Texas A&M Transportation Institute

Congestion Management and Analysis Tools

COMPAT – Congestion Management Process Assessment Tool

TCAT – Truck Congestion Analysis Tool

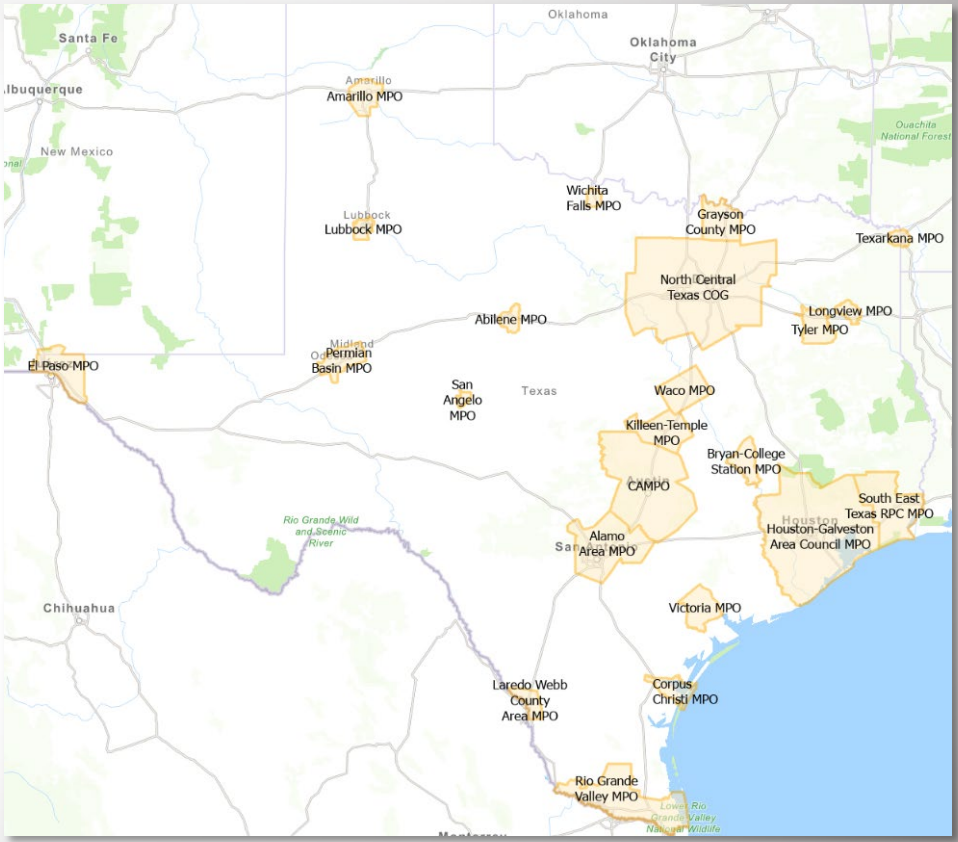
Texas A&M Transportation Institute

COMPAT

Congestion Management Process Assessment Tool

What is COMPAT?

- Planning tool for analyzing and monitoring congestion, with a focus on MPOs for congestion management and monitoring.
- Created over five years ago and maintained by TTI through TxDOT.
- Underlying data – Texas 100 Most Congested Road Segments database.
- At least nine MPOs are using either the Texas 100 Most Congested Road Segments database and/or COMPAT.
- Link: https://compat.tti.tamu.edu/



Where Does COMPAT Fit In?

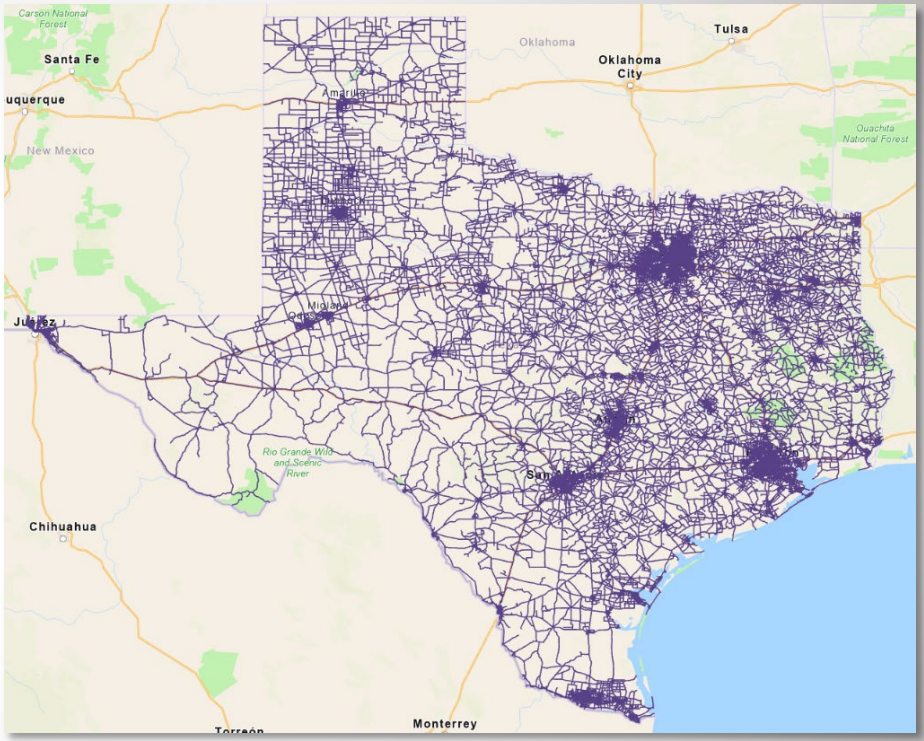
- Step 2, Question 3: Move People and Goods Reliably and Efficiently
  - Does your project help **move people** and goods **reliably and efficiently**?
  - Does it increase or maintain **travel time** reliability?
  - Does it decrease **annual peak hours of excessive delay**?

COMPAT cannot tell you project impact but can indicate where problems exist.

Data Behind COMPAT

Texas 100 Statewide Database

- Produced annually as part of the Texas 100 Most Congested Roadway Segments effort between TTI and TxDOT
- Multiple years of data creating consistency across years
- All measures are stored on TxDOT's network (RIF) at the road segment level.

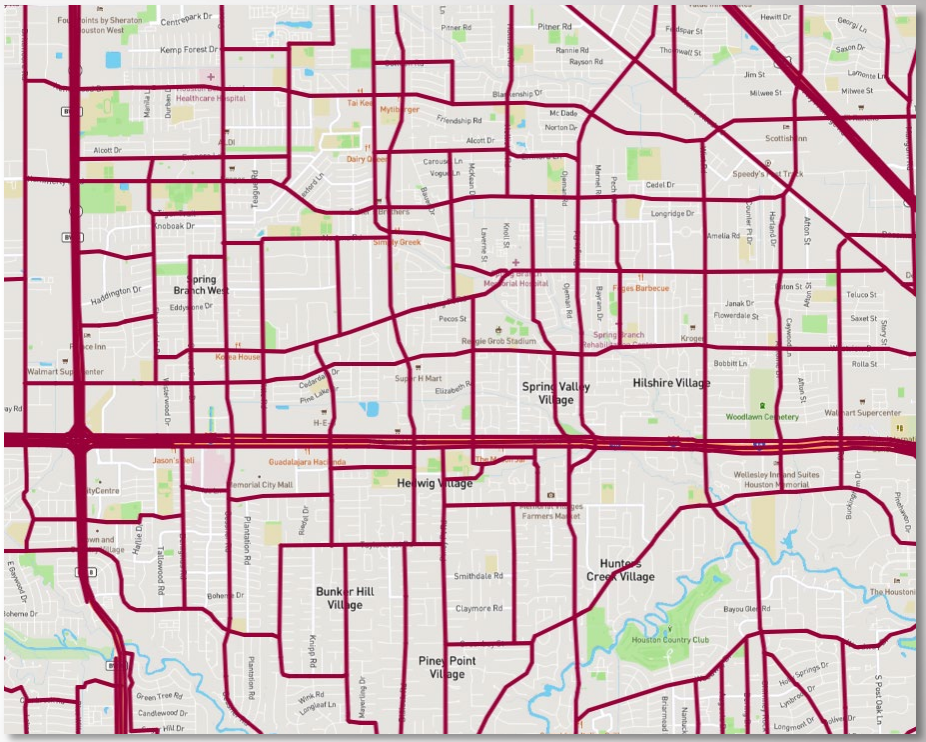


Texas 100 Database Coverage Map

Data Behind COMPAT

Texas 100 Statewide Database

- Majority of roadways above local classification are covered.
- Contains traditional mobility performance measures on annual basis for both all-vehicle and truck-only – delay, delay per mile, congestion cost, travel time index, planning time index, greenhouse gas emissions, others.



Texas 100 Database – Zoomed In Coverage

Key Features of COMPAT

Regional summaries

- Highway system
- Rural/urban
- National Highway System
- Functional classification

Provides for:

- Snapshot of how the area is performing.
- Can download multiple years for trends analysis.

Label	Hours of Delay	Time Index 95	Miles of Travel	Congested Speed	Travel Time Index
Interstate	54,498,327	1.6	46,626,768	55.3	1.26
Other Freeway and Expressway	9,465,258	1.28	26,181,318	60.8	1.09
Other Principal Arterial	42,019,960	1.32	25,596,261	37.2	1.15
Minor Arterial	53,341,190	1.33	30,685,792	30.3	1.15
Interstate	54,498,327	1.6	46,626,768	55.3	1.26
Other Freeway and Expressway	9,465,258	1.28	26,181,318	60.8	1.09
Other Principal Arterial	42,019,960	1.32	25,596,261	37.2	1.15
Minor Arterial	53,341,190	1.33	30,685,792	30.3	1.15
Major Collector	35,668,111	1.35	23,311,681	35.4	1.13
Minor Collector	866,088	1.59	576,787	42.9	1.14

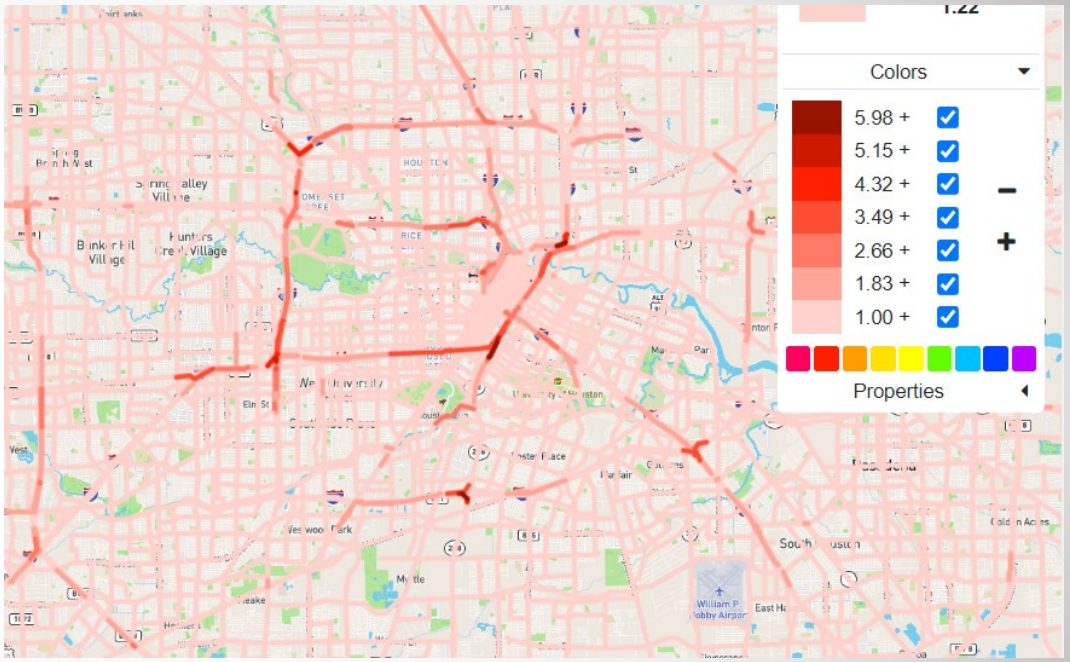
Key Features of COMPAT

Map customization

- Colors
- Additional map layers

Provides for:

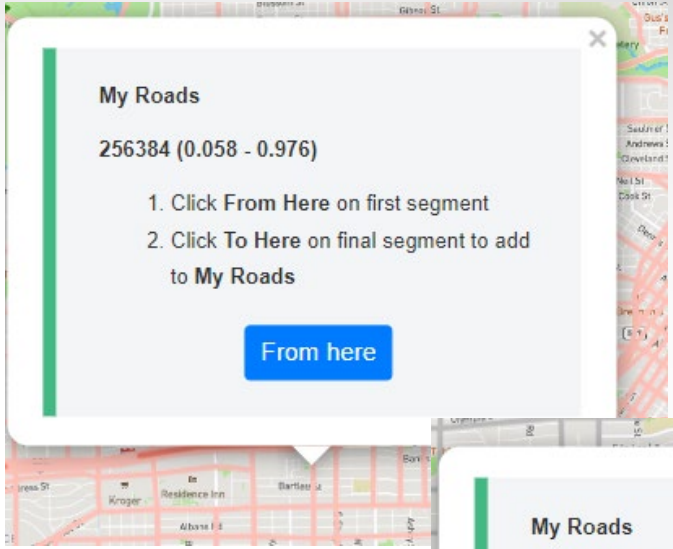
- Visual inspection of the area
- Visual representation and documentation

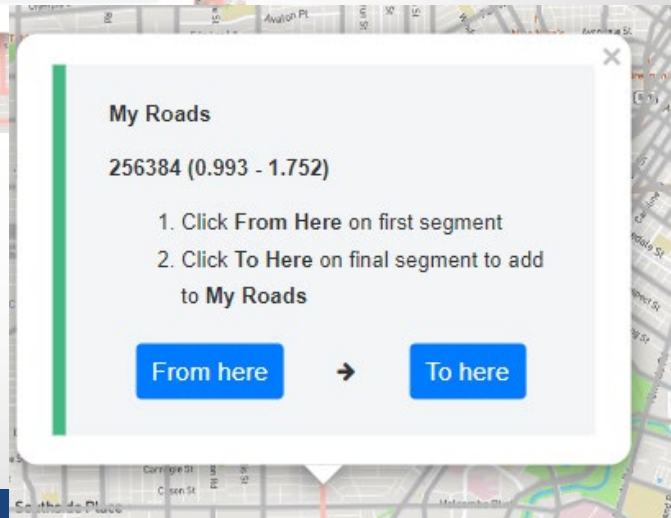


Key Features of COMPAT

Custom corridor creation

- Can create custom corridors for instant analysis on your location.
- Utilizes a from here/to here selection process, essentially putting push pins in a map.



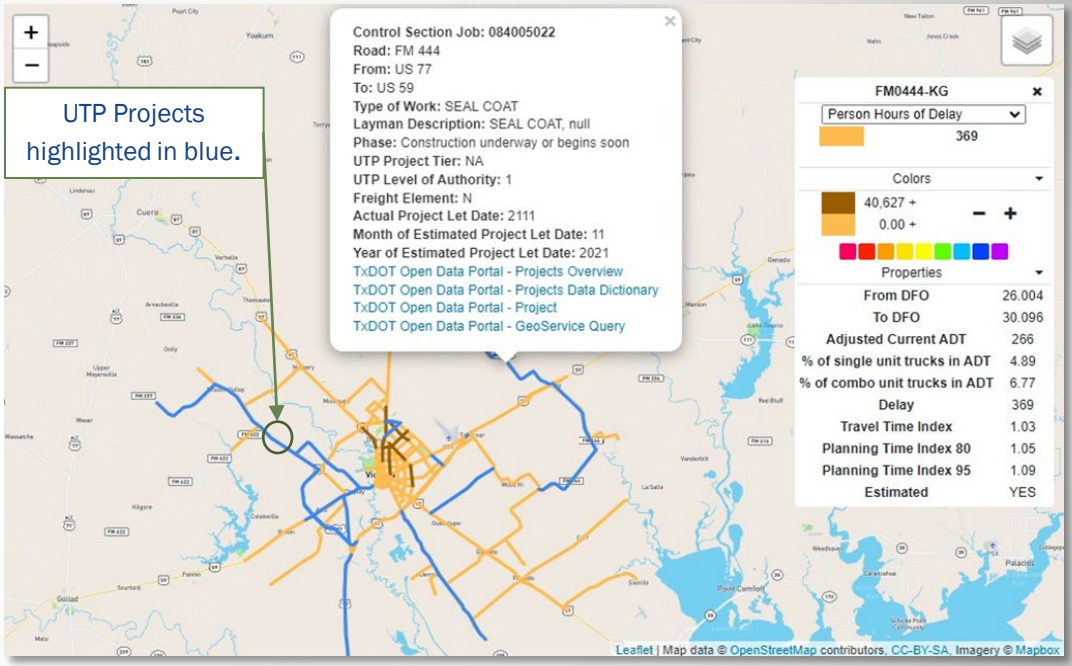


Provides for:

- Snapshot of your roadway is performing.
- Creating multiple corridors around a location can provide insight for those roads not in COMPAT.
- Can download multiple years for trends analysis.

Other Key Features of COMPAT

- Speed profiles – average weekday and weekend day in 15-minute increments.
- Context information – visualizing UTP projects from the TxDOT Open Data Portal.



Key Measures in COMPAT

Question 3: Move People and Goods Reliably and Efficiently

- **Person-hours of delay**, **truck person-hours of delay** - difference in travel time from uncongested traffic and congested traffic. This is for all persons in vehicles traveling for a year.

- **Travel time index**, **truck travel time index** - ratio of the peak period travel time as compared to the freeflow travel time. A value of 1.30 indicates it takes 30 percent longer to complete the peak period trip than the same trip during light traffic conditions.

- **Planning Time Index 95**, **truck Planning Time Index 95** - travel time reliability measure representing the total travel time that should be planned for a peak period trip to be on time 19 out of 20 times the trip is made. Computed as the 95th percentile travel time divided by the freeflow travel time. A value of 1.50 indicates that 50 percent additional travel time should be added to the trip compared to the same trip in light traffic to be on time 95 percent of the time.

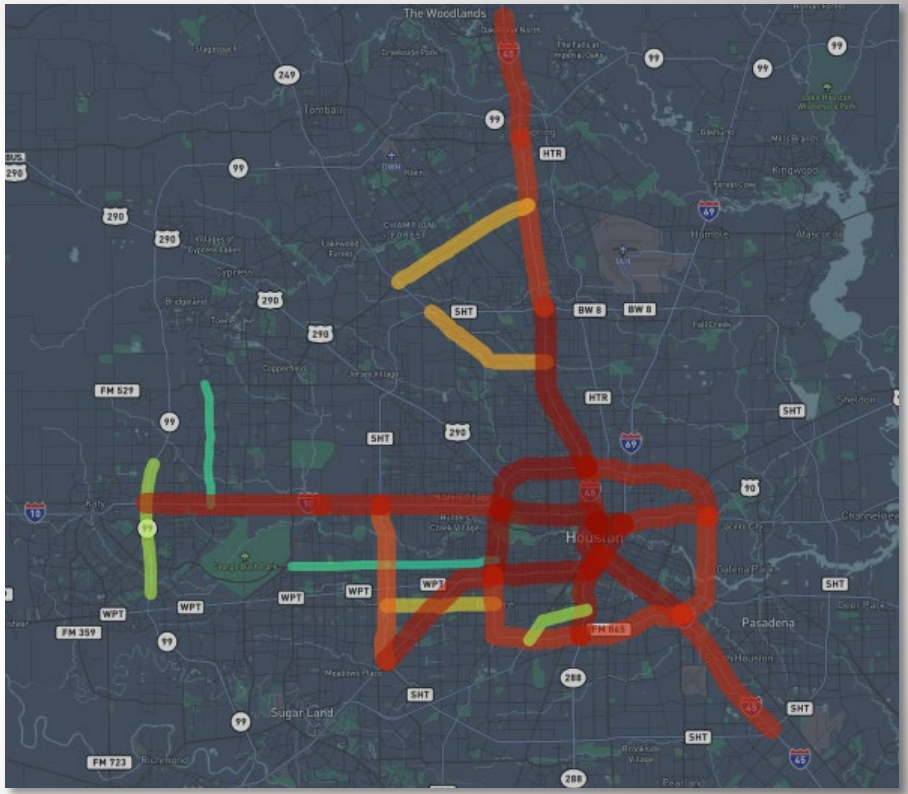
Texas A&M Transportation Institute

TCAT

Truck Congestion Analysis Tool

What is TCAT?

- Planning tool for analyzing and monitoring congestion, with a focus on trucks.
- Created over five years ago and maintained by TTI through TxDOT.
- Underlying data – Texas 100 Most Congested Road Segments database.
- Includes locations of Top 100 Most Congested Road Segments.
- While focus is on trucks, all-vehicles category included.
- Statewide coverage
- Link: https://tcat.tti.tamu.edu/



2022 Truck Top 100 Most Congested Road Segments

Where Does TCAT Fit In?

- Step 2, Question 4: Strengthen Regional and Economic Competitiveness
  - Does your project help strengthen regional and economic competitiveness?
  - Does it increase or maintain **truck travel time** reliability (TTTR)?

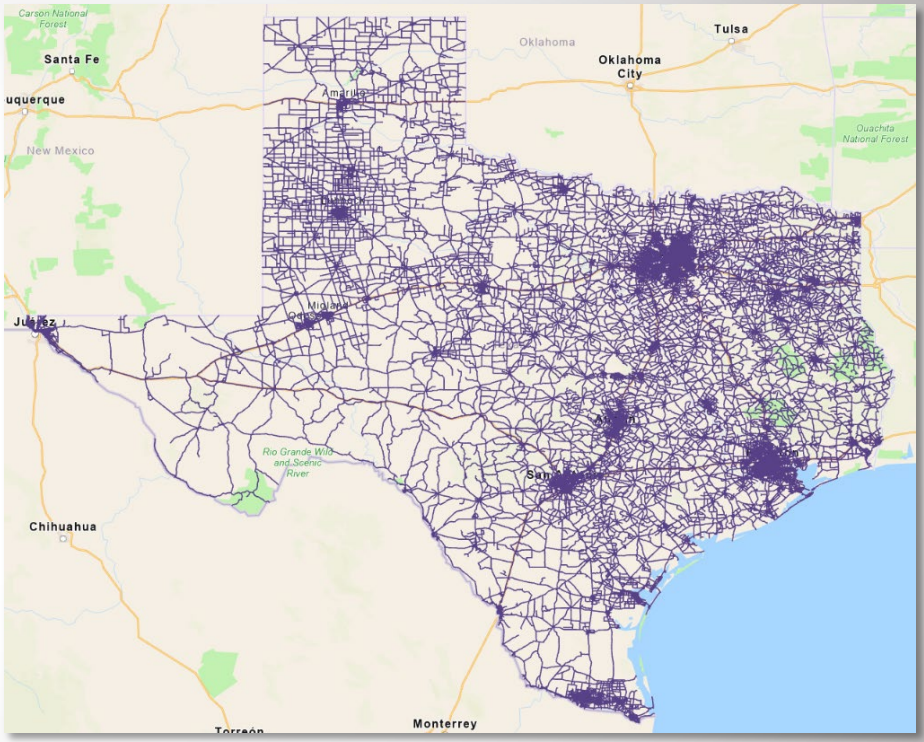
- Step 2, Question 5: Conserve and Protect Natural and Cultural Resources
  - Does your project help conserve and mitigate natural and cultural resources?
  - Does your project **avoid** or mitigate impacts to natural or cultural resources?
  - Does your project contribute to reduction of NOx, VOC, or **GHG** emissions?

TCAT cannot tell you project impact but can indicate where problems exist.

Data Behind TCAT

Texas 100 Statewide Database

- Produced annually as part of the Texas 100 Most Congested Roadway Segments effort between TTI and TxDOT
- Multiple years of data creating consistency across years
- All measures are stored on TxDOT's network (RIF) at the road segment level – on-system roadways.



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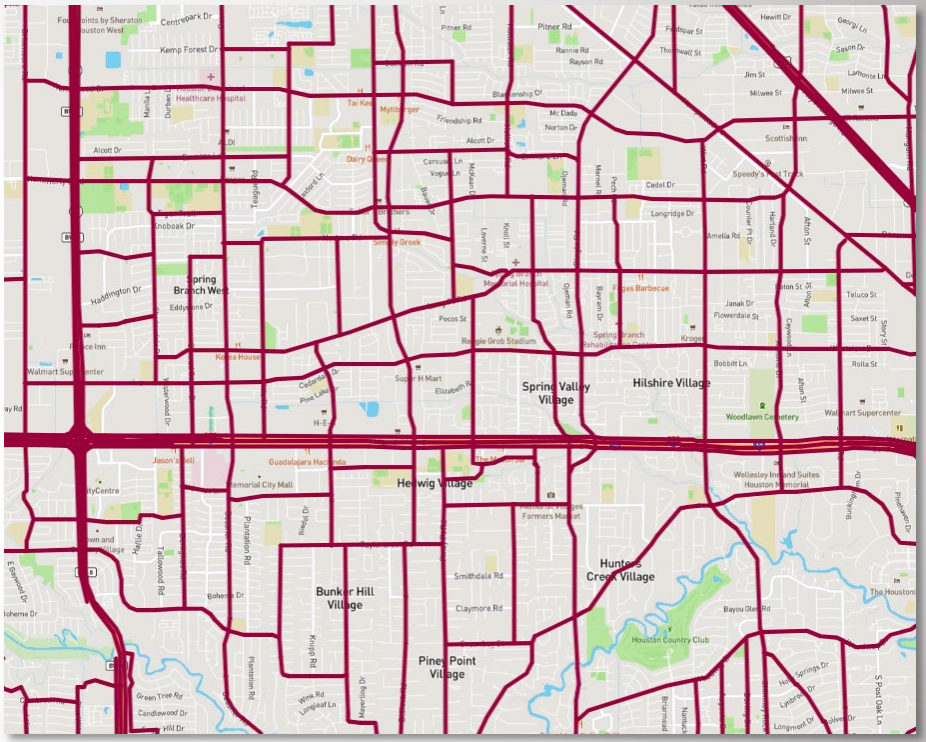

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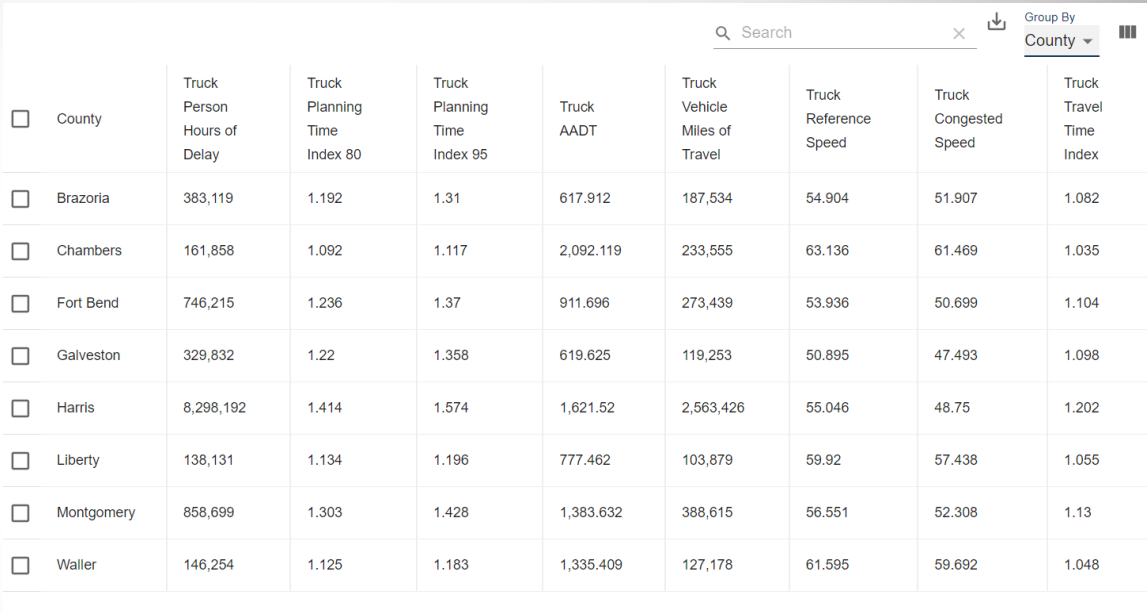

Search

Group By: County

County	Truck Person Hours of Delay	Truck Planning Time Index 80	Truck Planning Time Index 95	Truck AADT	Truck Vehicle Miles of Travel	Truck Reference Speed	Truck Congested Speed	Truck Travel Time Index
Brazoria	383,119	1.192	1.31	617.912	187,534	54.904	51.907	1.082
Chambers	161,858	1.092	1.117	2,092.119	233,555	63.136	61.469	1.035
Fort Bend	746,215	1.236	1.37	911.696	273,439	53.936	50.699	1.104
Galveston	329,832	1.22	1.358	619.625	119,253	50.895	47.493	1.098
Harris	8,298,192	1.414	1.574	1,621.52	2,563,426	55.046	48.75	1.202
Liberty	138,131	1.134	1.196	777.462	103,879	59.92	57.438	1.055
Montgomery	858,699	1.303	1.428	1,383.632	388,615	56.551	52.308	1.13
Waller	146,254	1.125	1.183	1,335.409	127,178	61.595	59.692	1.048

Provides for:

- Snapshot of how the area is performing.
- Can download multiple years for trends analysis.

Key Features of TCAT

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- Colors
- Additional map layers

Provides for:

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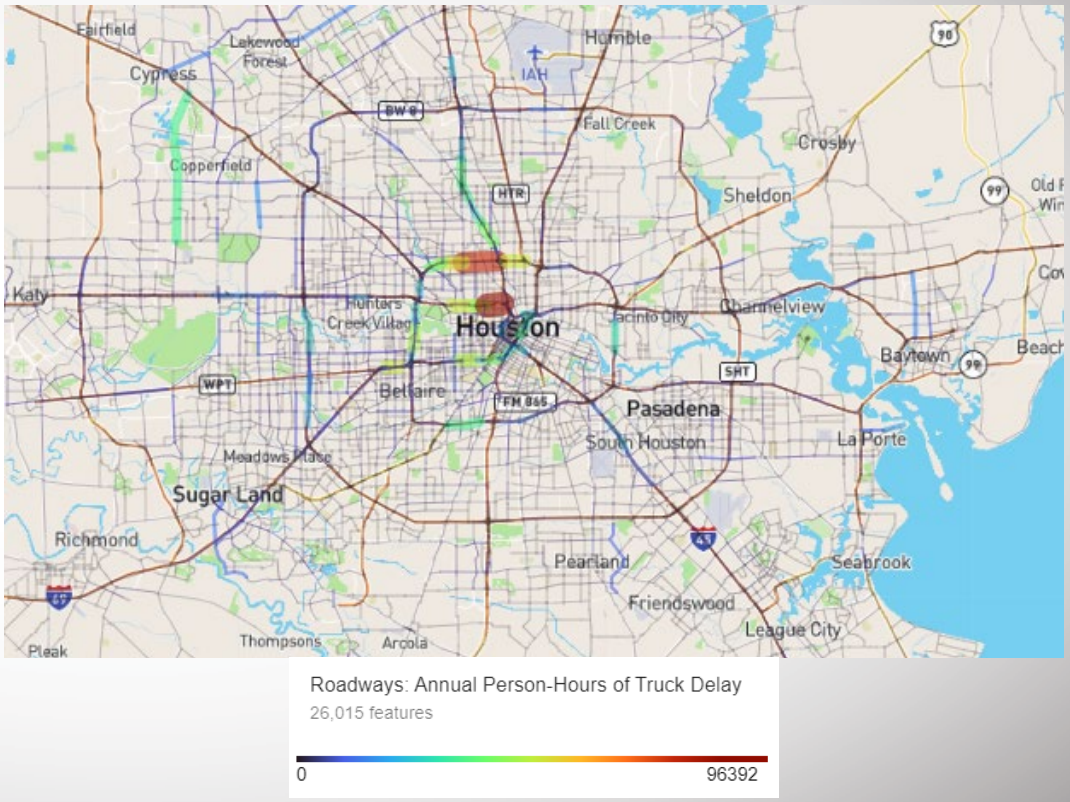

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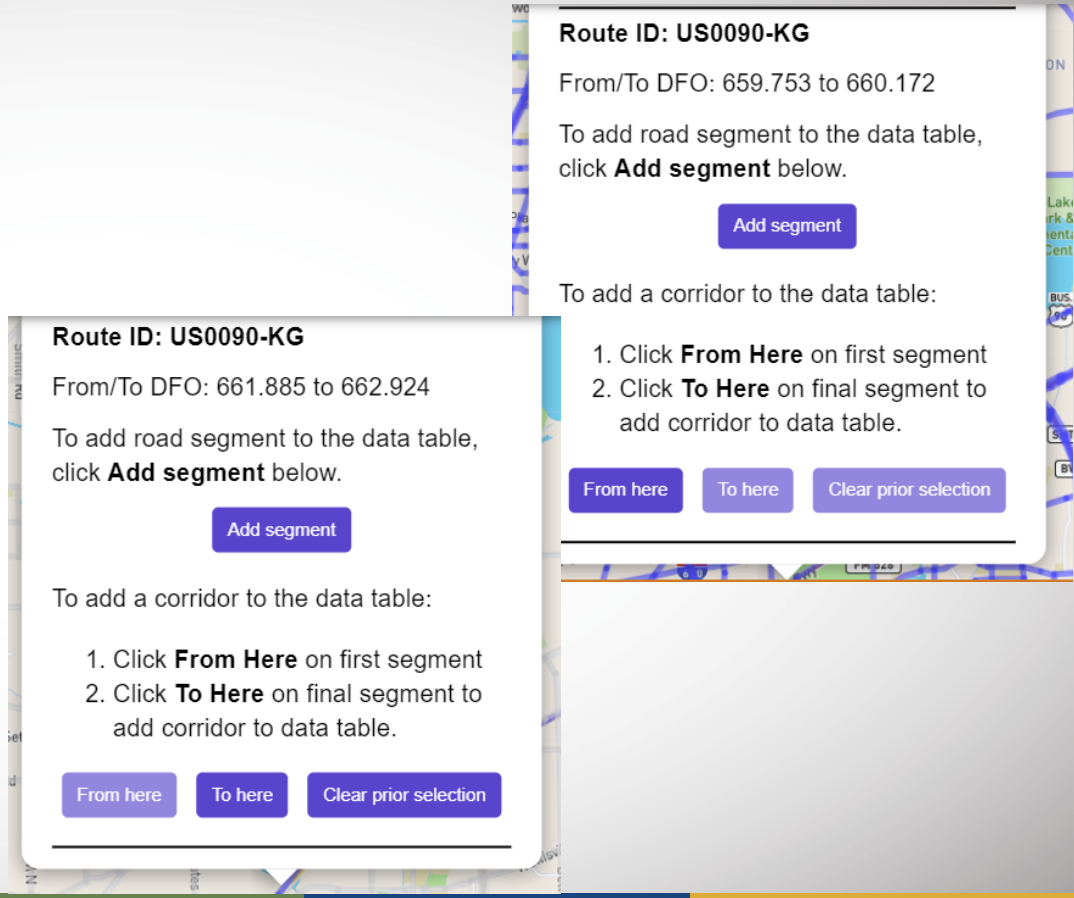
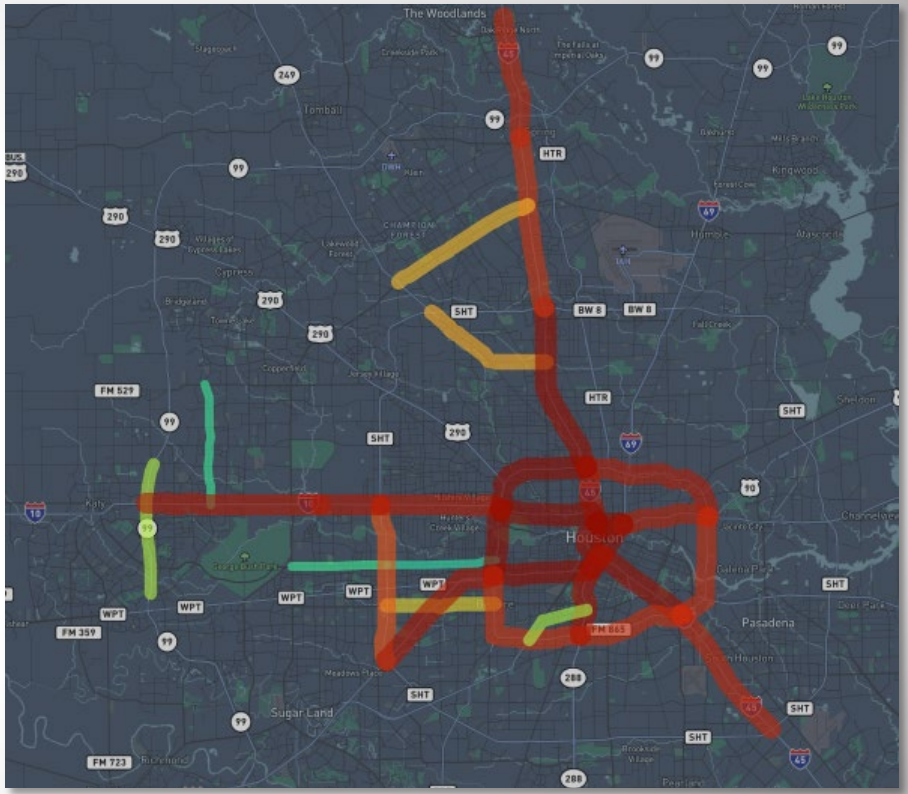


Key Features of TCAT

Other key features

- Context information – visualizing UTP projects from the TxDOT Open Data Portal.
- Various geographies – TxDOT district, county, MPO, etc.
- Locations of Top 100 Most Congested Road Segments.



2022 Truck Top 100 Most Congested Road Segments

Key Data In TCAT

Question 4: Strengthen Regional and Economic Competitiveness

- **Truck person-hours of delay** - difference in travel time from uncongested traffic and congested traffic. This is for all persons in vehicles traveling for a year.
- **Truck travel time index** - ratio of the peak period travel time as compared to the freeflow travel time. A value of 1.30 indicates it takes 30 percent longer to complete the peak period trip than the same trip during light traffic conditions.
- **Truck Planning Time Index 95** - travel time reliability measure representing the total travel time that should be planned for a peak period trip to be on time 19 out of 20 times the trip is made. Computed as the 95th percentile travel time divided by the freeflow travel time. A value of 1.50 indicates that 50 percent additional travel time should be added to the trip compared to the same trip in light traffic to be on time 95 percent of the time.
- **Congested costs** - annual costs to travelers due to such factors as loss productivity and extra vehicle wear. Annual cost of congestion based on wasted time and fuel.

Key Data In TCAT

Question 5: Conserve and Protect Natural and Cultural Resources

- **Congested CO2 (GHG)** - annual pounds of extra greenhouse gas emissions (CO2) from vehicles in congested conditions.
- **Normal CO2** – annual pounds of greenhouse gas (CO2) emissions from all travel.

Questions ?

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