Quantifying Long-Haul Trucks on Florida's Highways

EXECUTIVE SUMMARY

- *Planners needed data for highway trucks passing by 10 different exits.*
- *Big Data analysis separated local truck trips from long-haul trips.*
- *Analysis captured where trucks were entering and exiting highway.*

The Florida Department of Transportation needed to determine whether long-haul truck trips were a significant percentage of I-75 traffic. They turned to Big Data to separate long-haul from short-haul truck traffic.

Mission

FDOT has permanent highway sensors that capture truck volume data for a targeted stretch of highway. The volume sensors indicated that more trucks used I-75 than I-95 or other north-south corridors. They also indicated that heavy- and medium-duty trucks contributed a significant 15-20% of the total vehicle volume on I-75.

What sensors didn't capture was data on what percentage of those I-75 trucks were short-haul traffic (entering at one of the 10 ramps and exiting a few ramps later) versus long-haul traffic (moving through the entire corridor).

This data was critical because planners knew that shifting 18-wheeler trucks off the main highway could free up a lot of car space. But trucks entering at one ramp and exiting a few ramps later could be more difficult to shift with traffic mitigation, and shifting short-haul freight ultimately wouldn't make as much of an impact.

FDOT needed to understand how much of the total truck traffic was long-haul to determine if truck mitigation measures made sense.

> **"StreetLight Data is the most efficient way for us to differentiate if the truck traffic was long-haul or short-haul."**
>
> CHUNYU LU
> AECOM Florida

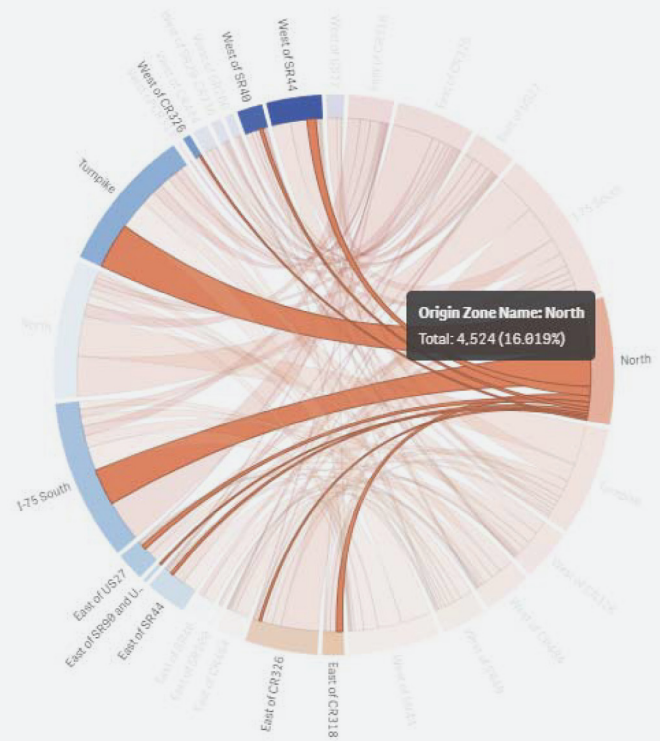
Analysis

Engineering firm AECOM worked with FDOT to calculate the amount of long-haul and short-haul freight. The first challenge was calculating how many trucks took one of the 10 exits off the I-75 corridor.

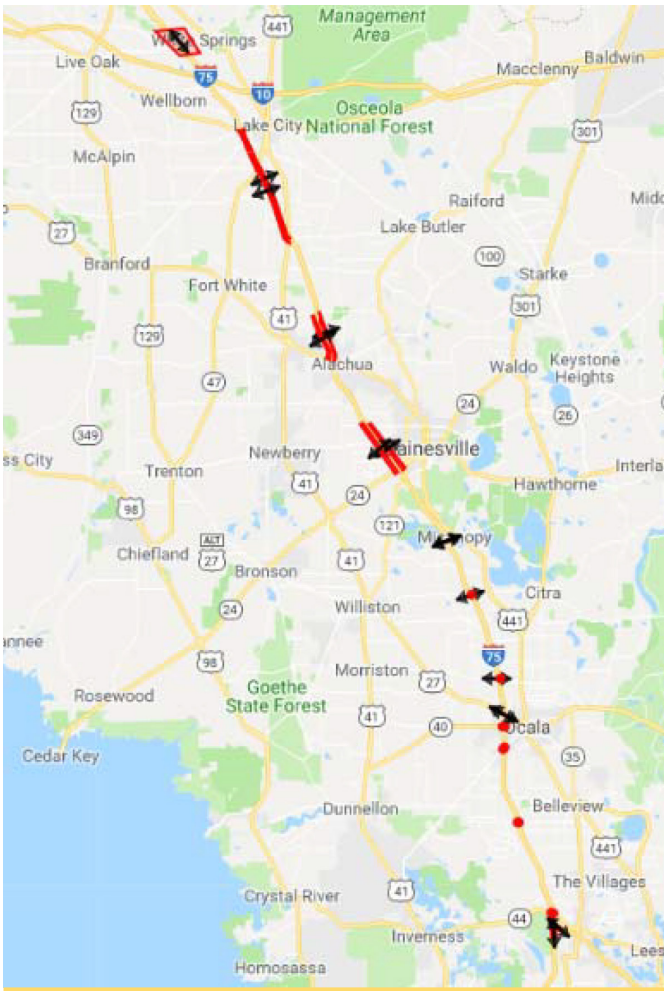
There are almost unlimited mathematical combinations for how trucks could have entered or exited the ten on- and off-ramps. Traditional modeling methods would not have revealed how much of the truck traffic was entering, exiting, or driving straight through.

StreetLight InSight® was able to quickly and easily calculate these options. Using *StreetLight InSight*, AECOM created an Origin-Destination (O-D) analysis for commercial traffic originating from the north and from the south. The O-D analysis pinpointed what percentage of truck trips took each exit, and what percentage passed all the way through.

A series of chord diagrams mapped the data for each segment of the corridor, creating a clear visualization of what percentage of trucks took each exit.



A chord diagram showing truck traffic flowing through the corridor or taking one of the exits.



Freight study area of I-75 in central Florida.

Results

With StreetLight's O-D analysis, AECOM was able to ascertain that a significant amount of southbound truck trips were long-haul, a higher percentage than northbound trips.

This data told planners that there were enough long-haul trucks — especially southbound — to include freight mitigation options as part of the overall study for I-75 traffic shifting options.

FDOT now knows that that 15-20% of vehicles in the corridor are freight trucks, and a large portion of those are long-haul. The department can now focus on ways to shift that truck traffic and make a meaningful difference for highway travelers.