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A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001–2009

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Overview

- Introduction & Objective
- Cargo capacity
- Congestion
- Emissions
- Energy efficiency
- Safety
- Infrastructure
- Conclusion

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Introduction & Objective

- Conducted by TTI's Center for Ports & Waterways for the National Waterways Foundation (Feb 2012)
- Publicly available independently verifiable 2009 data
- Updates original 2009 study (2005 data)
- Objective: Analyze data & develop metrics that can facilitate performance comparisons among inland towing, rail, truck on a common denominator (rates per ton-mile) in 6 impact areas
- Assumption: 100% diversion to rail or 100% to truck in the event of waterway closure

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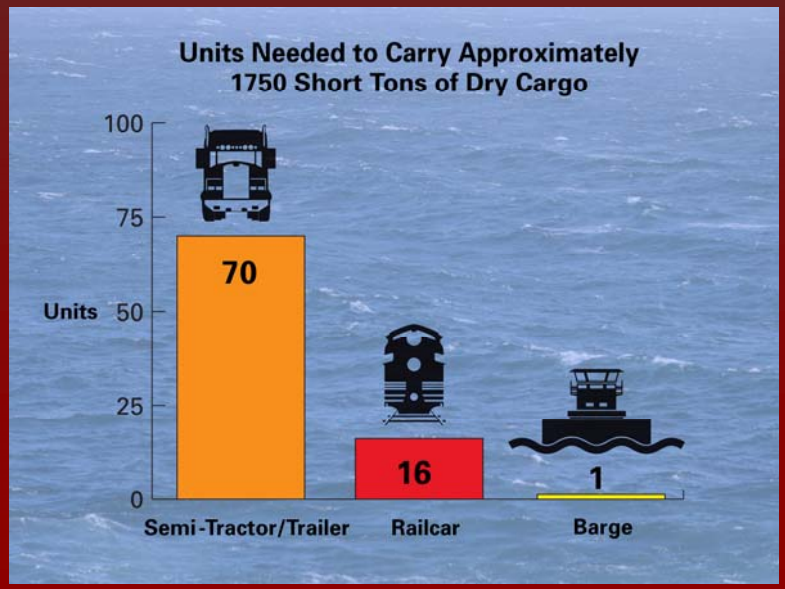
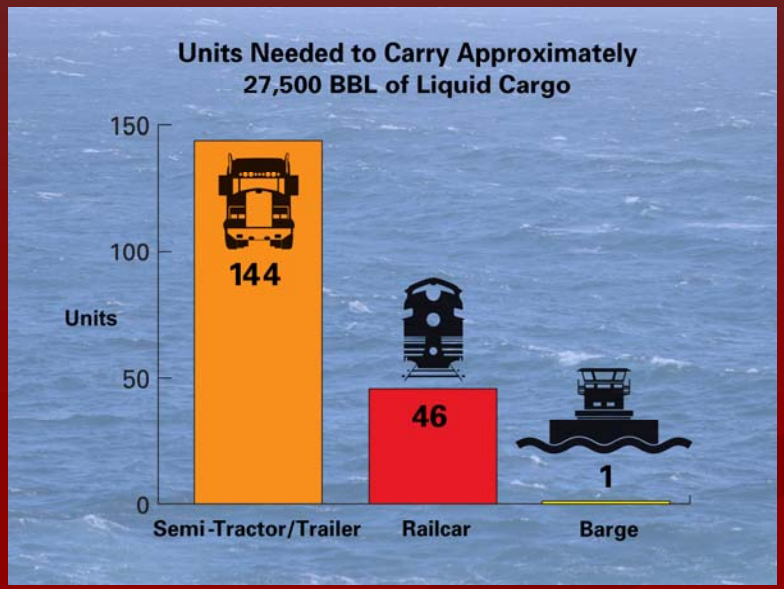
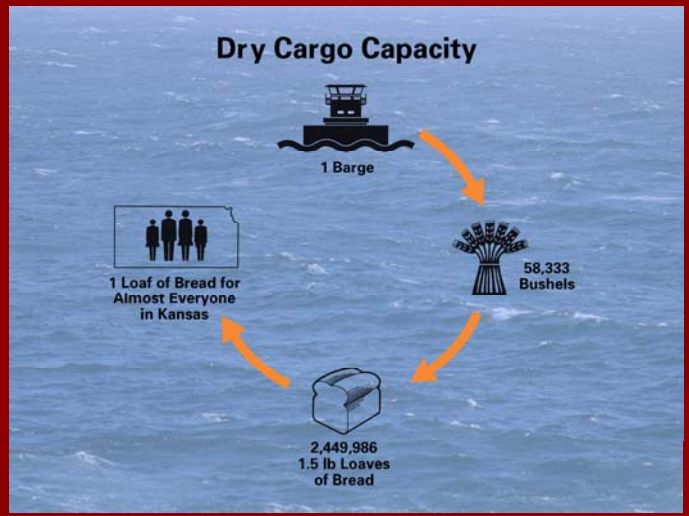
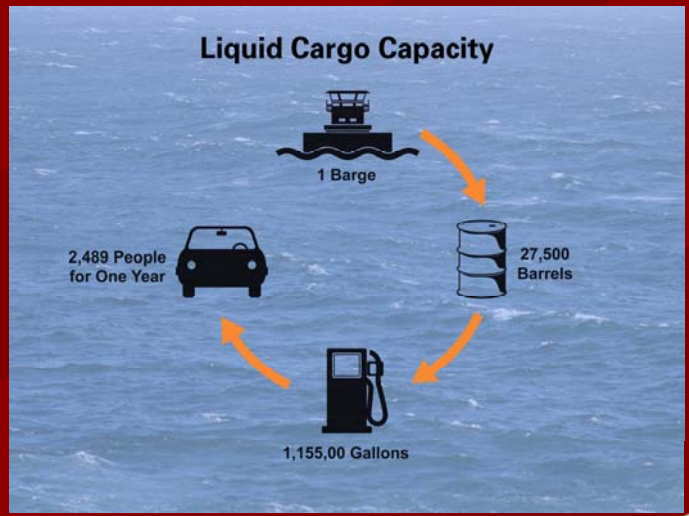
Cargo Capacity









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Congestion

- 2009 Waterborne Commerce data
  - Mississippi, Ohio, GIWW, Tennessee, Cumberland, Columbia
  - 637M tons & 220T ton-miles
- Truck diversion (data: USDOT, ATA)
  - Adds 51M truck trips = 18T truck vmt
  - Adds 84% (742) combination trucks/day-lane on rural IH (887 → 1629) i.e. adds 10% to % combination trucks in Average Annual Daily Traffic on rural IH (17% → 27%)
- Rail diversion (data: RRs/STB/SEC)
  - Adds 25% rail tonnage; impacts more severe in East
  - E.g. Ohio coal diversion to CSX adds 1M+ carloads = 27 trains/day; 22 mph → 13 mph

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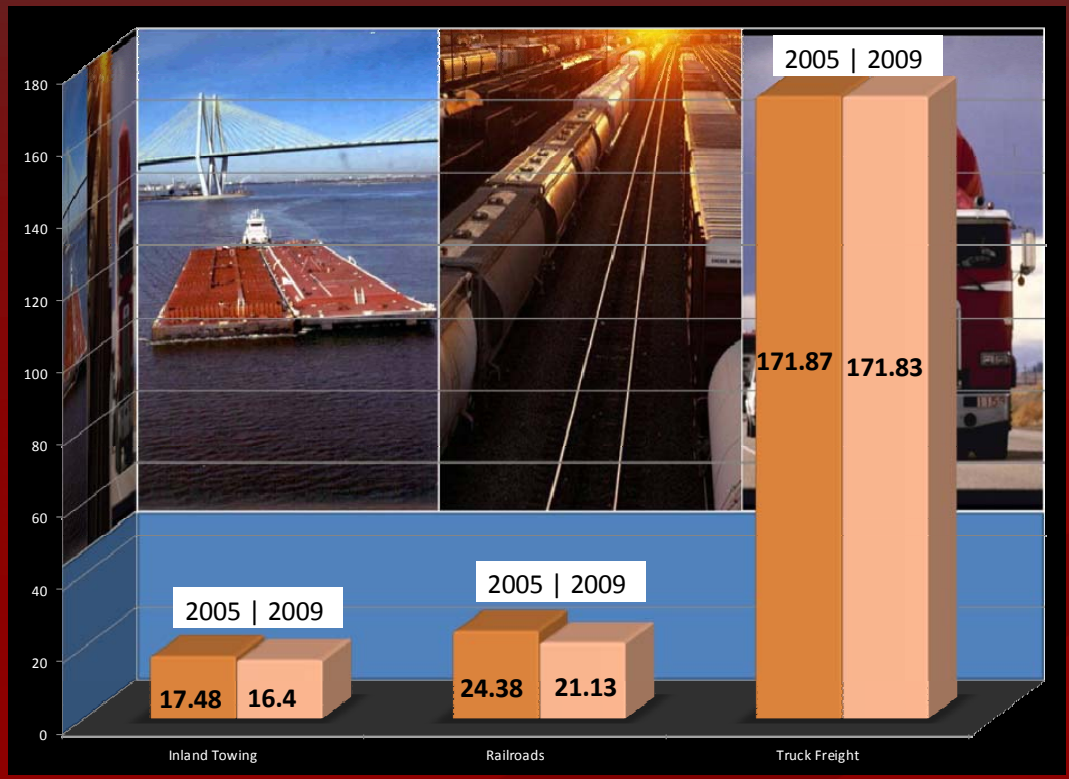
GHG Emissions



Metric Tons CO2 / Million Ton-miles

- Data sources: EPA, MOVES2010
- Inland tow & rail improved; truck same

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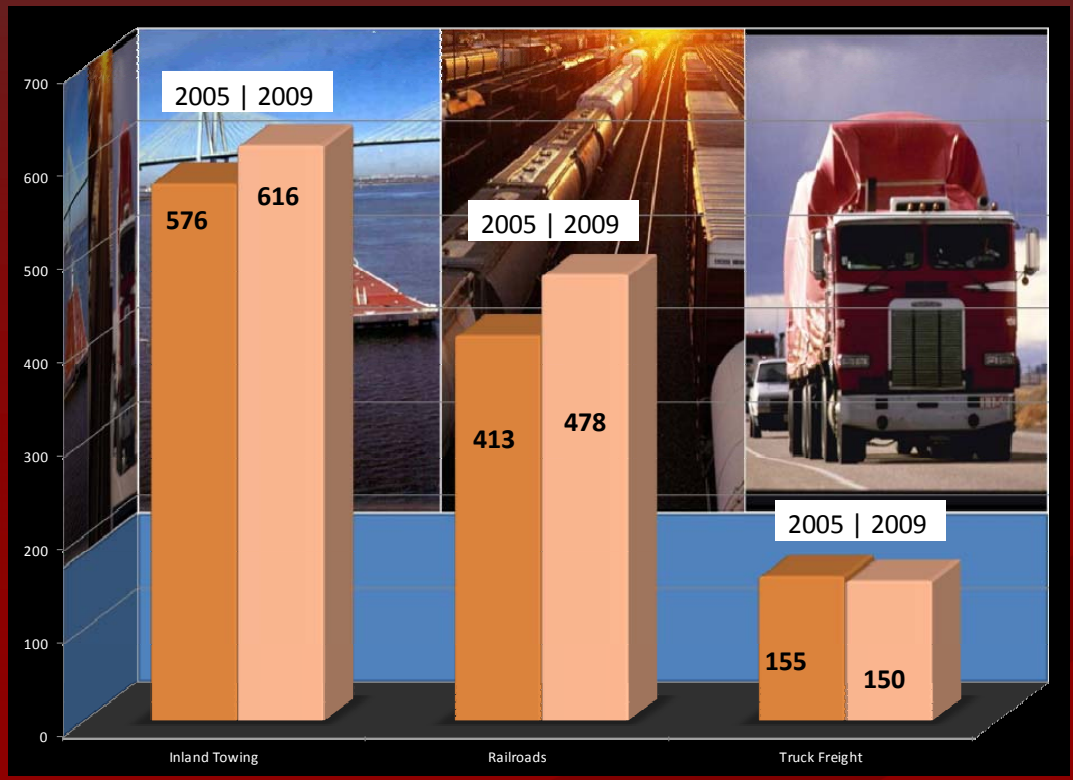
Energy Efficiency



Ton-miles/Gallon

- Data sources: TVA, RRs/STB/SEC, USDOT (BTS)
- Rail improvement: traffic ↓ speed ↑ (recession)

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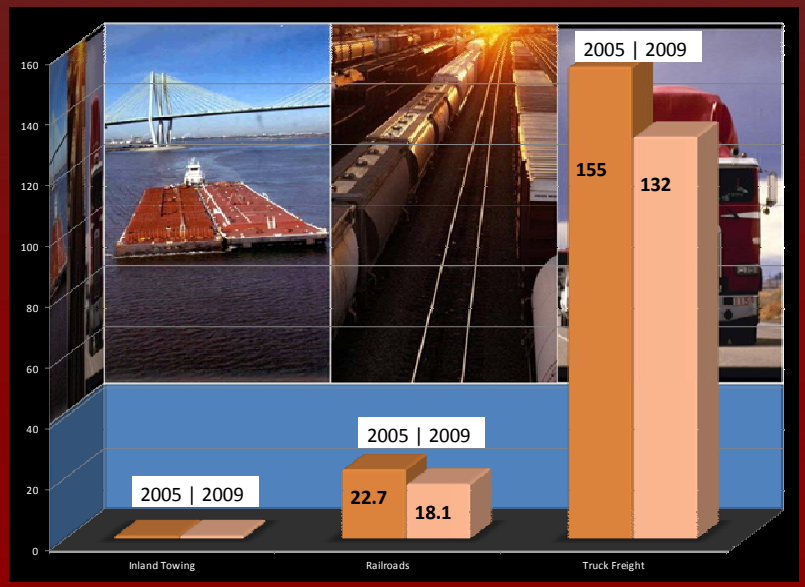
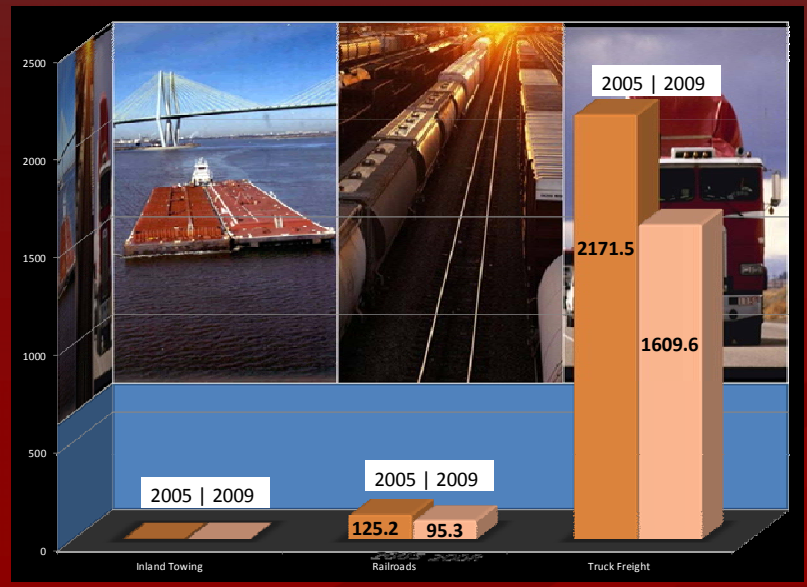
Safety



Ratio of Fatalities/MTM vs IT



Ratio of Injuries/MTM vs IT

- Data sources: USCG, USDOT (NTS, FMCSA)
- Water collisions, allisions, capsizings; derailments; truck crashes
- Rail & truck higher to start with so larger improvement

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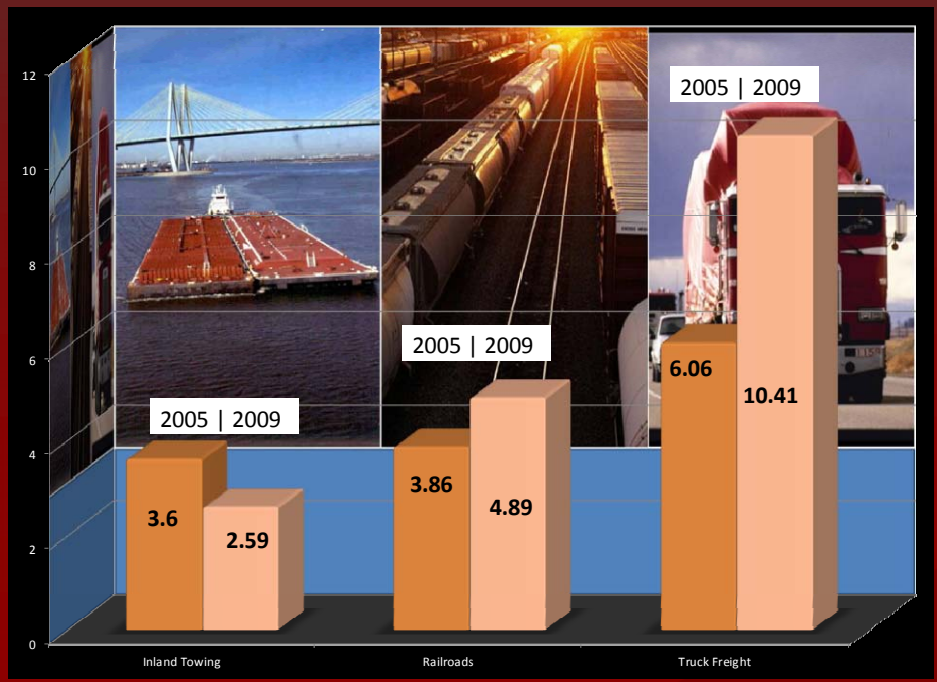
Safety – HazMat Spills



Gallons Spilled / HazMat MTM (01–05 & 01–09)

- Data sources: USCG, PHMSA
- Large spills (>1,000 gal)
- Only inland towing improved its record

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Infrastructure

- Truck diversion requires
  - +2" asphalt layer to 122K lane-miles of rural IH under higher 20-yr truck loadings (AASHTO method)
  - At TxDOT's average low bid unit price of $1.34/SY → $1.14B
  - Systemwide capital expenditure & higher maintenance costs
- Rail diversion results in
  - Higher demand for railcars & locomotives
  - Higher freight rates
  - Systemwide capital expenditure & higher maintenance costs
  - Potentially slower & less reliable delivery time
  - E.g. Ohio coal diversion to CSX: 81 trains *100 cars/train * $80K + 243 locomotives * $2M = $1.2B

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Conclusion

- Inland water transportation continues to perform and compare favorably with rail & truck with respect to the 6 impact areas:

  Cargo capacity

  Congestion

  Emissions

  Energy efficiency

  Safety

  Infrastructure
- Its absence would result in severe consequences in all 6 impact areas

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Thank You

Questions/Comments?
Info to share?

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