National Academies of Sciences, Engineering, and Medicine
Transportation Research Board
Future Interstate Study

GDOT Interstate Risk Assessment

May 17, 2017

Georgia Department of Transportation

Other studies along with the Interstate Risk Assessment Study

- Study info can be found at:
- www.dot.ga.gov/BS/Studies
- 2003 - Interstate System Plan
- 2008 I-285 Strategic Implementation System Plan
- 2009 Radial Freeway System Plan
- 2010 Managed Lane System Plan
- 2014 Managed Lane Implementation Plan
- 2014 Metro Atlanta Operational Planning Study

Other studies along with the Interstate Risk Assessment Study

- Downtown Connector Study
  www.dot.ga.gov/BS/Studies/DowntownConnector

GDOT Interstate Risk Assessment

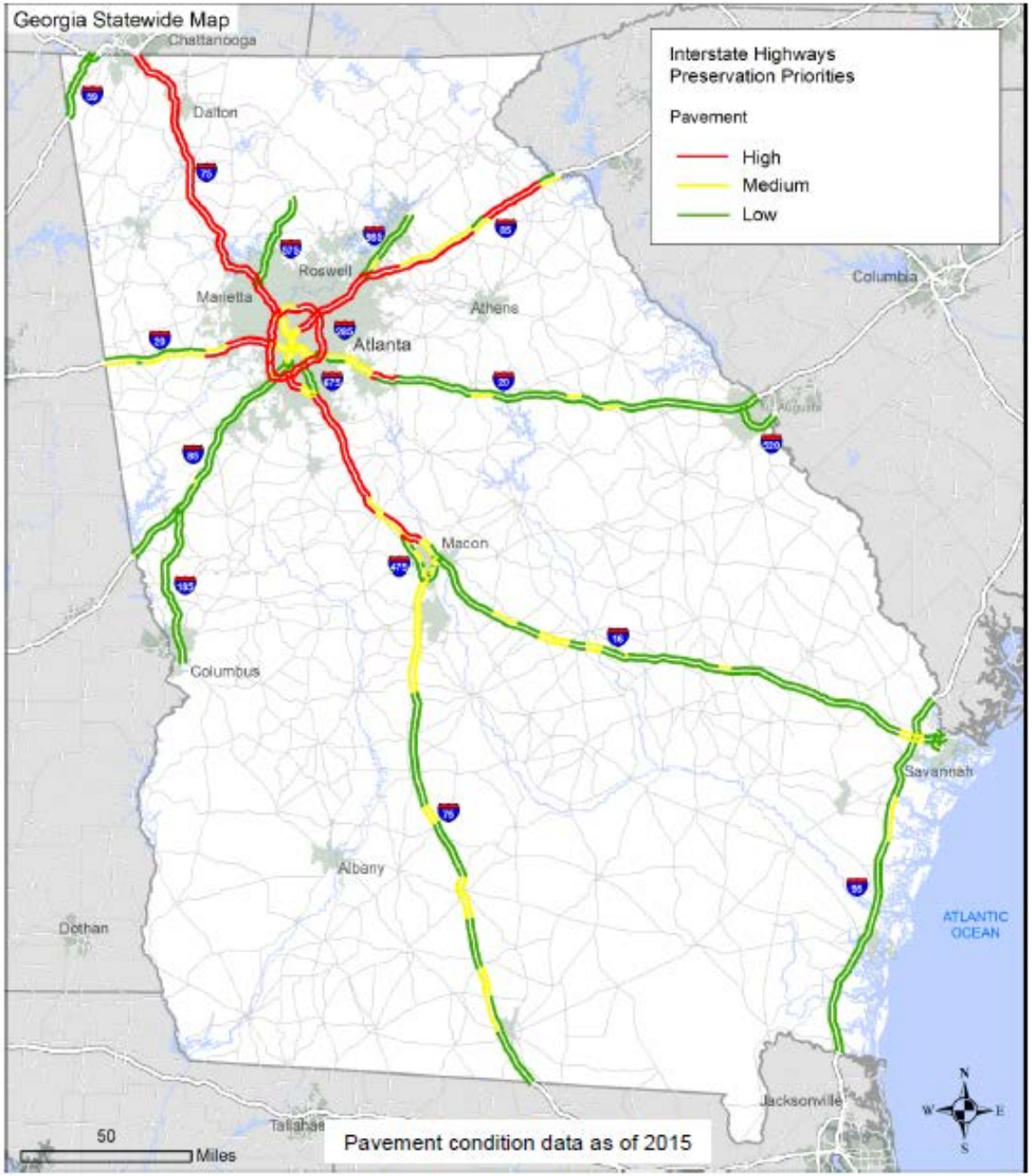
- Sometimes it's obvious where GDOT needs to focus resources

- Atlanta GA I-85 at Piedmont Rd area

Background

- Interstate Risk Assessment study objective
  - Define a quantitative and verifiable decision-making process for prioritizing **interstate maintenance** projects
- Key components
  - Develop a risk profile for the interstate system
  - Develop a plan for addressing highest risks
    - Identify mitigation strategies
    - Prioritize strategies

Figure ES.2 Interstate Pavement Preservation Priorities



Types of Risk to Consider

- Performance risks
  - Loss of service due to *pavement* deterioration
  - Loss of service due to *bridge* deterioration

These risks can be addressed proactively through maintenance activities

- External risks (potentially)
  - Hurricane
  - Flooding
  - Earthquake
  - Tornado
  - Man made events

These risks can not

Evaluating the Likelihood of Pavement Performance Risk

- COPACES rating
- Truck ADT

- Conduct analysis by lane based on truck distribution

One Way ADT	2 Lanes in One Direction		3+ Lanes in One Direction		
	Inner	Outer	Inner	Center	Outer
2,000	6	94	6	12	82
4,000	12	88	6	18	76
Etc.					

Evaluating the Likelihood of Bridge Performance Risk

- Condition ratings – super, sub, deck
- Inventory rating
- Inventory rating for HMOD truck
- Truck ADT
- Fracture critical designation

Evaluating the Likelihood of External Risks

Example – Flooding risk

Segment is in the floodplain and gets a flag for flooding risk

62F

Segment is not in the floodplain and does not get a flag

62

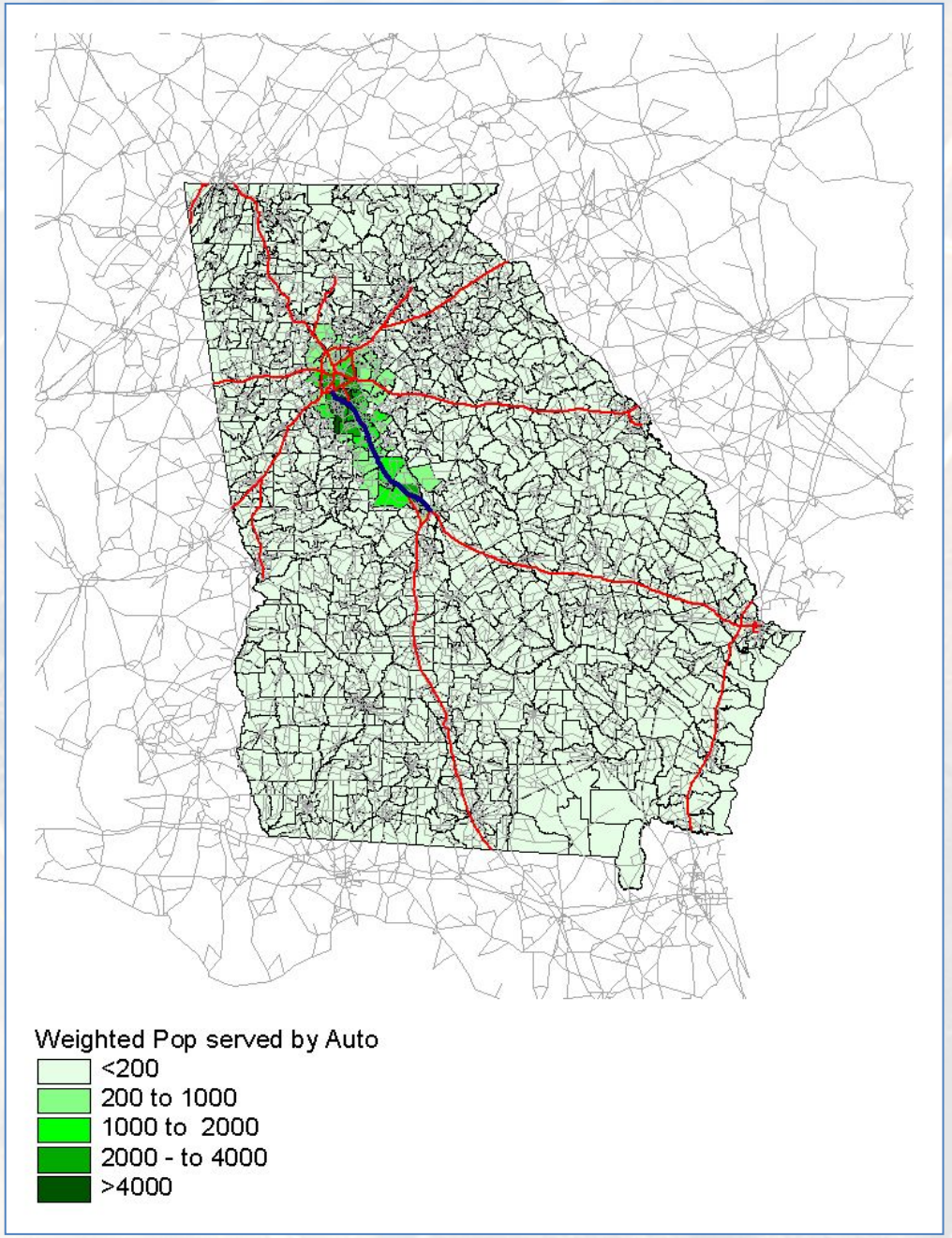
Evaluating Consequences

- Consumer Markets Served
- Industrial Markets Served
- Freight Served
- Capacity Constraint during Construction

Population Served

- Measure of importance of interstate segment to serve residential auto trips
- Approach
  - Identify all passenger vehicle trips that begin or end in each TAZ *and* use I-75 segment
  - Weight and sum population across TAZs
- Required data
  - Select passenger vehicle trip tables for each set of links (SWM)
  - Population in each zone (2006 pop/SWM)

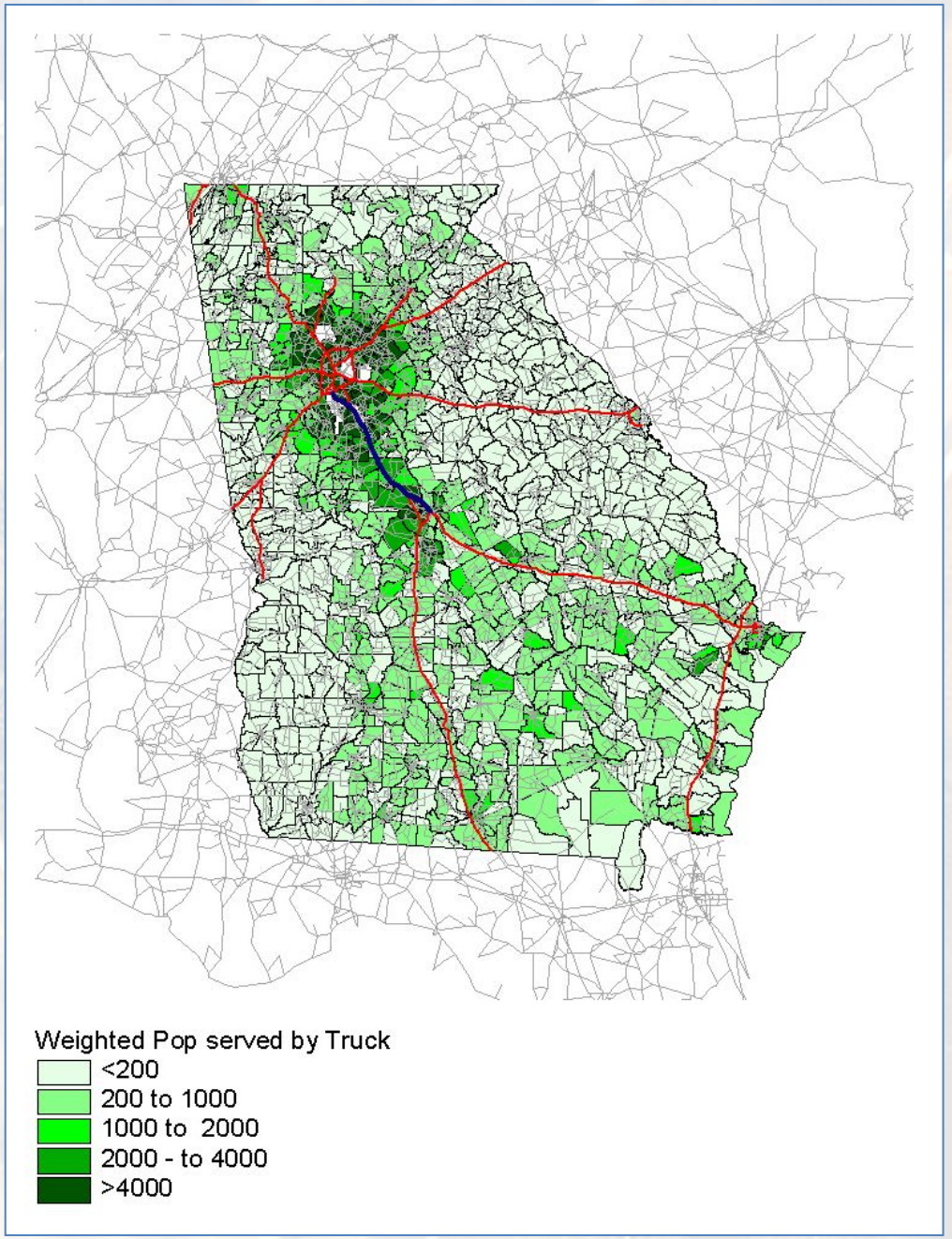
Population Served by I-75 Segment



Consumer Markets Served

- Measure of the importance of interstate segment to serve goods to/from commercial markets
- Approach
  - Identify all truck trips that begin or end in each TAZ *and* use I-75 segment
  - Weight and sum population across TAZs
- Required data
  - Select truck trip tables for each set of links (SWM)
  - Population in each zone (2006 pop/SWM)

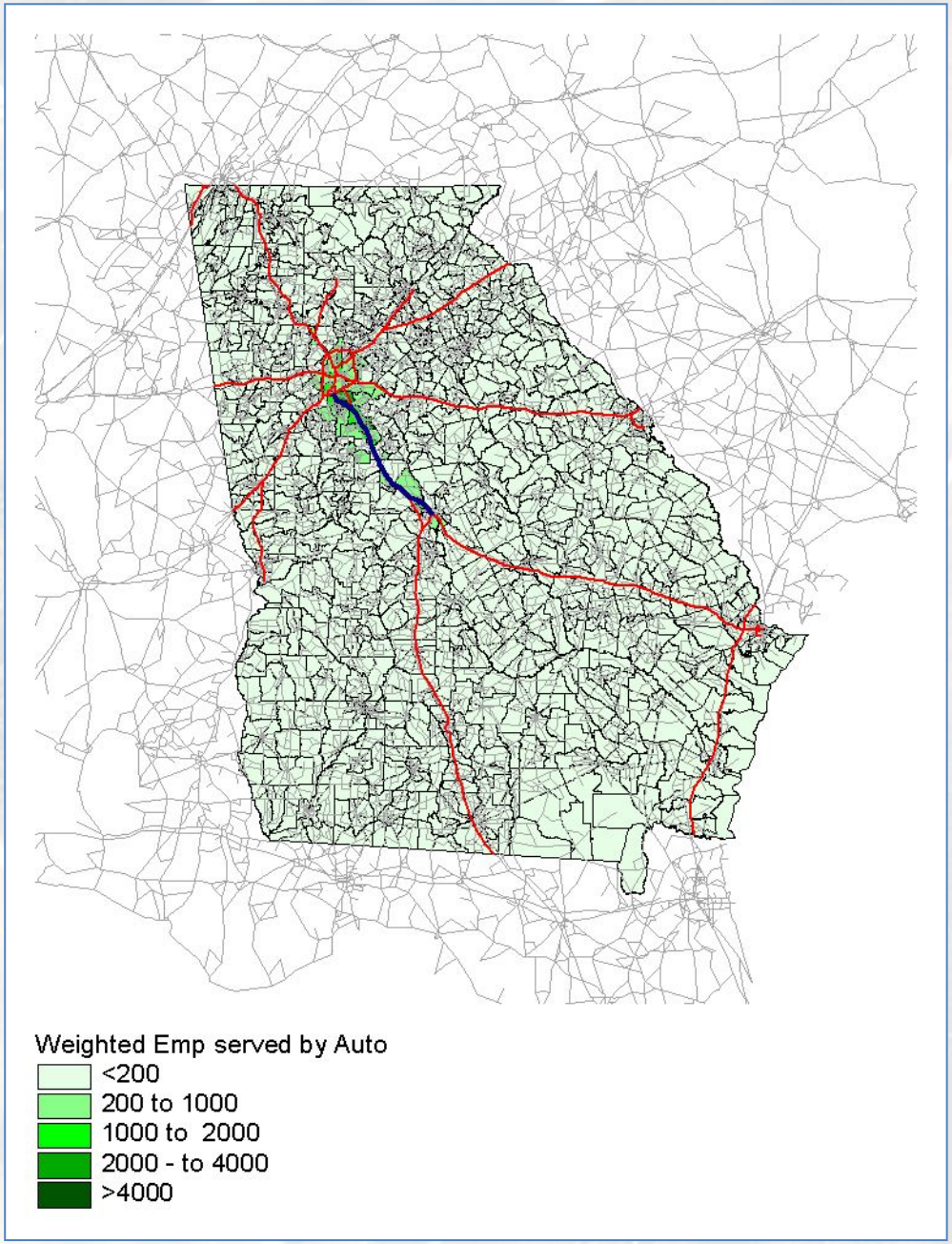
Consumer Markets Served by I-75 Segment



Jobs Served

- Measure of the importance of interstate segment to serve auto access to jobs
- Approach
  - Identify all passenger vehicle trips that begin or end in each TAZ *and* use I-75 segment
  - Weight and sum employment across TAZs
- Required data
  - Select passenger vehicle trip tables for each set of links (SWM)
  - Employment in each zone (2006 pop/SWM)

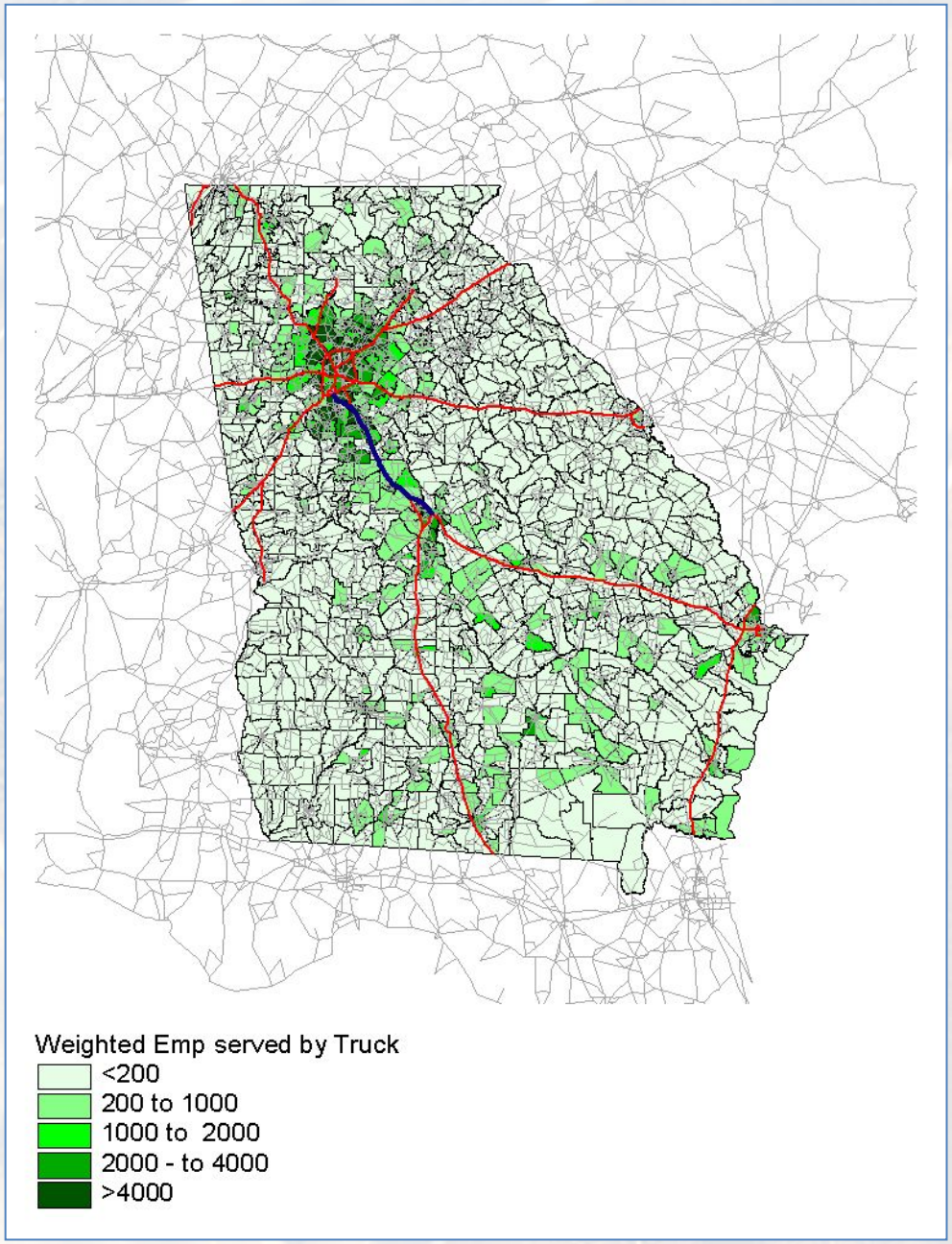
Jobs Served by I-75 Segment



Industrial Markets Served

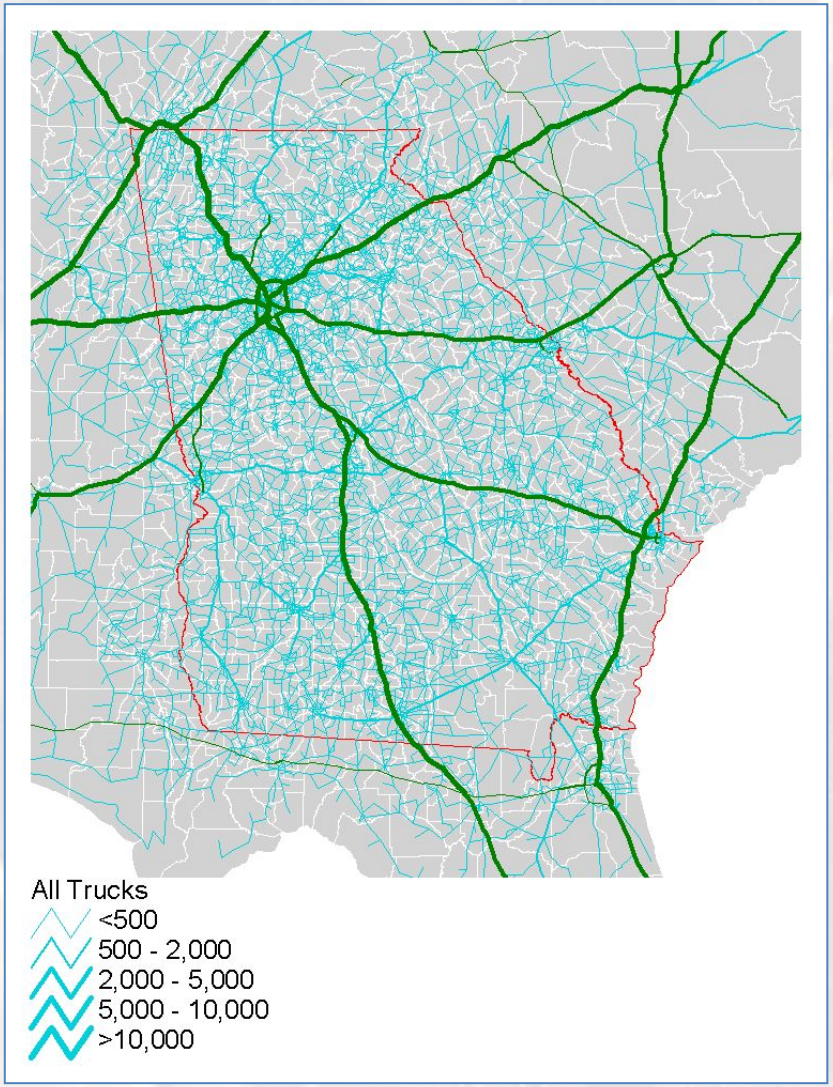
- Measure of the importance of interstate segment to serve goods to and from industrial markets
- Approach
  - Identify all truck trips that begin or end in each TAZ *and* use I-75 segment
  - Weight and sum employment across TAZs
- Required data
  - Select truck trip tables for each set of links (SWM)
  - Employment in each zone (2006 pop/SWM)

Industrial Markets Served by I-75 Segment



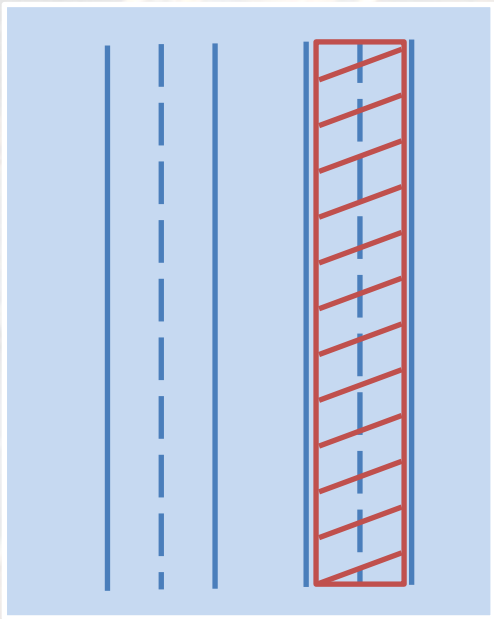
Freight Served

- Measure of the importance of interstate segment to general freight flows
  - Trucks serving GA, AND
  - Trucks passing through GA
- Approach – Import freight daily vehicle volumes directly from SWM
- Required data
  - Freight daily vehicle volume (SWM)



Capacity Constraint

- Measure of work zone delay
- Approach - Develop capacity factors using HCM default capacities
  - Capacity factor = existing capacity divided by capacity if 2 lanes dropped
  - Existing V/C * capacity factor = constrained V/C
- Required data
  - Existing link V/C (SWM)
  - Capacity factor table (under development)



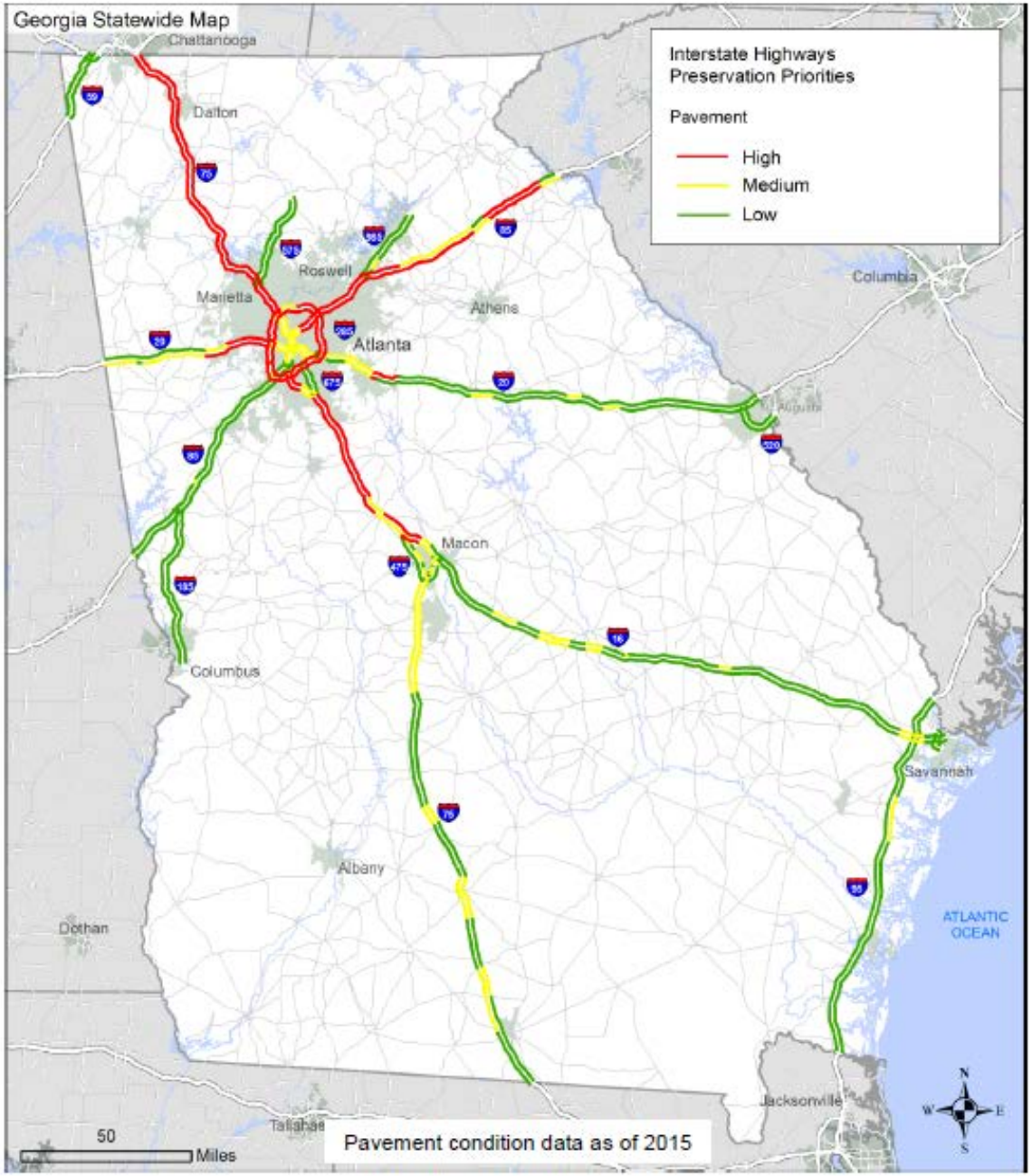
Evacuation Route

- Measure of importance of interstate segment for evacuation/security response
- Approach – binary approach
  - If on evacuation route, link gets “1”
  - If not, link gets “0”
- Required data
  - GDOT evacuation routes (GA NaviGAtor)

Calculating Consequence Score

1. Calculate each consequence element for each link
2. Normalize the results and record on a 0-100 scale
3. Combine consequence elements using weights that reflect relative importance of each consequence

Figure ES.2 Interstate Pavement Preservation Priorities



Questions ?