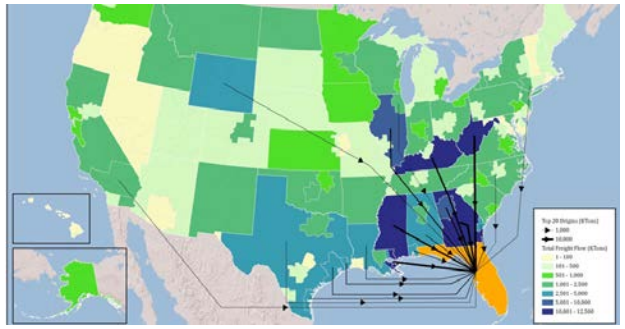


RSG
the science of insight

Validating Florida Freight Model with Truck GPS Data

Innovations in Freight Data Workshop

May 17, 2017 (Irvine, CA)

Acknowledgments

Consultant Team

- Maren Outwater, RSG
- Colin Smith, RSG
- Abdul Pinjari, University of South Florida

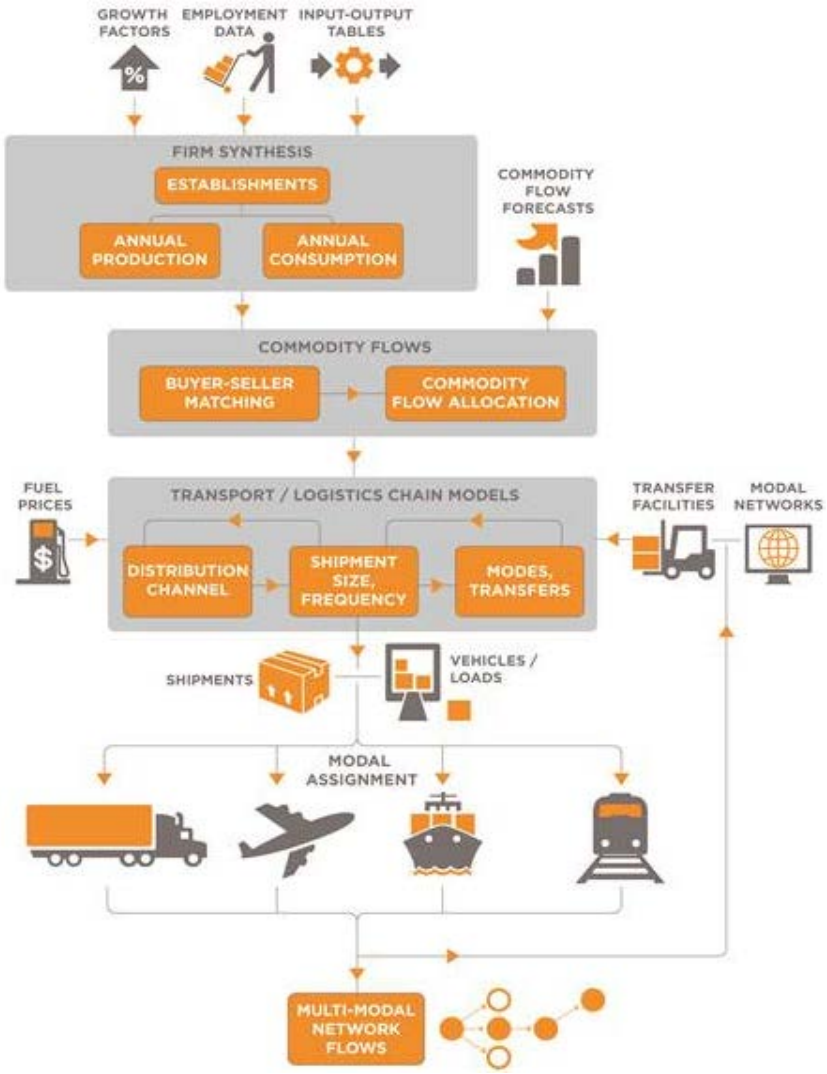
Florida Department of Transportation

- Frank Tabatabaee
- Vidya Mysore

FreightSIM

(Florida Supply Chain Intermodal Shipment)

- A supply chain disaggregate freight model that simulates freight transportation between suppliers and buyers
- Microsimulation and supply chain logistics considerations to forecast freight demand
- Represents various supply chains that may apply to specific commodities and industries
- Various data sources used for calibration/validation (CBP, truck counts, Transearch, CFS, PIERS, T-100, ATRI, etc.)



ATRI Data in FreightSIM

- More than 20 million raw GPS records (4 weeks of data in 2012)
- More than 80,000 trucks covered in the data
- Raw GPS data were processed by the University of South Florida to be converted into trip tables and OD travel times
- Fused with observed truck traffic counts at over 500 locations within and outside Florida

USED FOR

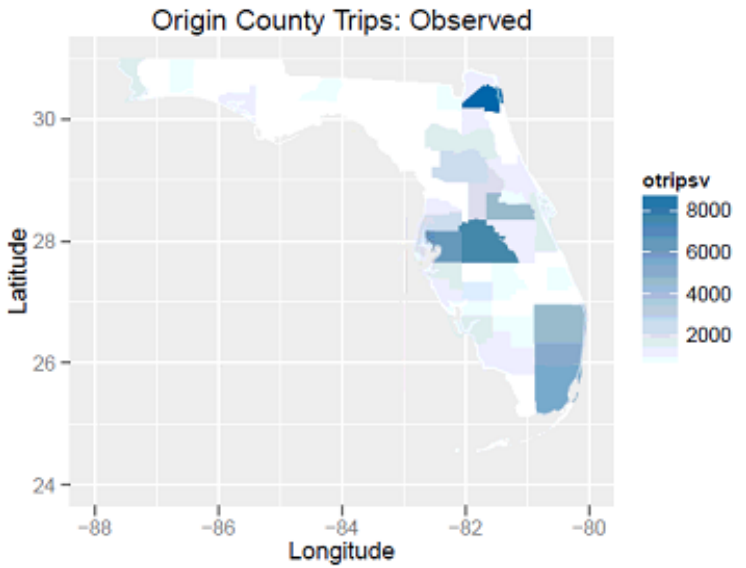
- Validating truck trip tables
- Calibrating certain commodity flows (to better match observed truck movements from truck GPS data)

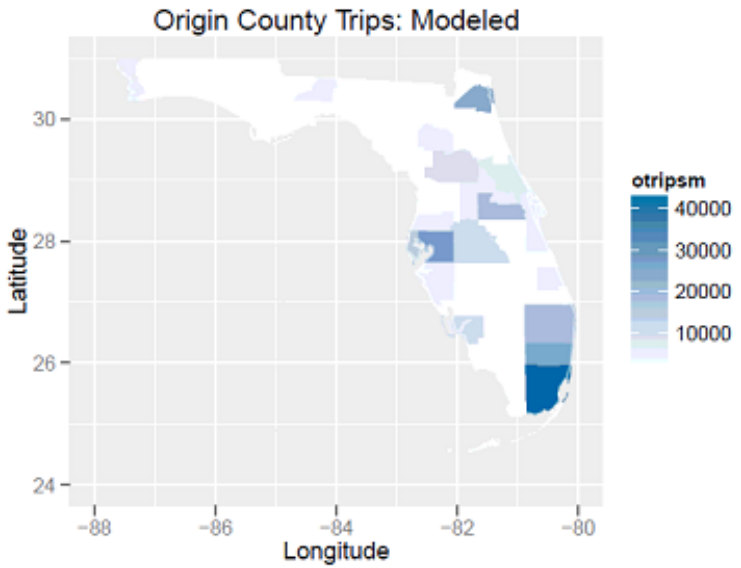
Use of ATRI Data in FreightSIM

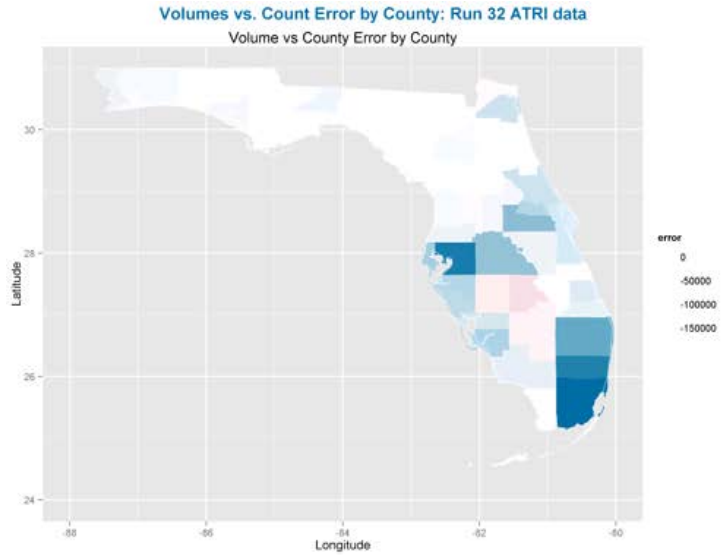
- To validate highway assignment truck trip tables
- To validate truck travel times and speeds used in the model
- To calibrate truck trips distribution (adjustments to the region-to-region movements by truck reported in FAF)

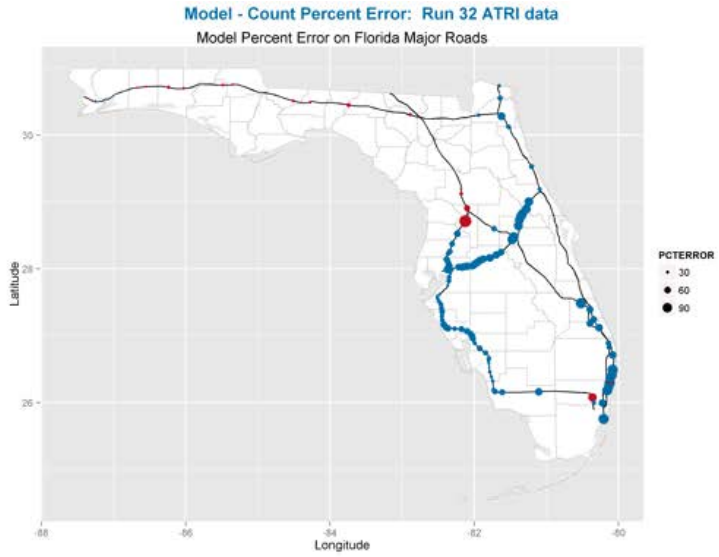
Don't call the client yet:
We found a new big data to validate the model

Model Validation



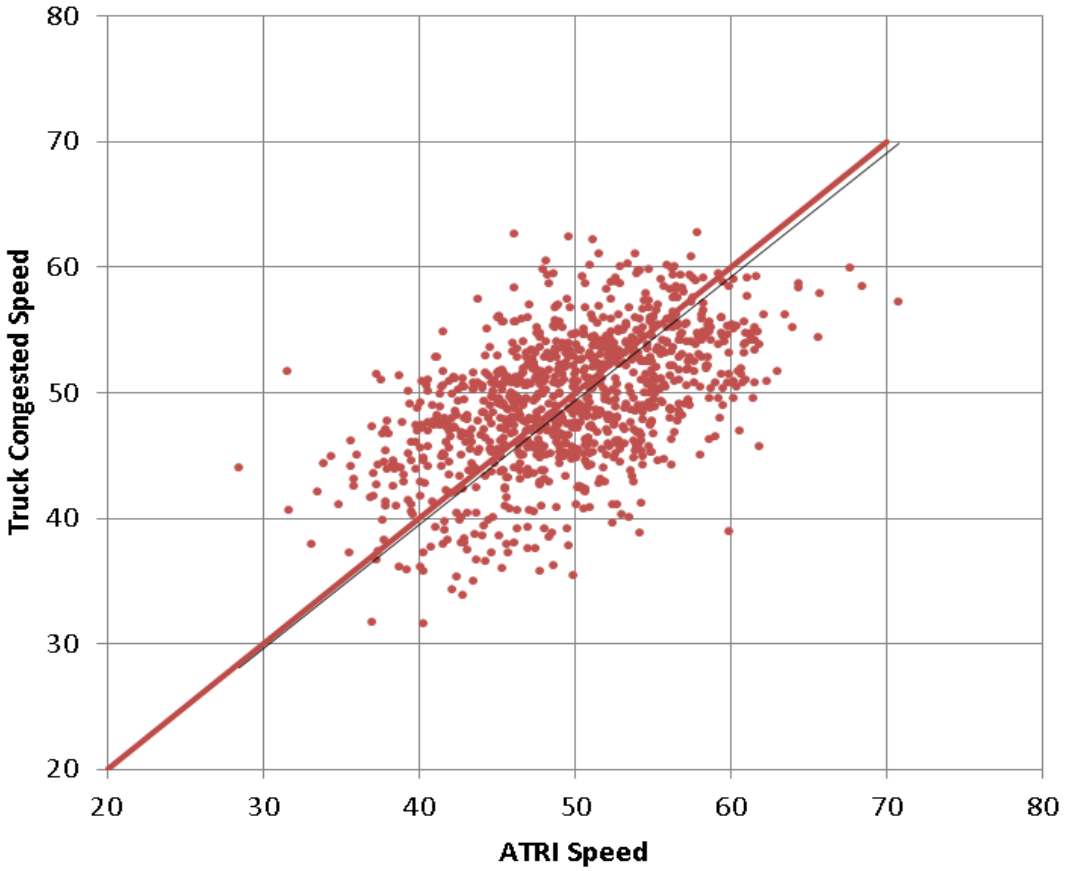






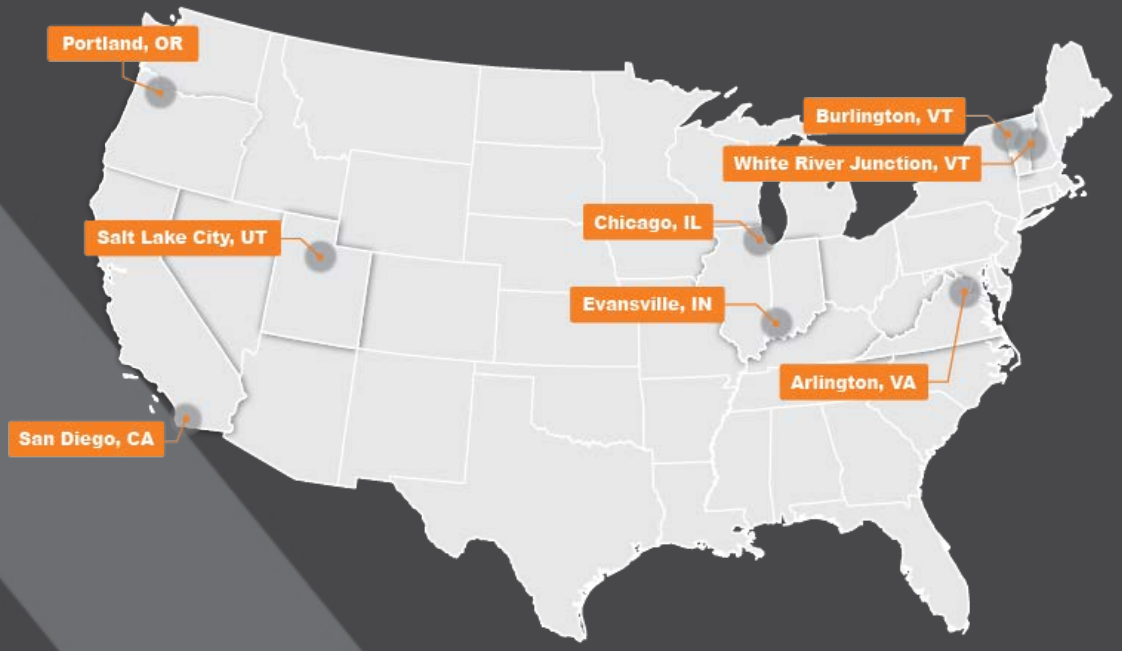
Validation of Truck Speeds

Observed speeds were derived from ATRI truck data and compared to model truck speeds



Conclusions

- Majority of freight models typically use validation data sources (e.g. truck counts, weigh in motion, or truck surveys data) with limitations that truck GPS data can resolve:
  - Origin and destination of the trucks (to be used for validating truck trips by OD)
  - Average truck travel times that can be used to validate modeled travel times
- Truck GPS data has been widely used to develop freight performance measures and not for freight model validation
- Less attention has been paid to truck GPS data potential use in freight modeling and model validation



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