


Streetlight Insight®

Transportation Analysis Case Discussion by H-GAC


March 2, 2022

It begins with Big Data

- Every month, Streetlight ingests, indexes, and processes approximately 40 billion anonymized location records from smart phones and navigation devices in connected vehicles and trucks

- This data is considered Big Data, as it is large, hard-to-manage volumes of data that is mostly unstructured. This information type does not consist of a pre-set data model or schema, making it not compatible with typical databases.

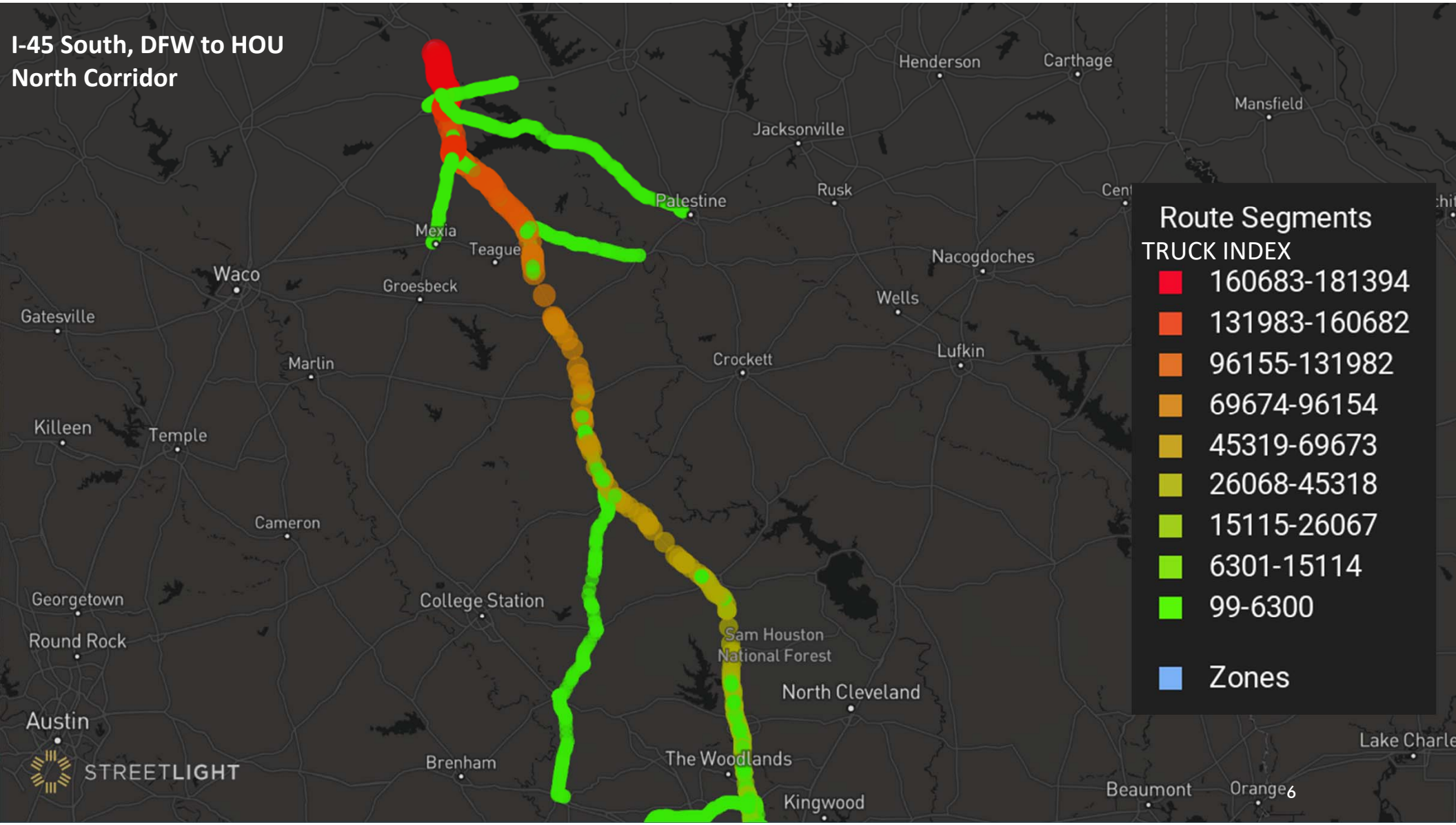
Streetlight's algorithm

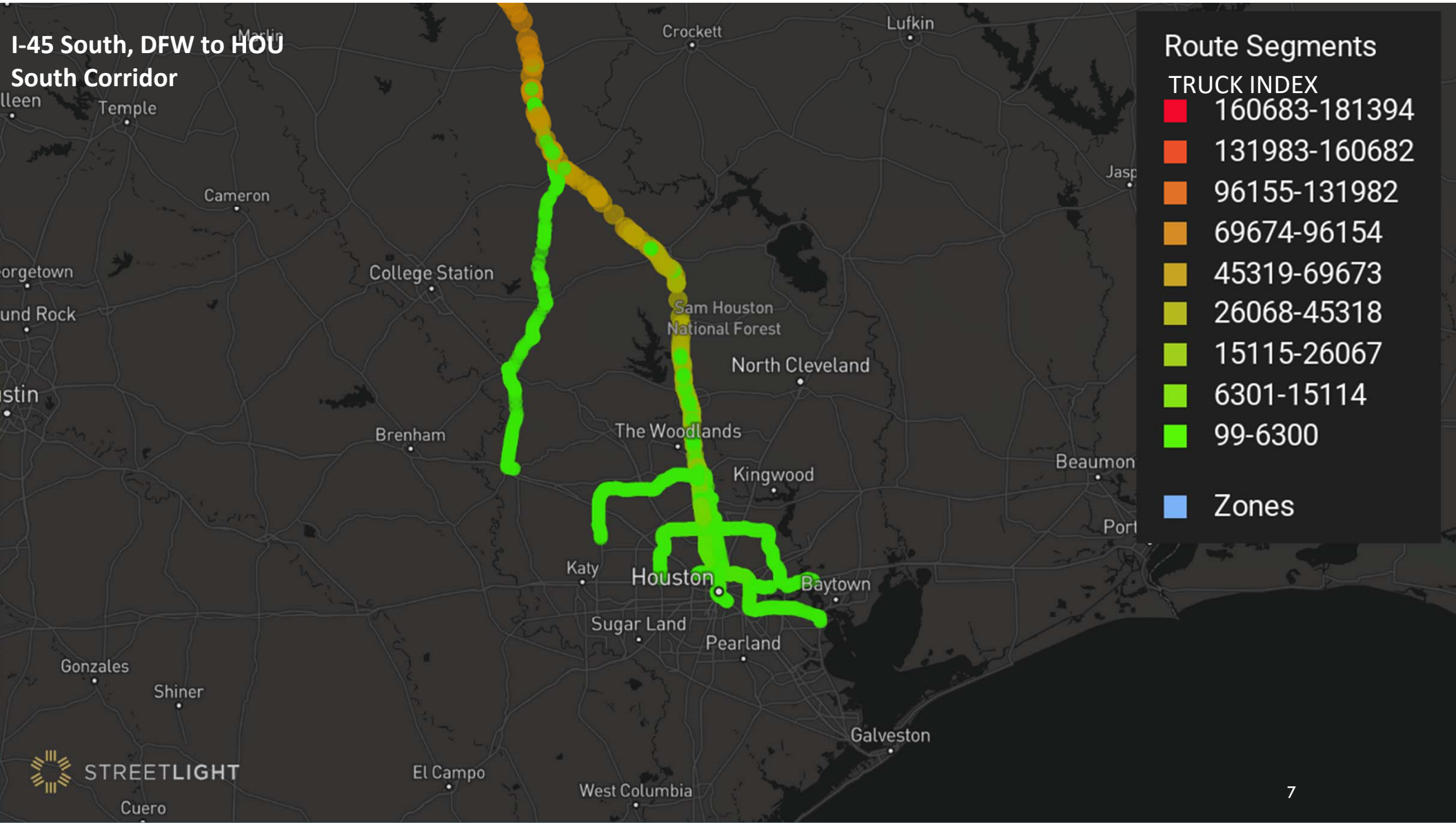
- Streetlight's algorithm, called **Route Science®**, transforms trillions of location data points over time into contextualized, aggregated, and normalized travel patterns.
- Streetlight's data is **validated** against thousands of traffic counters and embedded sensors.

Streetlight's Results

- Route Science® then normalizes and aggregates that data into analytics, delivering unique insights into how cars and trucks move on virtually every road.
- Streetlight is completely accessed via the web.
- It let's you analyze, visualize, and compare travel patterns across Texas.

IH-45 ZEV Project
Streetlight Analysis


I-45 South, DFW to HOU
North Corridor
Henderson
Carthage
Mansfield
Jacksonville
Palestine
Rusk
Mexia
Teague
Waco
Groesbeck
Nacogdoches
Wells
Gatesville
Marlin
Crockett
Lufkin
Killeen
Temple
Cameron
Georgetown
College Station
Round Rock
Sam Houston
National Forest
North Cleveland
Austin
Brenham
The Woodlands
Kingwood
Beaumont
Orange
Lake Charle
STREETLIGHT
Route Segments
TRUCK INDEX
160683-181394
131983-160682
96155-131982
69674-96154
45319-69673
26068-45318
15115-26067
6301-15114
99-6300
Zones


I-45 South, DFW to HOU
South Corridor
Route Segments
TRUCK INDEX
160683-181394
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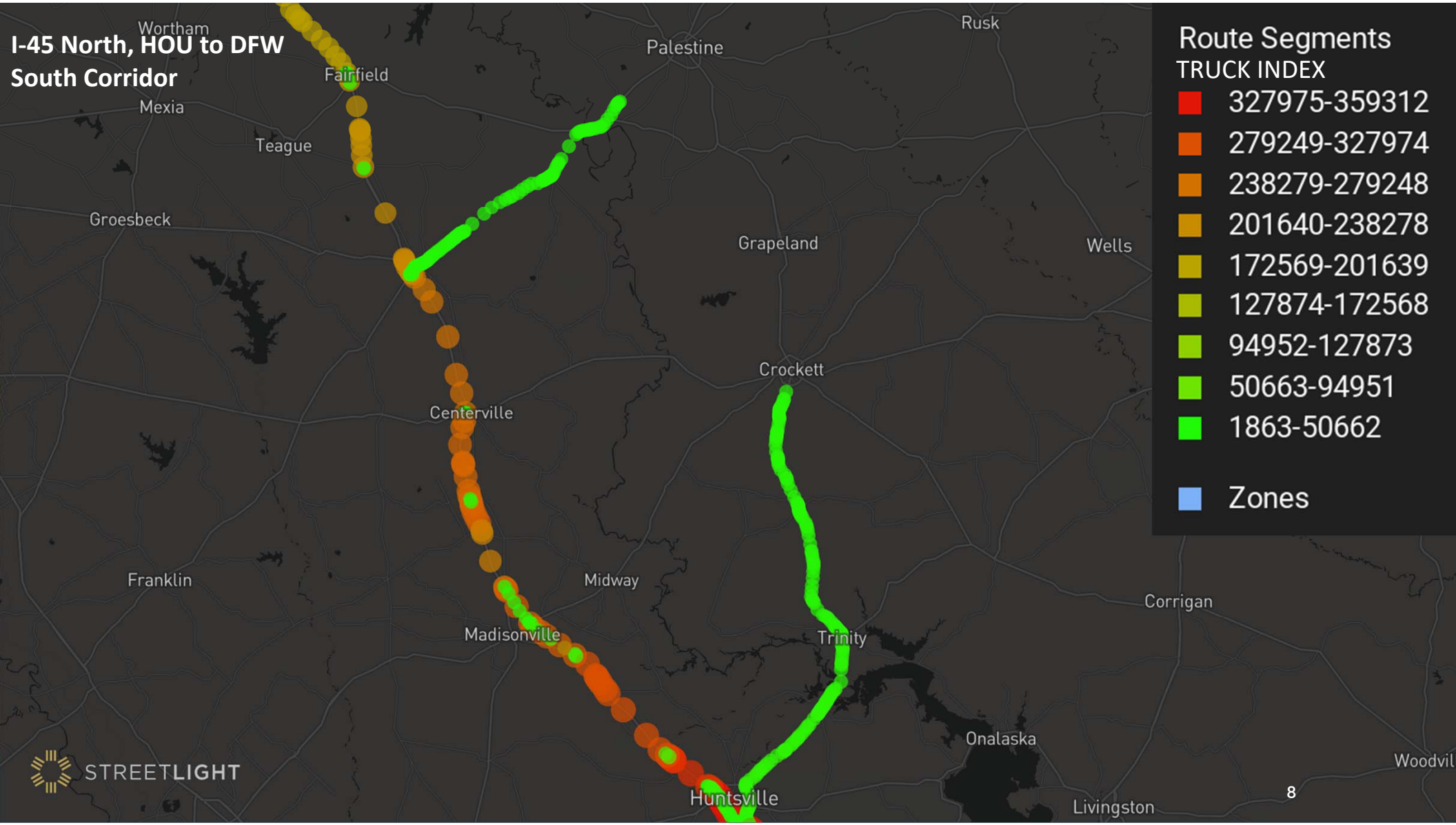
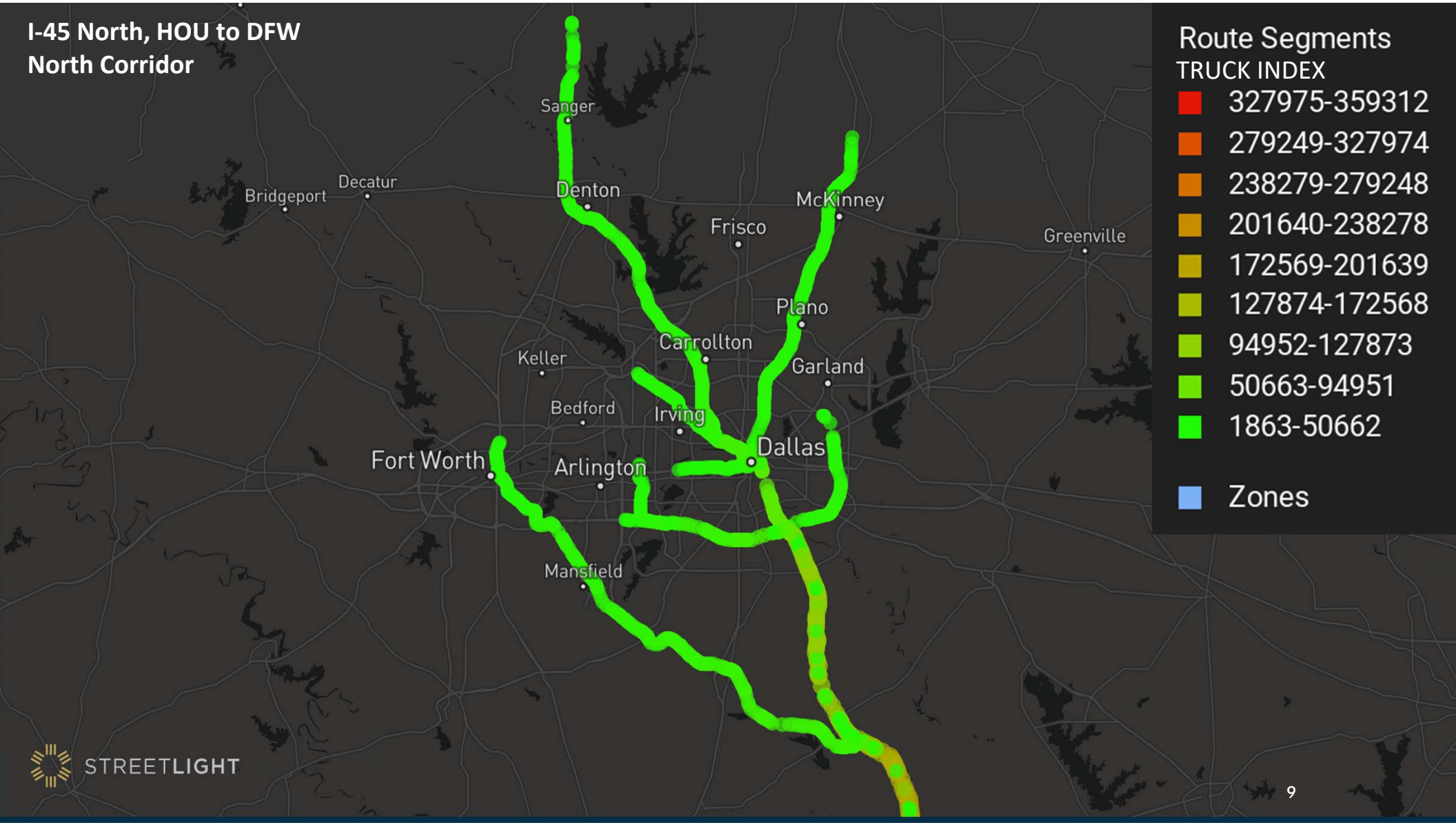
Brenham
The Woodlands
Kingwood
Beaumon
Katy
Houston
Baytown
Sugar Land
Pearland
Gonzales
Shiner
Galveston
El Campo
West Columbia
Cuero
STREETLIGHT


I-45 North, HOU to DFW
South Corridor
Wortham
Fairfield
Mexia
Teague
Palestine
Rusk
Groesbeck
Grapeland
Wells
Crockett
Centerville
Franklin
Midway
Madisonville
Trinity
Corrigan
Onalaska
Huntsville
Livingston
Woodvil
Route Segments
TRUCK INDEX
327975-359312
279249-327974
238279-279248
201640-238278
172569-201639
127874-172568
94952-127873
50663-94951
1863-50662
Zones
STREETLIGHT


I-45 North, HOU to DFW
North Corridor
Sanger
Bridgeport
Decatur
Denton
Frisco
McKinney
Greenville
Plano
Carrollton
Keller
Garland
Bedford
Irving
Dallas
Fort Worth
Arlington
Mansfield
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1863-50662
Zones
STREETLIGHT

COVID VMT Monitor
Streetlight Analysis

Why VMT?

- It is a well-known and widely used measurement
- VMT is correlated with things that matter to transportation practitioners: gas tax revenues, road wear-and-tear, greenhouse gas emission, toll revenue, travel patterns
- Streetlight's VMT tool utilizes its Big Data methods & Cuebiq's real time mobility index to capture and measure all individuals in a region
- Streetlight's VMT considers the frequency of trips, not just the length of the median trip

Streetlight Methodology

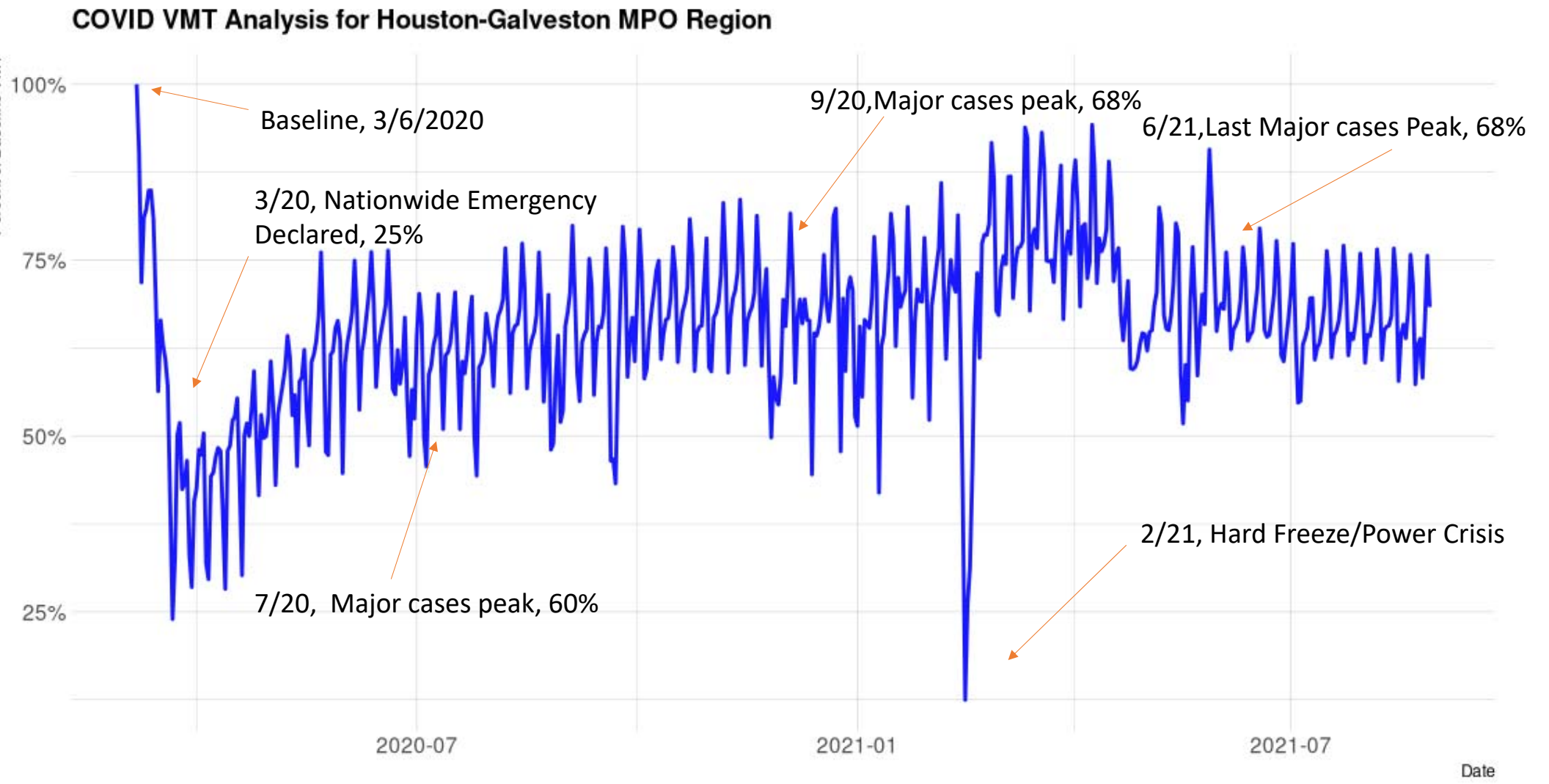
- To capture total travel, Streetlight evaluates both the mean trip length and the total number of trips taken by the full population:

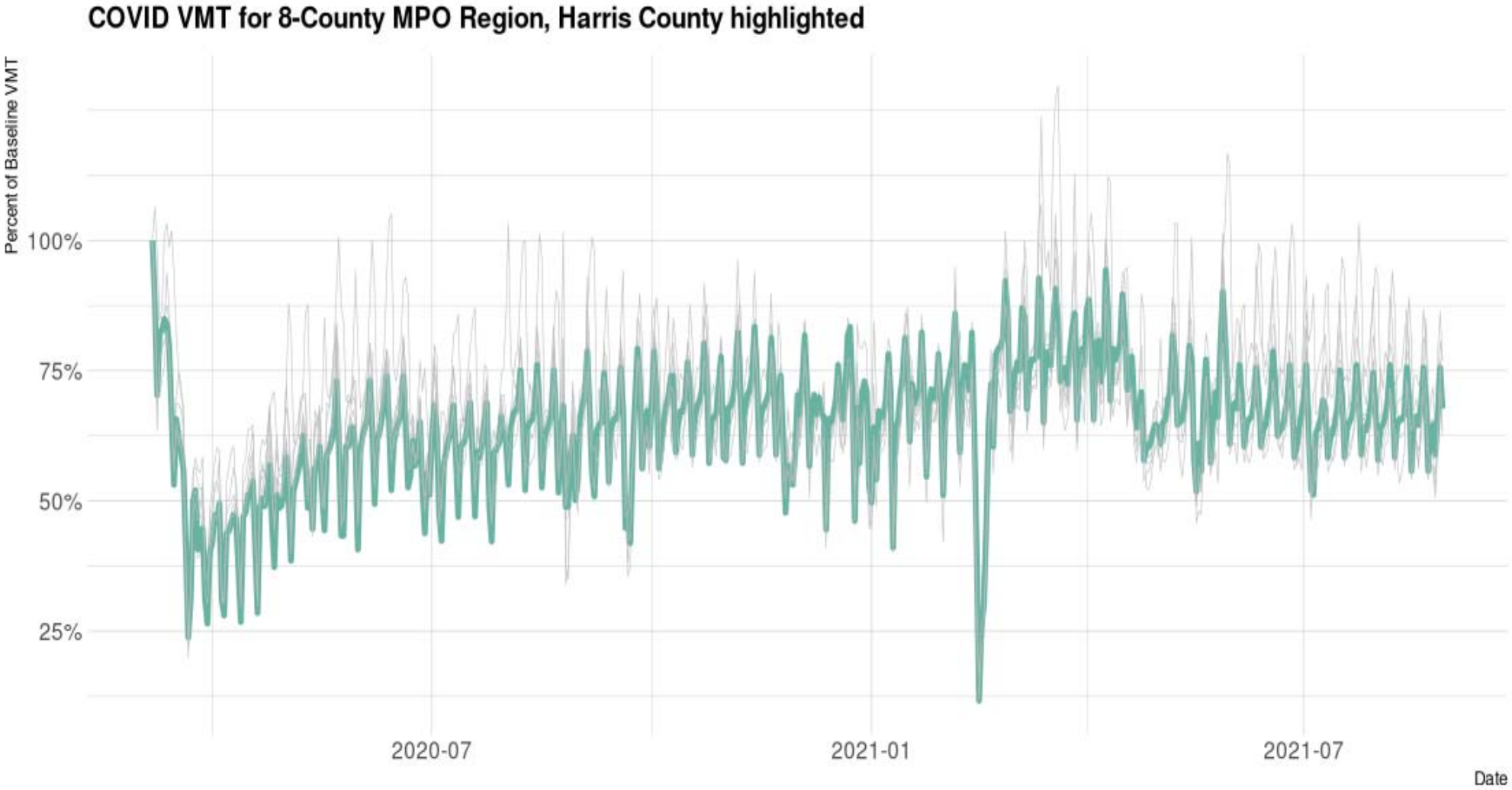
$$VMT = \overline{Trip\ Length} * Total\ \#\ of\ Trips\ by\ All\ Individuals$$

- Trips by individuals are calculated using trips that start or end in a county---do not include trips that pass-through county
- Streetlight's VMT has been validated against FHWA's Traffic Trends/Statistics and permanent counter data

H-GAC COVID VMT Data

- A Baseline (March 6, 2020) VMT was established in the Streetlight Data.
- Next, we divided the total VMT (8-county) for each day by the total baseline VMT (8-county).
- This gave us the percentage of baseline VMT for the entire region, which measures differences in vehicular traffic during the pandemic


COVID VMT Analysis for Houston-Galveston MPO Region
100%
75%
50%
25%
Baseline, 3/6/2020
3/20, Nationwide Emergency Declared, 25%
7/20, Major cases peak, 60%
9/20,Major cases peak, 68%
6/21,Last Major cases Peak, 68%
2/21, Hard Freeze/Power Crisis
2020-07
2021-01
2021-07
Date


COVID VMT for 8-County MPO Region, Harris County highlighted
Percent of Baseline VMT
100%
75%
50%
25%
2020-07
2021-01
2021-07
Date

SE Harris County Regional Study
Truck Cut-Through Analysis

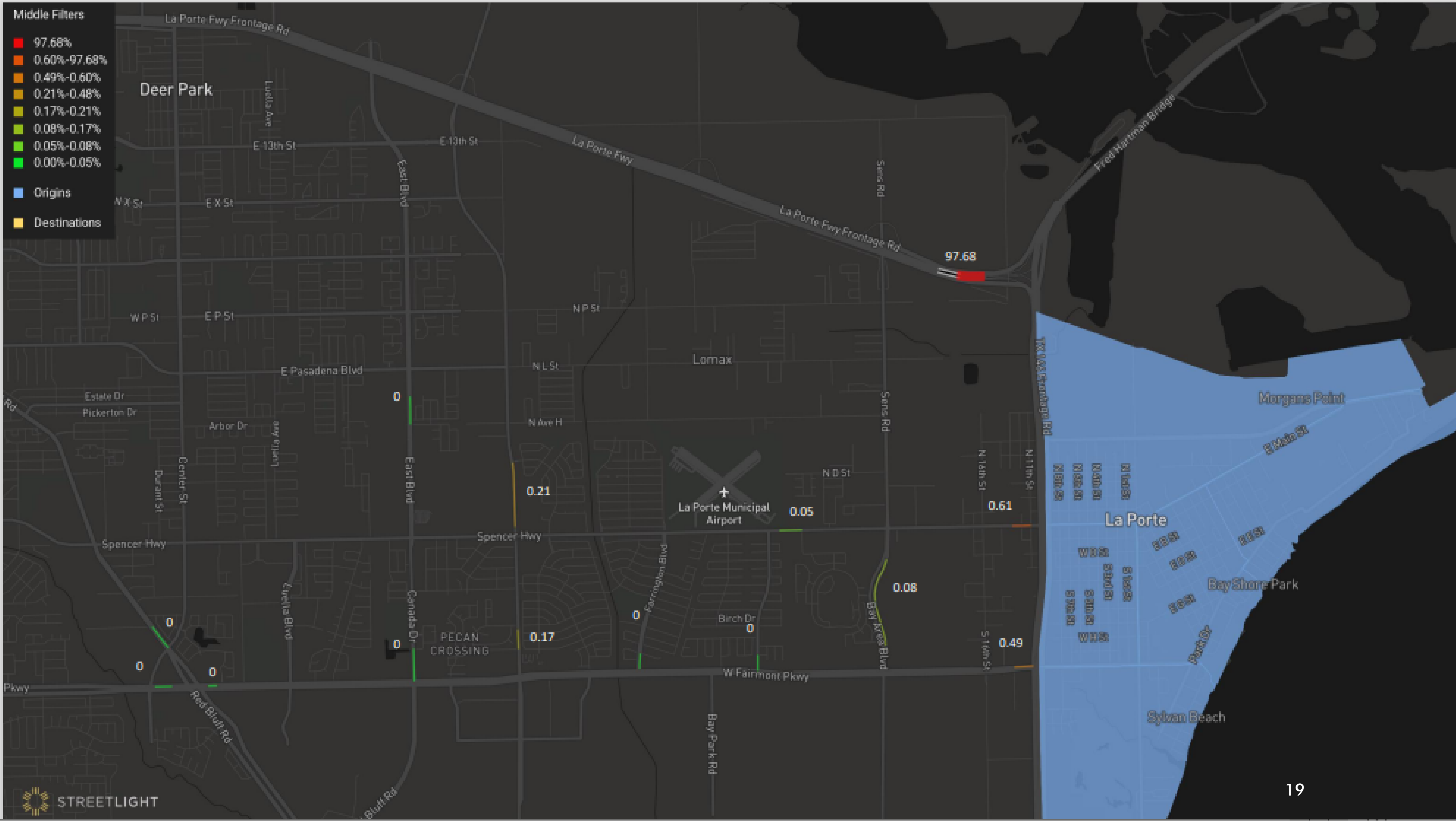
SE Harris County Regional Study Scope

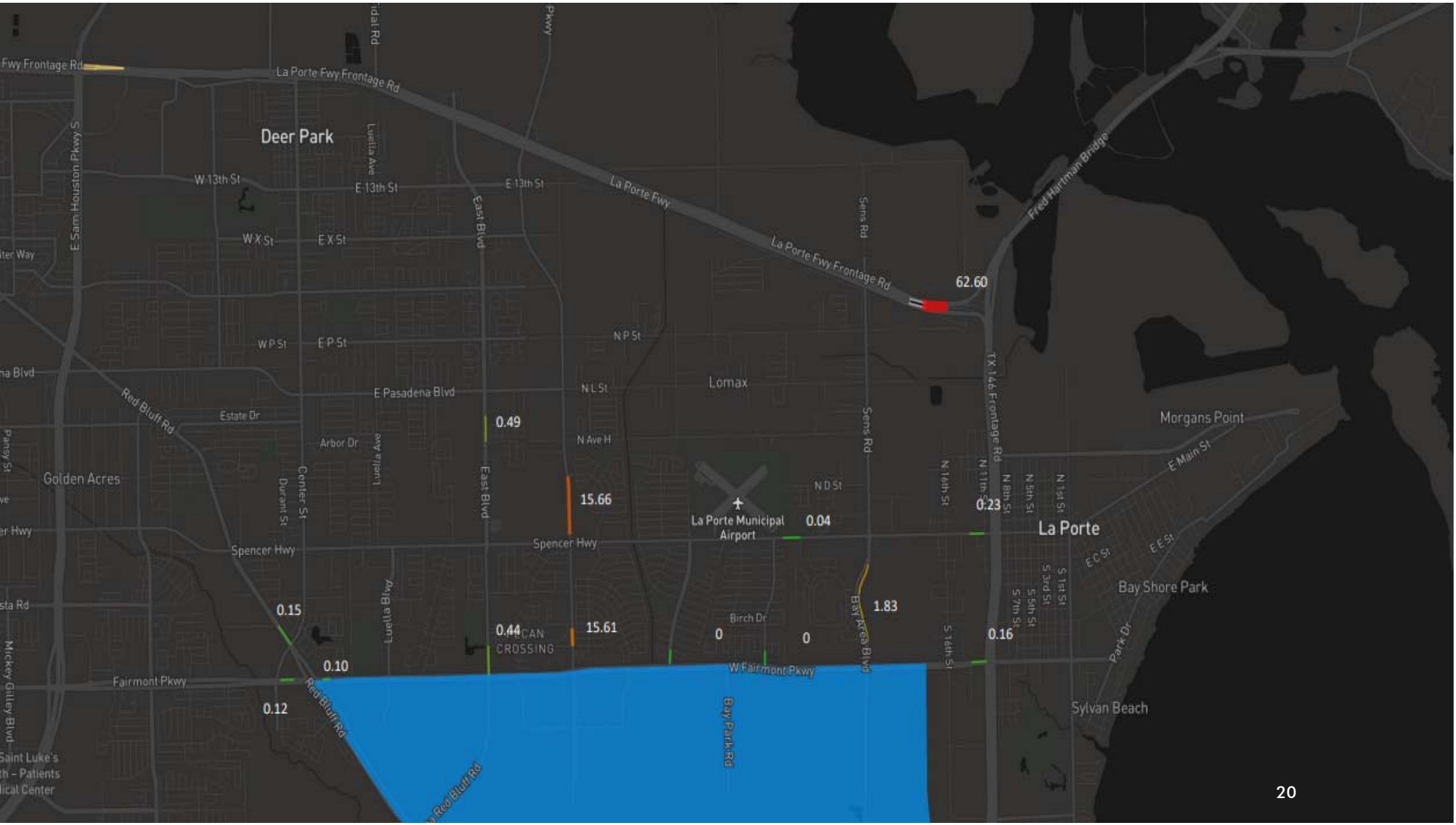
- The purpose of this study is to recommend improvements to address multimodal transportation, development, and economic policy needs in the subregion that aligns with H-GAC's goals of mobility, safety, economic competitiveness, transportation asset condition, and natural and cultural resources.

SE Harris Regional Study Cut-Through Analysis

- A study was initiated to determine if trucks cut-through residential neighborhoods near the Port of Houston: Barbour's Cut & Bayport Industrial Park

  - origin zones were selected on the above locations
  - a known destination zone for trucks moving out of the area was selected (BW 8 at SH 225)
  - middle filters in residential neighborhoods were selected

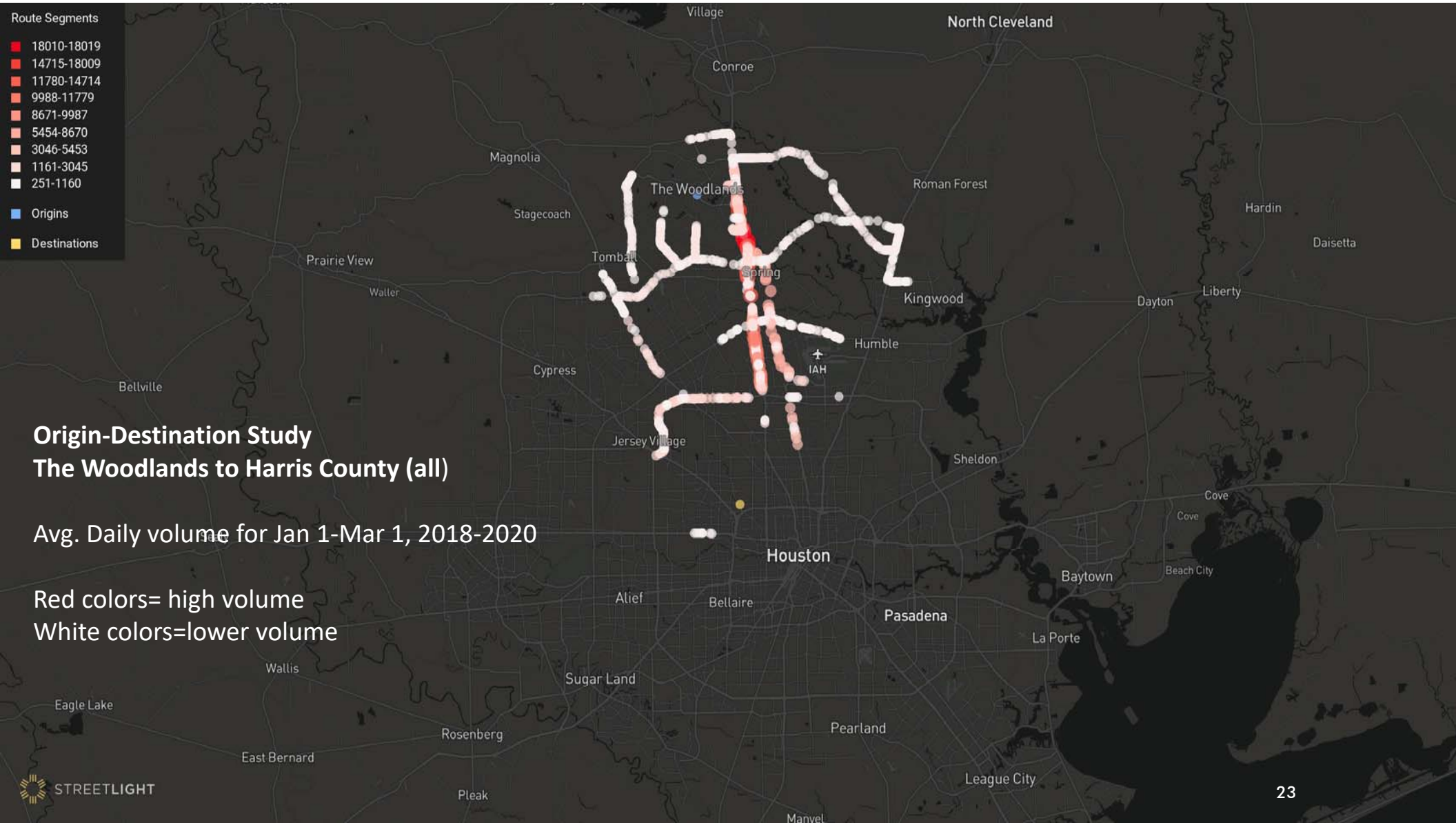

Middle Filters
97.68%
0.60%-97.68%
0.49%-0.60%
0.21%-0.48%
0.17%-0.21%
0.08%-0.17%
0.05%-0.08%
0.00%-0.05%
Origins
Destinations
97.68
0.61
0.49
0.21
0.17
0.08
0.05
0
Deer Park
Lomax
La Porte
La Porte Municipal Airport
Morgans Point
Bay Shore Park
Sylvan Beach
PECAN CROSSING
La Porte Fwy
La Porte Fwy Frontage Rd
Fred Hartman Bridge
Spencer Hwy
W Fairmont Pkwy
E Pasadena Blvd
East Blvd
Sens Rd
Canada Dr
Red Bluff Rd
Bay Park Rd
Bay Area Blvd
Center St
E 13th St
STREETLIGHT


La Porte Fwy Frontage Rd
Deer Park
W 13th St
E 13th St
La Porte Fwy
Fred Hartman Bridge
W X St
E X St
62.60
W P St
E P St
N P St
E Pasadena Blvd
N L St
Lomax
Red Bluff Rd
Estate Dr
0.49
Arbor Dr
N Ave H
Morgans Point
E Main St
Golden Acres
15.66
N D St
0.23
La Porte Municipal Airport
0.04
La Porte
Spencer Hwy
0.15
1.83
0.44
15.61
0
0
0.16
Bay Shore Park
Birch Dr
0.10
Fairmont Pkwy
W Fairmont Pkwy
0.12
Bay Park Rd
Sylvan Beach
Park Dr

Montgomery County Pct. 5 Regional Study

Montgomery County Origin-Destination Analysis

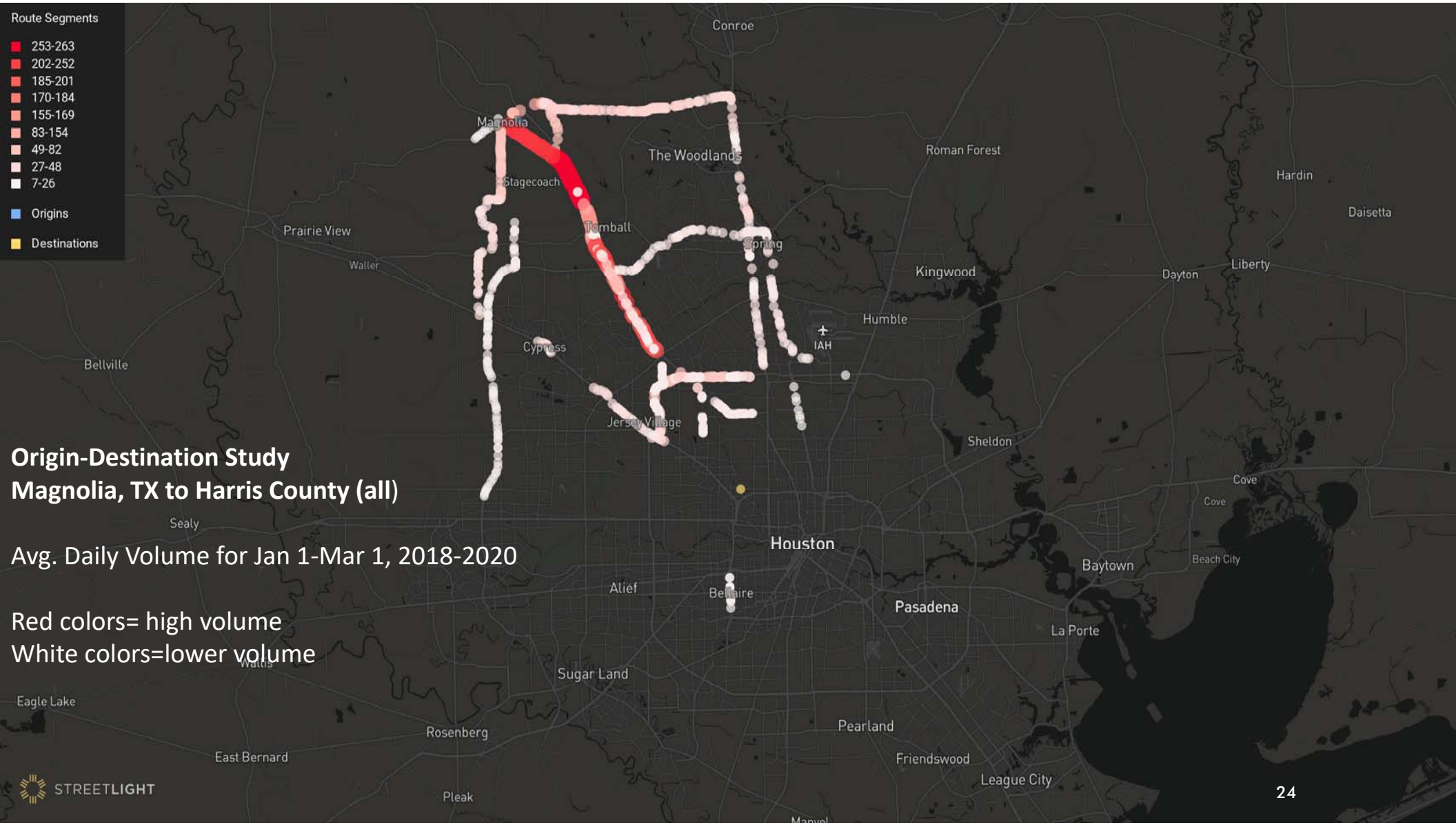
- Origin-Destination analysis was used to determine most frequent routes from cities in Montgomery County to Harris County
- 2 origin zones were selected (The Woodlands and City of Magnolia).
- The destination zone incorporated the entirety of Harris County.
- Dates of analysis: Jan 1-Mar 1 of 2018-2020.
- Results: The most traversed routes to Harris County from both cities were displayed on a map



Origin-Destination Study
The Woodlands to Harris County (all)

Avg. Daily volume for Jan 1-Mar 1, 2018-2020

Red colors= high volume
White colors=lower volume



Origin-Destination Study
Magnolia, TX to Harris County (all)

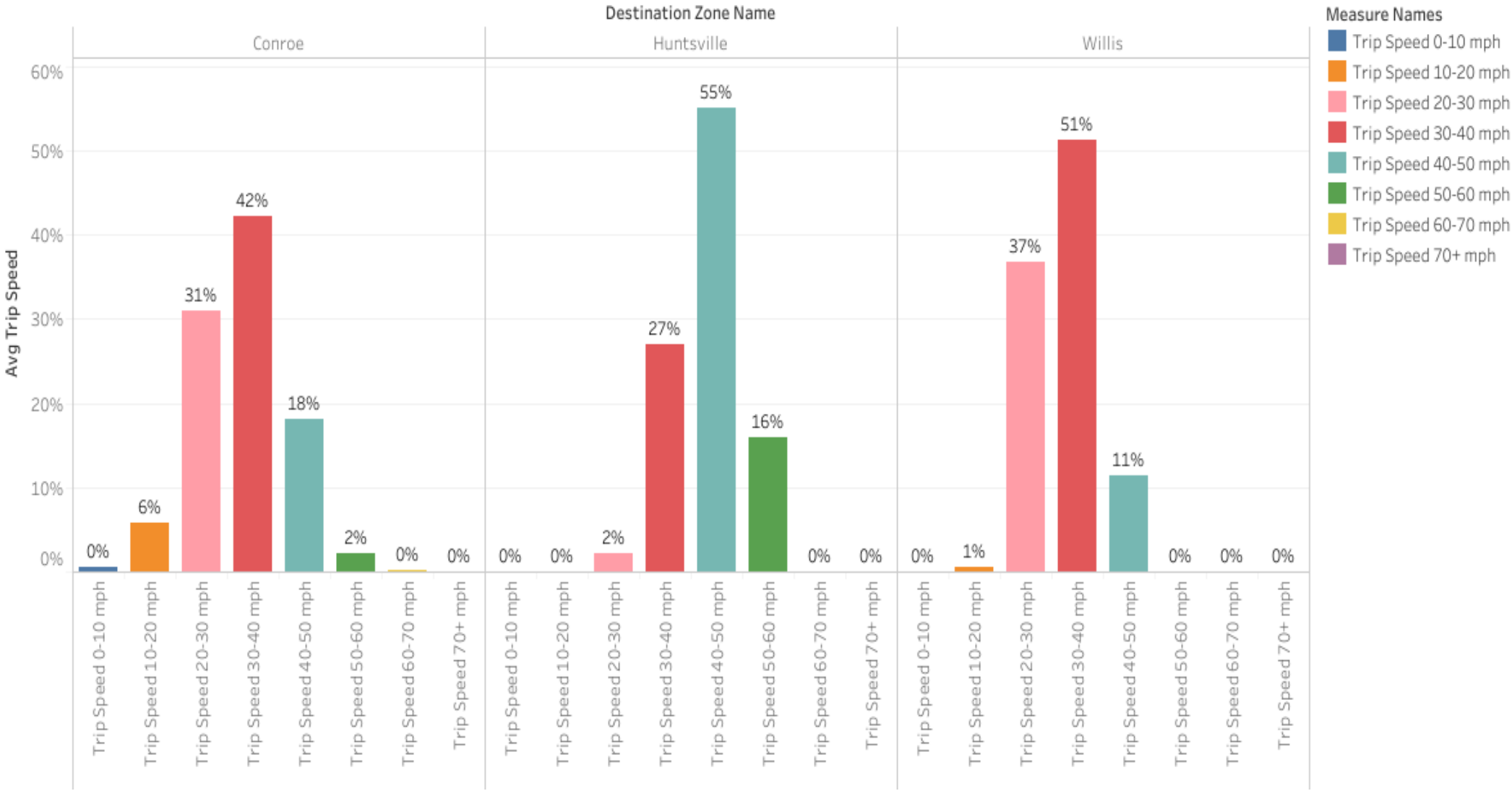
Avg. Daily Volume for Jan 1-Mar 1, 2018-2020

Red colors= high volume
White colors=lower volume

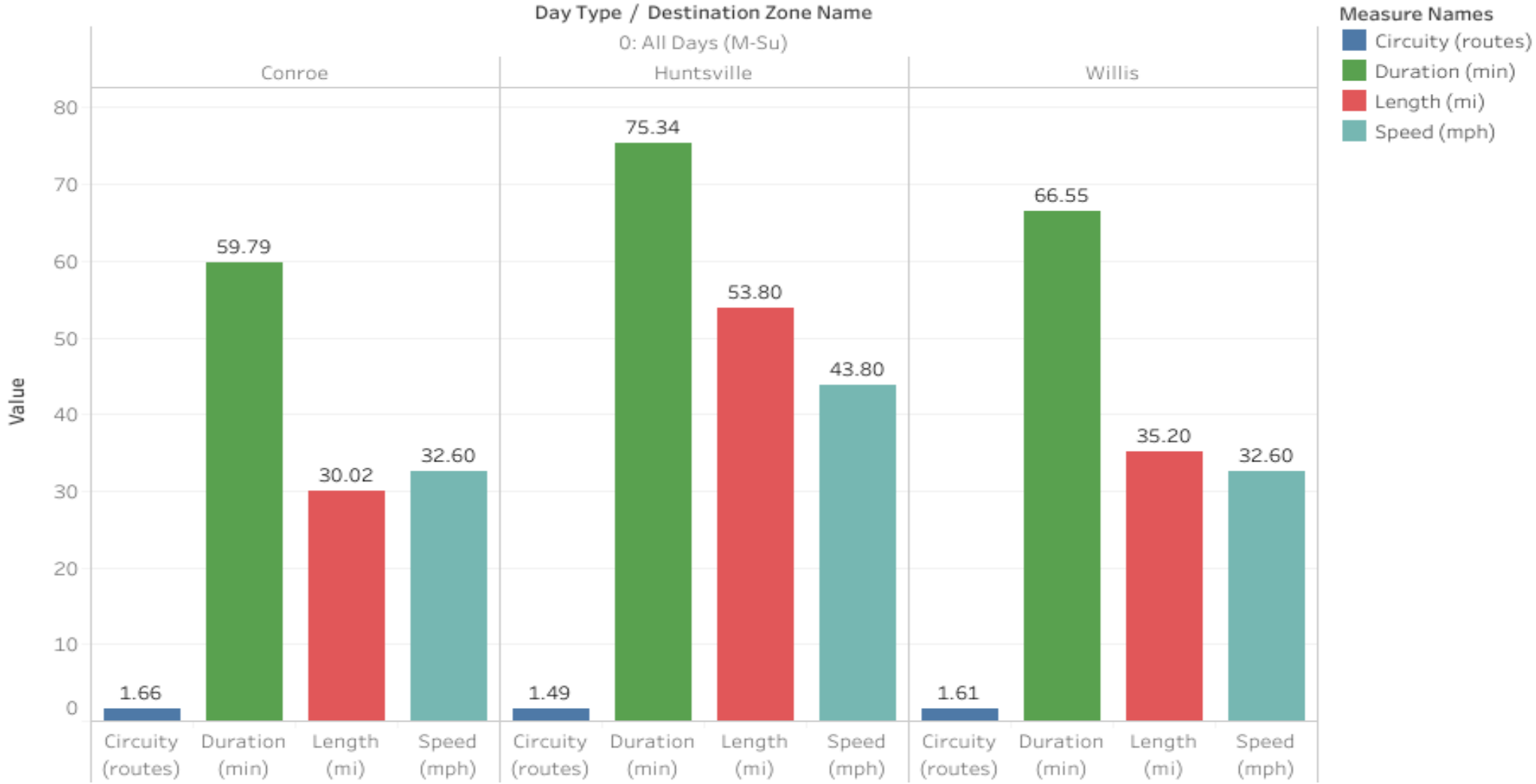
Montgomery County Pct 5, Trip Information Detail

- Trip data (Speed, Circuity, Duration, Length) was queried from Streetlight.
- An origin of the City of Magnolia and 3 destination cities were selected: Cities of Conroe, Huntsville, Willis.
- Query Dates: Jan 1- Mar 1, 2018-2020.
- Two graphs follow: Trip Speed Histogram, Trip Detail Overview

Trip Speed, Origin: Magnolia



Magnolia: Trip Overview [Averages]
Trip Circuity (routes), Trip Duration(min), Trip Length (mi), Trip Speed(mph)



Questions or comments