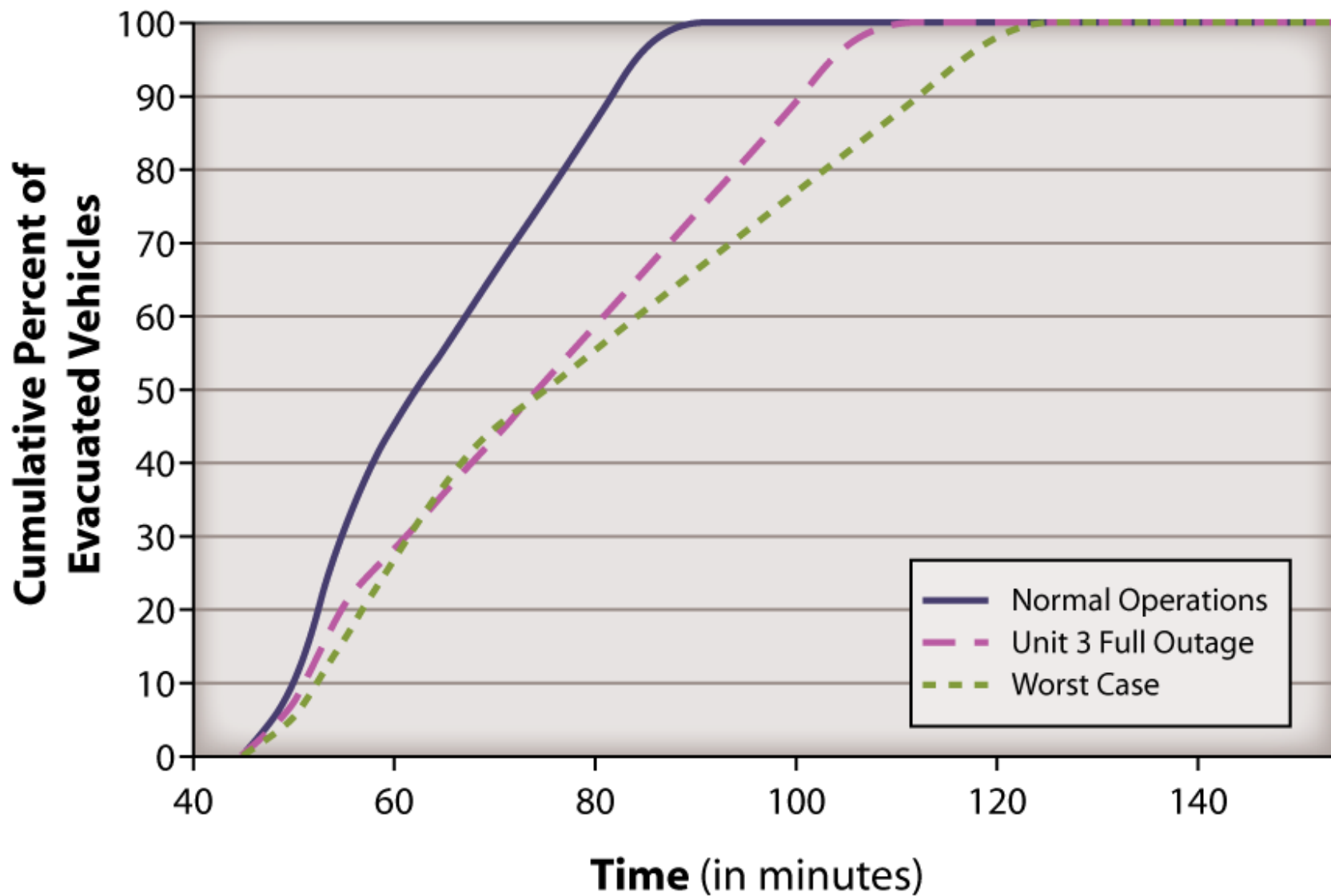


# Example: Building an Evacuation Model

- 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

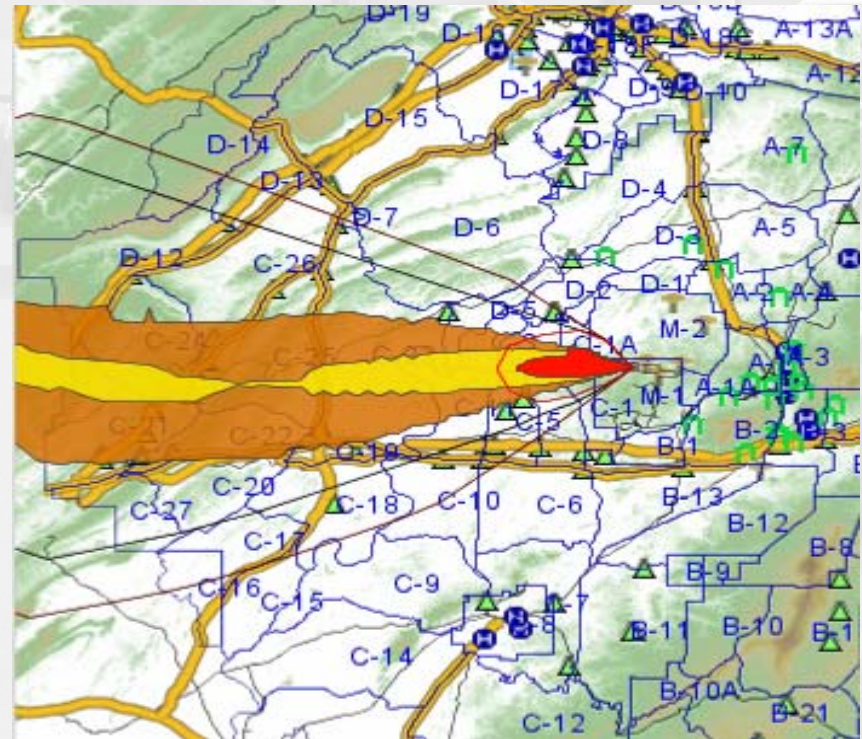


# Output: Evacuation Times



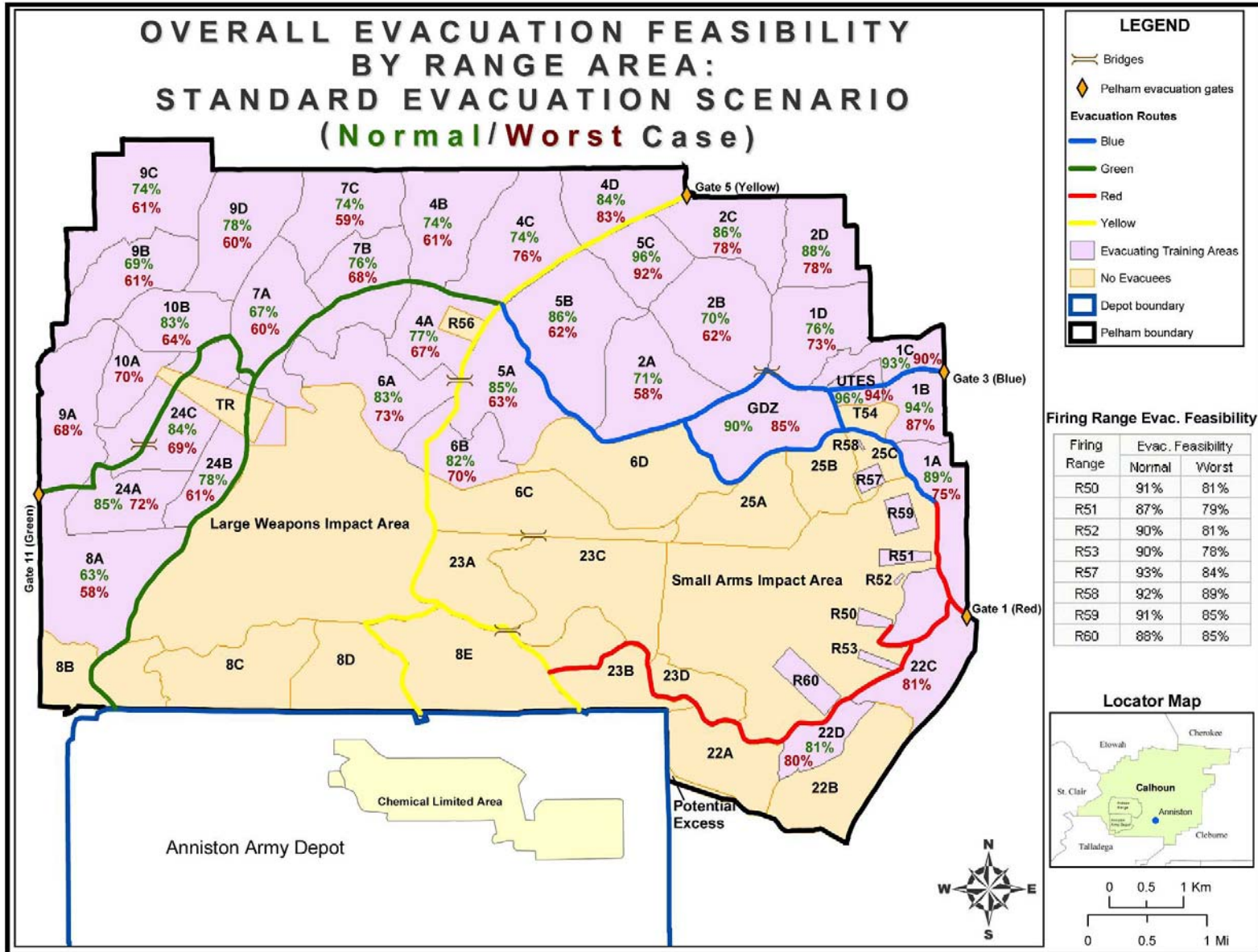
# Next Step: Evacuation as Protective Action

- 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





# Evacuation Feasibility





# Questions/Discussion?



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