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Hollywood, FL

TRANSPORTATION SYMPOSIUM

FDOT District 4 Truck Parking Planning Strategies

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Transportation Symposium Website
SCAN ME

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Overview

- Introductions
- Study Area and Study Objectives
- Stakeholder & Community Engagement
- Truck Parking Engineering Analysis
- Truck Parking Demand Analysis
- Next Steps

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Supporting FDOT's Compass: The Critical Role of Truck Parking

- **Safety**: Parking shortages forces drivers to park in unauthorized locations that creates hazards for themselves and others.
- **Communities**: Lack of truck parking forces drivers to park on local roads in residential communities.
- **Workforce Development**: Providing parking facilities for truck drivers attracts industry which increases economic opportunities.
- **Resiliency**: Truck parking sites can be used during disaster recovery to stage crews and equipment or provide space for rapid debris removal.
- **Technology**: Technology is allowing us to provide real-time safe parking availability information to drivers.
- **Supply Chain**: Time is money for drivers. Lost time looking for parking wastes fuel, increases maintenance costs, and eventually leads to higher prices for consumers.

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The Truck Parking Challenge

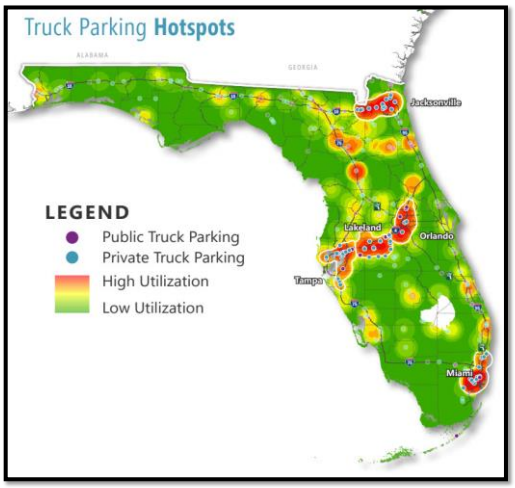
National Challenge:

- 1 space for every 11 trucks
- Truck drivers spend on average 1 hour looking for parking each day

Florida Challenge:

Most truck parking facilities along Florida's interstates experience overcrowding during any given 24-hour period.

- Mostly overnight (peak utilization 9pm-5am)
- Tuesday, Wednesday, and Thursday generally experience the highest rates



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National Highway Freight Program (NHFP)

- The federally funded National Highway Freight Program (NHFP) is a formula-based program that supports investments in the National Highway Freight Network (NHFN) across the U.S.
- Freight projects are submitted during the annual Call for Projects cycle, evaluated using the qualitative and quantitative criteria outlined in the Freight Mobility and Trade Plan (FMTP), and then reviewed for selection.
- Projects approved for funding are included in the annual update of the FMTP Investment Element.

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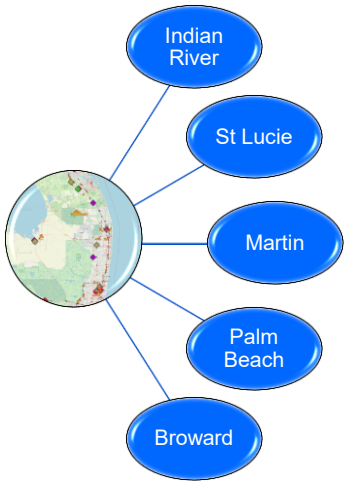
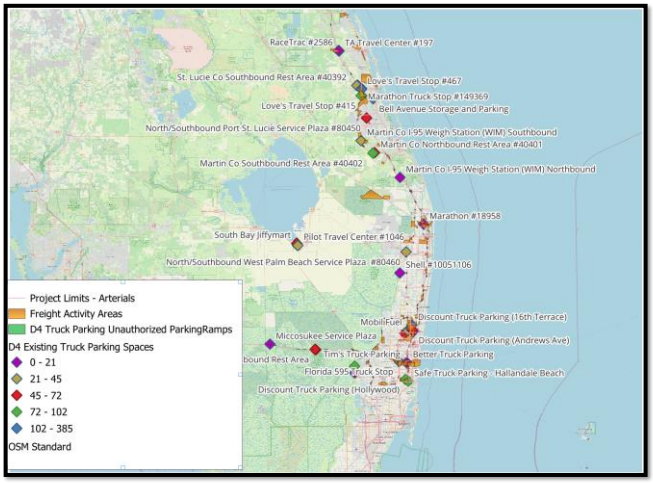
Study Area





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Study Objectives

Truck Parking Engineering Analysis

- Quantify the need for truck parking in Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties
- Identify parcels suitable for development as truck parking facilities
- Prioritize parcels with suitable criteria
- Develop conceptual plans for development and estimated costs
- Develop actionable next steps

Truck Parking Demand Analysis

- Conduct demand analysis
- Quantify truck parking needs and demand for each of the counties in the study area
- Confirm utilization
- Estimate future demand

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Engineering Analysis: Study Process

- Engage Freight Stakeholders
- Property Parcel Analysis
  - Florida Department of Revenue data
  - Identify land with potential for development
  - Confirm suitability based on several factors
  - Rank sites
- Concept Design and Costs Estimation
- Implementation plan

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Literature Review – Main Criteria

Truck Parking Development Handbook

- Access
- Design Criteria, e.g., minimum size 5 acre

District 6

- Land Use, vacant and publicly owned parcels
- Neighborhood impacts (i.e., sites adjacent to residential areas)
- Driving distance from freeways
- Proximity to major terminals/hubs and industrial and commercial truck generators
- Truck accessibility (poor, average or preferred)
- Freeway truck percent >5% of Annual Average Daily Traffic (AADT)
- Nearby freeway's future traffic:
  - Land cost feasibility threshold 1.1 million per usable acre
  - Tier-based methodology

FHWA: Model Development for National Assessment of Commercial Vehicle Parking; Study of Adequacy of Commercial Truck Parking Facilities

- Truck Parking Demand- Modeling Methodologies

District 4

- Existing Conditions and Truck Parking Supply
- Truck Parking Demand- Modeling Methodologies

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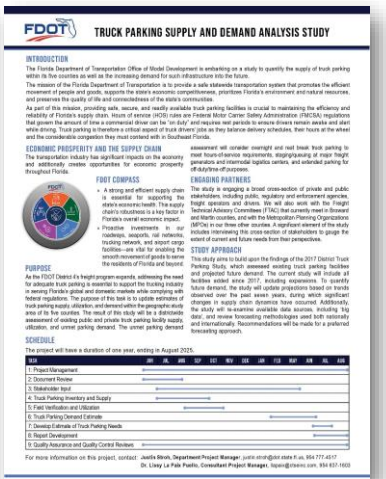
Stakeholder Engagement

Public Agencies

- Transportation
- Land Use – counties and municipalities

Private Operators

- Trucking and logistics companies
- Drivers
- Parking providers



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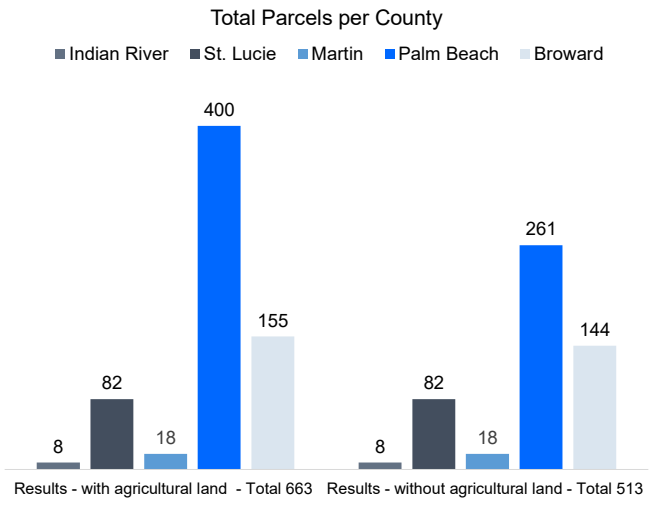
Tier Zero: Property Parcel Analysis



Sequence	Criteria
0	FL Dept of Revenue Parcels
1	Land use codes
2	Buffer from interchanges (TC)
3	Parcel size
4	Vacant land
5	Condos (remove)
6	Improvement quality
7	Preserved lands (remove)
8	Water bodies
9	Occupied FDOT Right-of-Way
10	Add agriculture land Broward and Palm Beach
11 WITHOUT 10	Visual inspection
11WITH 10	FL Dept of Revenue Parcels

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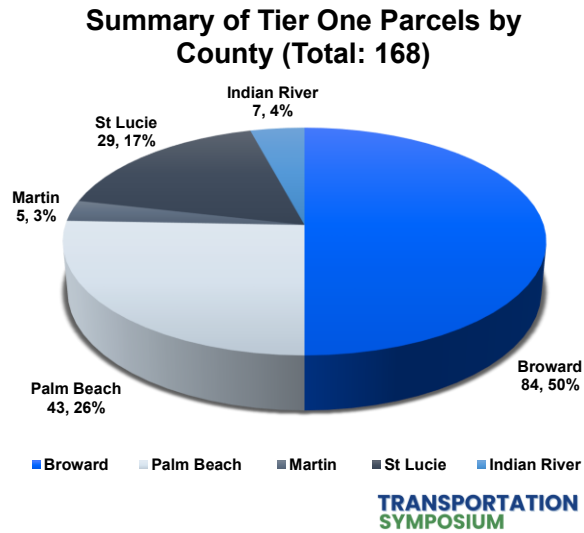
Tier One: Parcel Analysis

No.	Evaluation Criterion	Required/Desired Outcome
1	Existing Zoning Code	Matches Required Zoning Code per Municipality/County legislation
2	Located within the UDB	Yes - a buffer of 2 miles
3	Existing Land Use Designation	Vacant, Industrial, Office, Commercial, or Streets
4	Adopted Future Land Use Designation	Vacant, Industrial, Office, Commercial, Recreation, Institutional, Public Facility, Open Space, or Streets. Add Agricultural parcels in Broward and Palm Beach.
5	Nearest Driving Distance to Strategic Intermodal System (SIS) Roadways	Within ≤ 5.8 miles (10 mins) of SIS Roadway
6	Freeway Truck Percent	≥ 10% of AADT, 2 miles buffer
7	Near Major Freight Activity Areas	≤ 3 miles
8	Adjacent Existing Land Use Compatibility	Exclude residential AND not vacant institutional AND not Governmental (Public County Schools, Colleges, Hospitals)
9	Access: based on the capacity of the nearest arterial, distances to freeways, SIS roadways, arterials, and existing conditions of the surrounding roadway network.	Keep both "Good" and "Sufficient"
10	Estimated Future Freeway Truck Percent	≥ 10% of future (2045) AADT within 2-mile buffers



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Tier Two: Criteria

	Tier 2 Evaluation Criteria	Required/Desired Outcome	Scoring
Social, Cultural & Environmental	Wetland Impacts	No	1= True 0 = False
	Located within a floodplain?	No, or yes	1= True 0 = False
	Located near or within a contaminated site?	No	1= True 0 = False
	Proximity to education facilities?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to religious institutions?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to medical facilities?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to emergency response?	> 1 within a 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to civic facilities and governmental buildings?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to cemeteries?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to parks and publicly used lands?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to historical/ archaeological districts and/or sites?	Least possible within 1-mile buffer	0 if three or more sites, 0.5 if 1 or 2 sites, 1 if zero sites
	Proximity to Noise Receptors?	No (F/E, G, or D) – e.g., Schools, parks, or medical offices. Exclusion area A to C; within 0.25 miles distance from NSA (noise sensitive area) = unfavorable.0	
Physical Characteristics	Nearest Driving Distance to Strategic Intermodal System (SIS) Roadways/Freeways	< 1.25 mile of intersections/interchanges	3 = < 0.5 mile 2= 0.5 - 1. mile
	Nearest Driving Distance to Nearest Arterial	< 0.5 miles of intersection	1 = 1. - 1. 25 mile 0 = > 1.25 mile
	Lane Capacity of Nearest Arterial	< 0.5 miles of intersection	<4 lanes (0), four lanes (1), six or more (2)
	Number of signalized intersections to nearest arterial	0	1= True 0 = False
	Lane width of Adjacent Roadways (ft)	>= 12ft	1= True 0 = False
	Pavement conditions of adjacent roadway	Paved	1= True 0 = False
	Proximity to Railroad Crossing	No	1= True 0 = False
	Transmission Line Locations	outside 1-mile buffer	1= True 0 = False
	Location of Vulnerable Roads	Within a 1-mile buffer from the most vulnerable road (Vulnerability Score1 Least Vulnerable - 4 Most vulnerable)	1= True 0 = False
Desireability	Site Developed	No	1= True 0 = False
	Parcel Size	Larger acreage	Quartiles by Acreage
	Proximity to Major Freight Activity Areas	Closest to the Major Freight Activity Area	Quartiles distance (e.g. zero) - 75%:2, 25%-75%:1, 25%:0)

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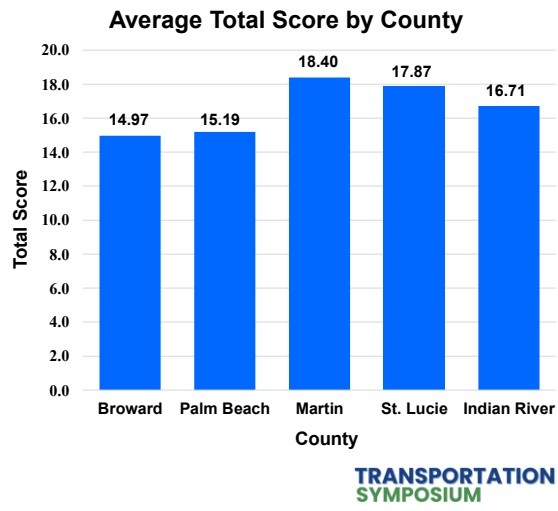
Results Tier 2 - Scores by County

Tier 2 Evaluation Criteria	Broward	Palm Beach	Martin	St. Lucie	Indian River
Environmental & Socio cultural					
Impacts wetlands?	0.52	0.75	0.00	0.44	0.00
Located within a floodplain?(100 or 500 –year flood plain)	0.01	0.39	0.60	0.94	0.00
Located within or nearby a contaminated site(s)?	0.99	1.00	1.00	1.00	1.00
Proximity to education facilities?	0.27	0.22	0.80	0.69	1.00
Proximity to religious institutions?	0.35	0.11	0.50	0.56	0.71
Proximity to medical facilities?	0.20	0.20	0.60	0.74	0.71
Proximity to emergency response?	0.32	0.27	0.70	0.79	1.00
Proximity to civic facilities and governmental buildings?	0.92	0.90	1.00	0.97	1.00
Proximity to cemeteries?	0.91	0.91	1.00	0.97	1.00
Proximity to parks and publicly used lands?	0.06	0.53	1.00	0.82	1.00
Proximity to historical/archaeological districts and/or sites?	0.85	0.86	1.00	0.97	1.00
Proximity to Noise Receptors?	0.18	0.02	0.20	0.21	0.00
Physical Charcterstics					
Nearest Driving Distance to Strategic Intermodal System (SIS) Roadways/Freeways	0.50	0.18	1.00	0.88	0.57
Nearest Driving Distance to Nearest Arterial	0.98	1.00	1.00	1.00	1.00
Lane Capacity of Nearest Arterial	1.36	1.66	1.00	0.79	1.29
Number of signalized intersections* to nearest arterial	0.61	0.43	0.60	0.79	0.00
Lane width of Adjacent Roadways (ft)	1.00	1.00	1.00	1.00	1.00
Pavement conditions of adjacent roadway*	1.00	1.00	0.80	1.00	1.00
Near a railroad crossing?	0.63	0.70	1.00	0.71	1.00
Proximity to Power lines	0.00	0.27	0.20	0.26	0.00
Proximito to vulnerable roads	0.42	0.20	0.40	0.35	0.00
Desireablity					
Site Developed	0.69	0.39	1.00	0.50	0.71
Marketability to the private sector? Ranked based on amount of potential parking spaces (division of acreage by spot size)	1.10	1.36	0.40	0.47	0.43
Proximity to major freight activity areas(split?)(based on the percentile: from closest (e.g. 2) to farthest (e.g. zero) - 75%:2, 25%-75%:1, 25%:0)	1.11	0.82	1.60	1.00	1.29
Average of Total Score	**14.97**	**15.19**	**18.40**	**17.87**	**16.71**



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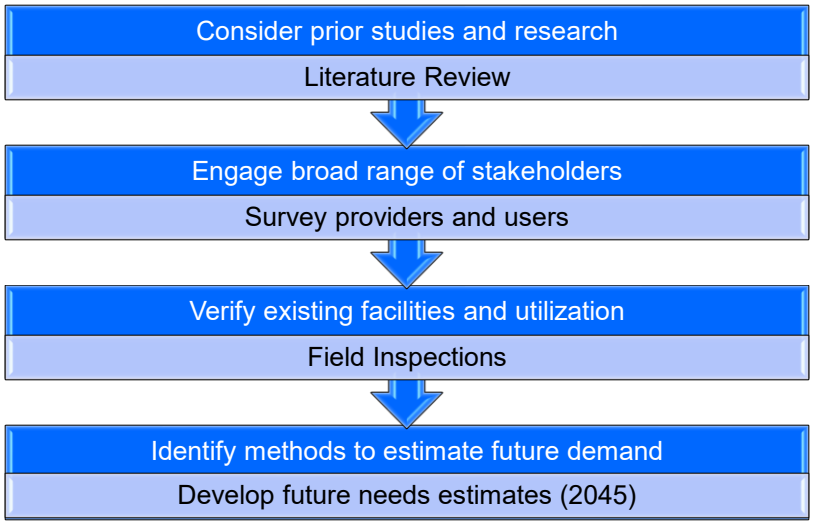
Demand Analysis - Study Process



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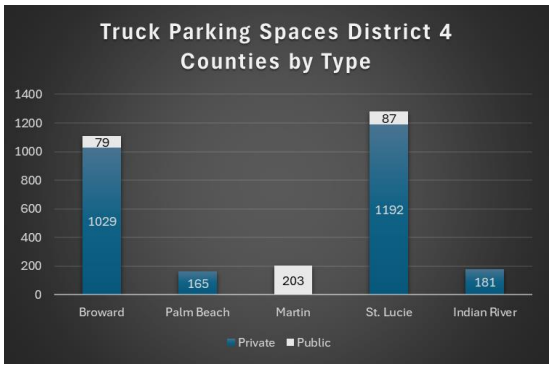
Existing Conditions

District 4 Summary: Truck Parking Sites and Total Spaces

County	Number of Sites 2017*	Number of Sites 2024	The average number of spaces / site	Total Spaces (2024)	Percentage Total Parking Spaces by County
Broward	8	13	85	1108	**37.74%**
Palm Beach	5	5	33	165	**5.62%**
Martin	3	4	51	203	**6.91%**
St. Lucie	7	9	142	1279	**43.56%**
Indian River	3	2	91	181	**6.16%**
Grand Total	**26**	**33**	**89**	**2936**	**100 %**

*Based on 2017 District 4 Truck Parking Supply and Demand Study



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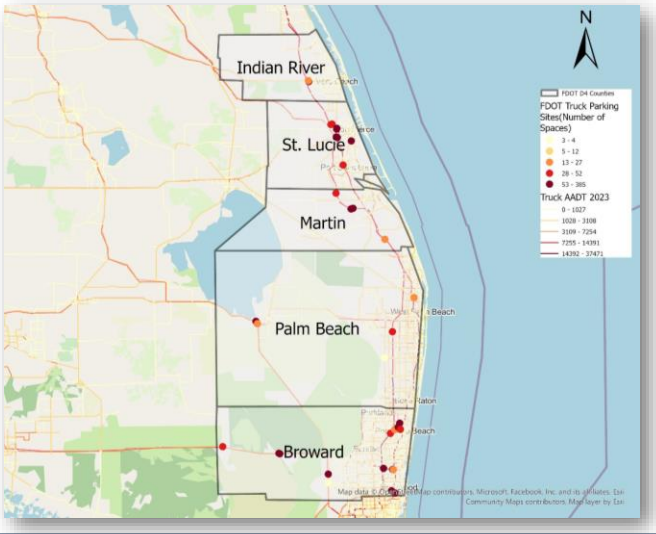
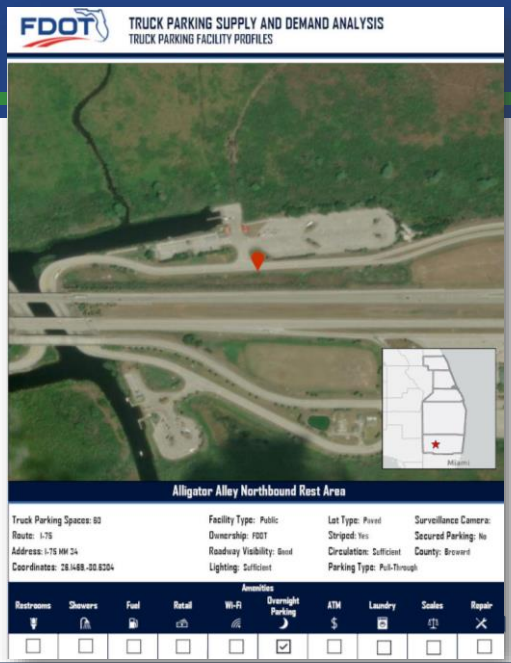
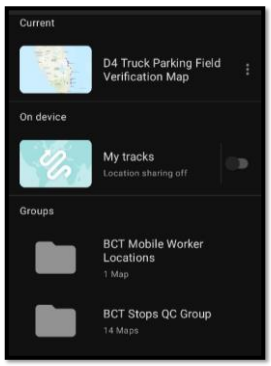
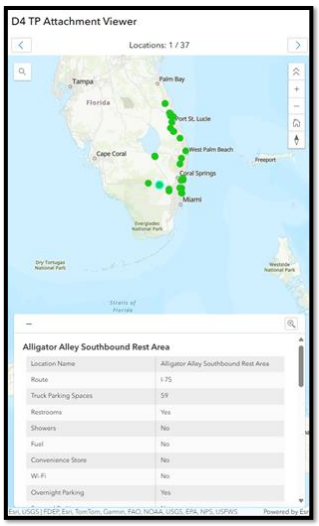
Existing Conditions





Field Inspection Database





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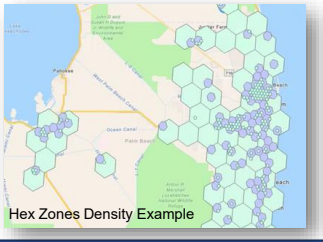
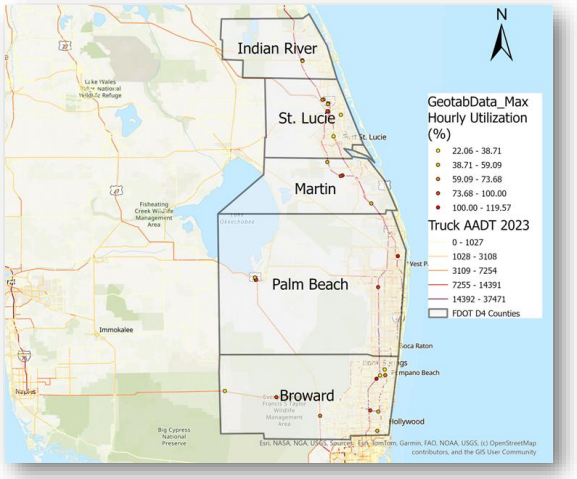
Existing Truck Parking Demand

Altitude by Geotab provides hourly and daily counts of parked trucks at designated sites, using historical data from GPS tracking devices.

Use of Stop Analytics includes:

- Identifying the duration and location of vehicle stops
- Extracting both authorized and unauthorized parking events





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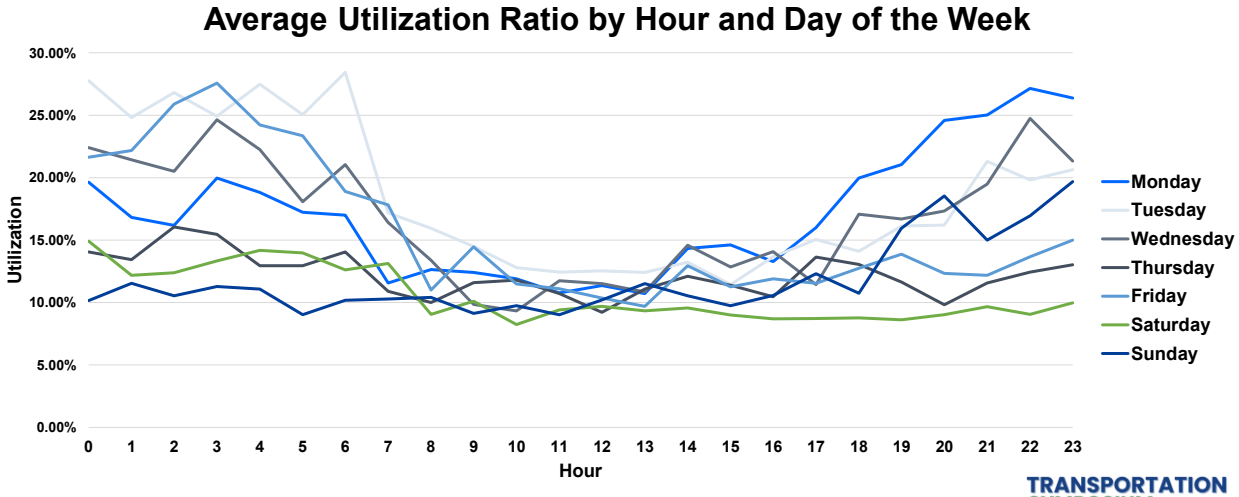
Descriptive Statistics



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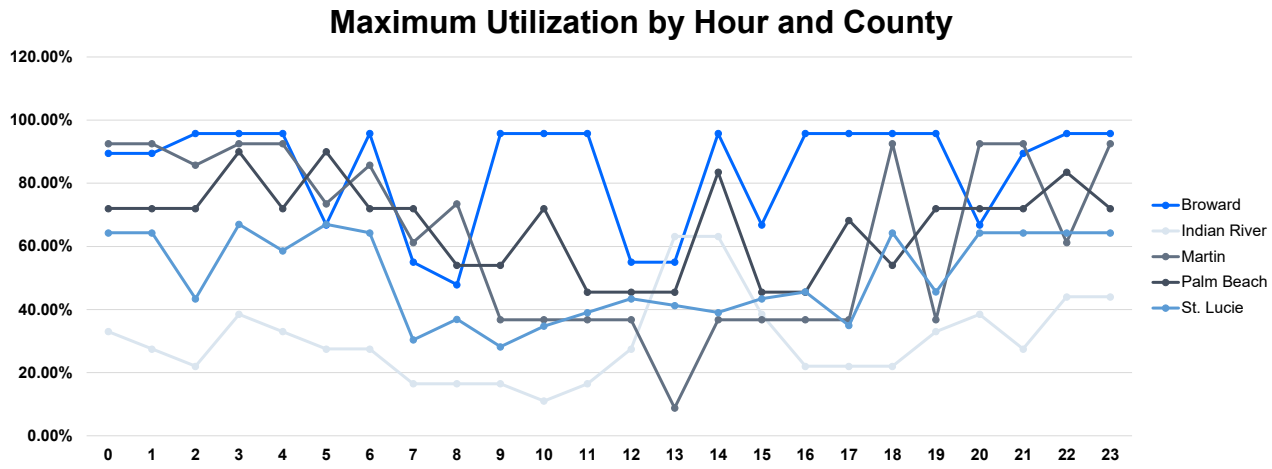
Descriptive Statistics



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Ongoing Steps: Demand Modeling

Estimate a Micro Level Model

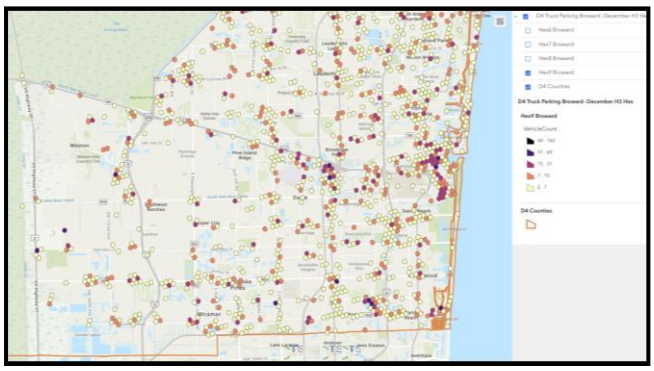
- Utilization
- Unauthorized parking: number of trucks parked at unmarked areas.
- Ramp analysis
- Hex zones based on Geotab data

Developing Expansion Factors

- Counts per site
- FL 511 Data

Forecasting and Simulation

- Future Traffic



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Ongoing Steps: Demand Modeling

Available Data: 4 months

Peak Period: Weekdays (Monday, to Wednesday), 8:00 PM to 5:00 AM

Off-Peak: All other times

Seasonal Factors:
- Peak Season: June and December
- Low season March and November

Model structure: Ordinary Least Squares (OLS)

Significant variables: AADT, Truck %, Roadway Speed

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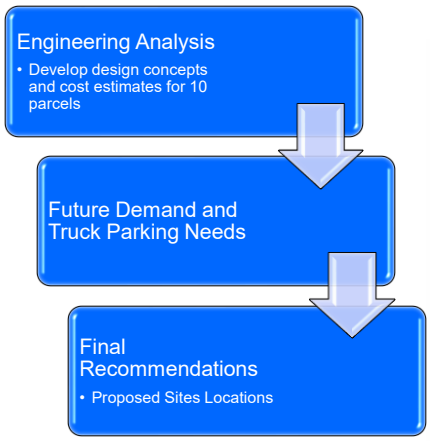
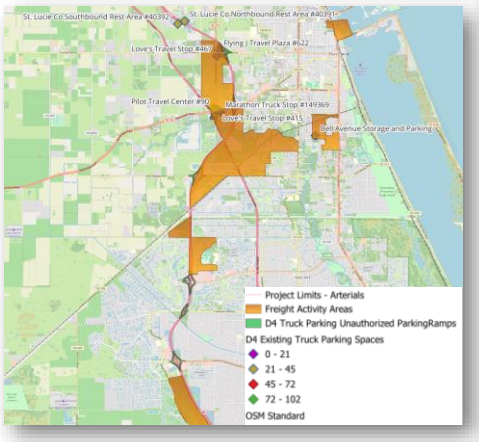
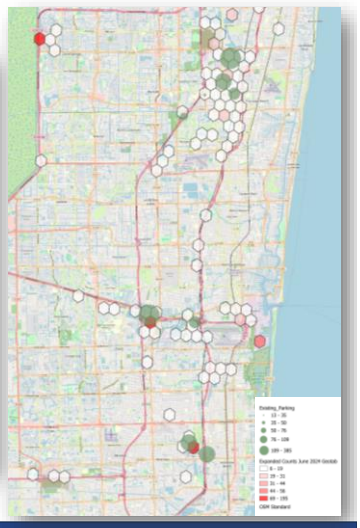
Next Steps







Thank You

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References

- FDOT District 6. (2012). Truck Parking Study. Florida Department of Transportation.
- FDOT. (2017). Truck Parking Supply and Demand. FDOT District 4 .
- FDOT District 1. (2017). Districtwide Freight Truck Parking Inventory.
- FDOT District 6. (2018). Assessment for Potential Truck Parking Locations within Miami-Dade County, Final Report .
- FDOT (2020), Statewide Truck Parking Study. Florida Department of Transportation.
- FDOT District 6. (2020). Miami-Dade County Truck Parking Implementation Master Plan. Technical Memo 1.
- FDOT District 6. (2022). Truck Parking Supply and Demand Study Master Plan Final Report.
- FHWA. (2002a). Model Development For National Assessment of Commercial Vehicle Parking .
- FHWA. (2022). Truck Parking Development Handbook.
- FHWA. (2002b). Study of Adequacy of Commercial Truck Parking Facilities - Technical Report .
- Garber, N. J. , & Wang, H. (2004). ESTIMATION OF THE DEMAND FOR COMMERCIAL TRUCK PARKING ON INTERSTATE HIGHWAYS IN VIRGINIA.
- Guerrero, S., Pulikanti, S., Wieghart, B., Bryan, J., & Strow, T. (2022). Modeling Truck Parking Demand at Commercial and Industrial Establishments. Transportation Research Record: Journal of the Transportation Research Board, 2677, 036119812211035. https://doi.org/10.1177/03611981221103597
- Miami-Dade MPO. (2012). Development of Truck Parking Facilities in Miami-Dade County Phase II: Options for Implementation.
- Rabbitt, C. (2024). Automotive and Surface Transportation Research Centre.

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