



Air Quality Health Monitoring Task Force Meeting

October 2024



Welcome!

This meeting is being recorded. The recording and meeting materials will be available on our website.

Please sign-in on the sign-up sheet being passed in the room.

Zoom attendees:

Please enter your name, title, and organization into the chat box.

Please make sure your microphones are muted during the presentations.

Utilize the raise your hand feature or the chat box during the presentation to help minimize distractions to the presenter.

Questions will be addressed at the end of each presentation.

When asking a question, please state your name and organization.





Air Quality Monitoring Policy

Jenny Narvaez | Program Manager | 10.24.2024



History for Local Monitoring Efforts

Local entities engaged in non-regulatory monitoring

Local government's request for regional air monitoring program (3/2019)

- Support decisions to enhance public health

NCTCOG Air Quality Health Task Force (12/2019)

Consistency

Spatial coverage

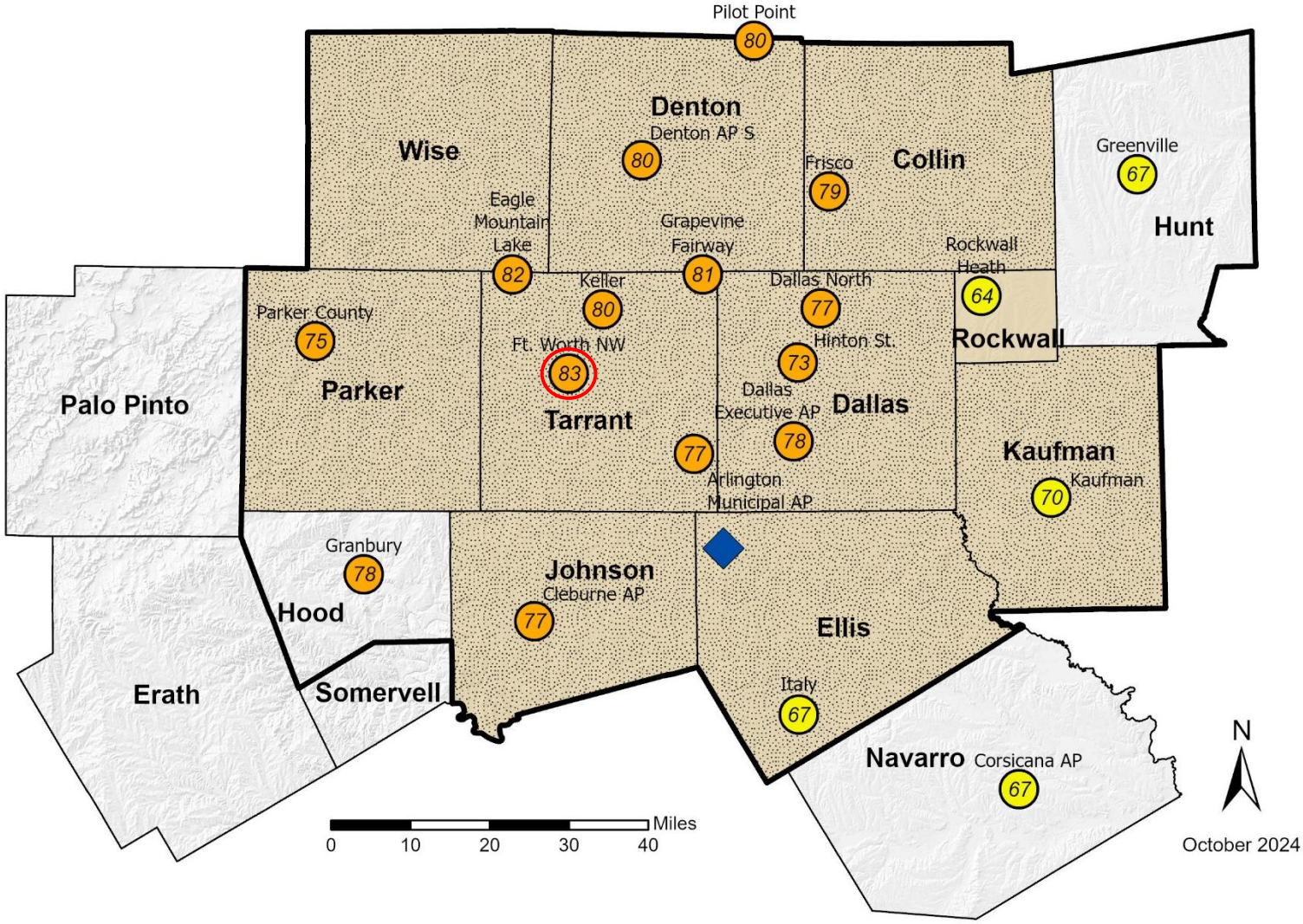
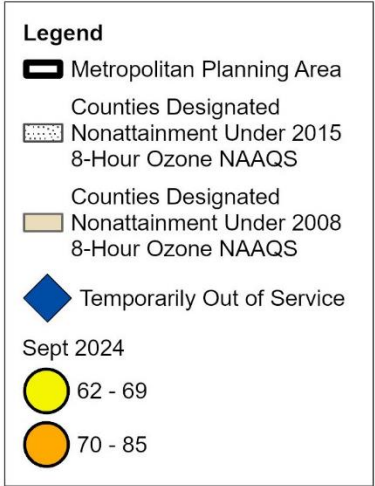
Temporal coverage

Seasonal changes

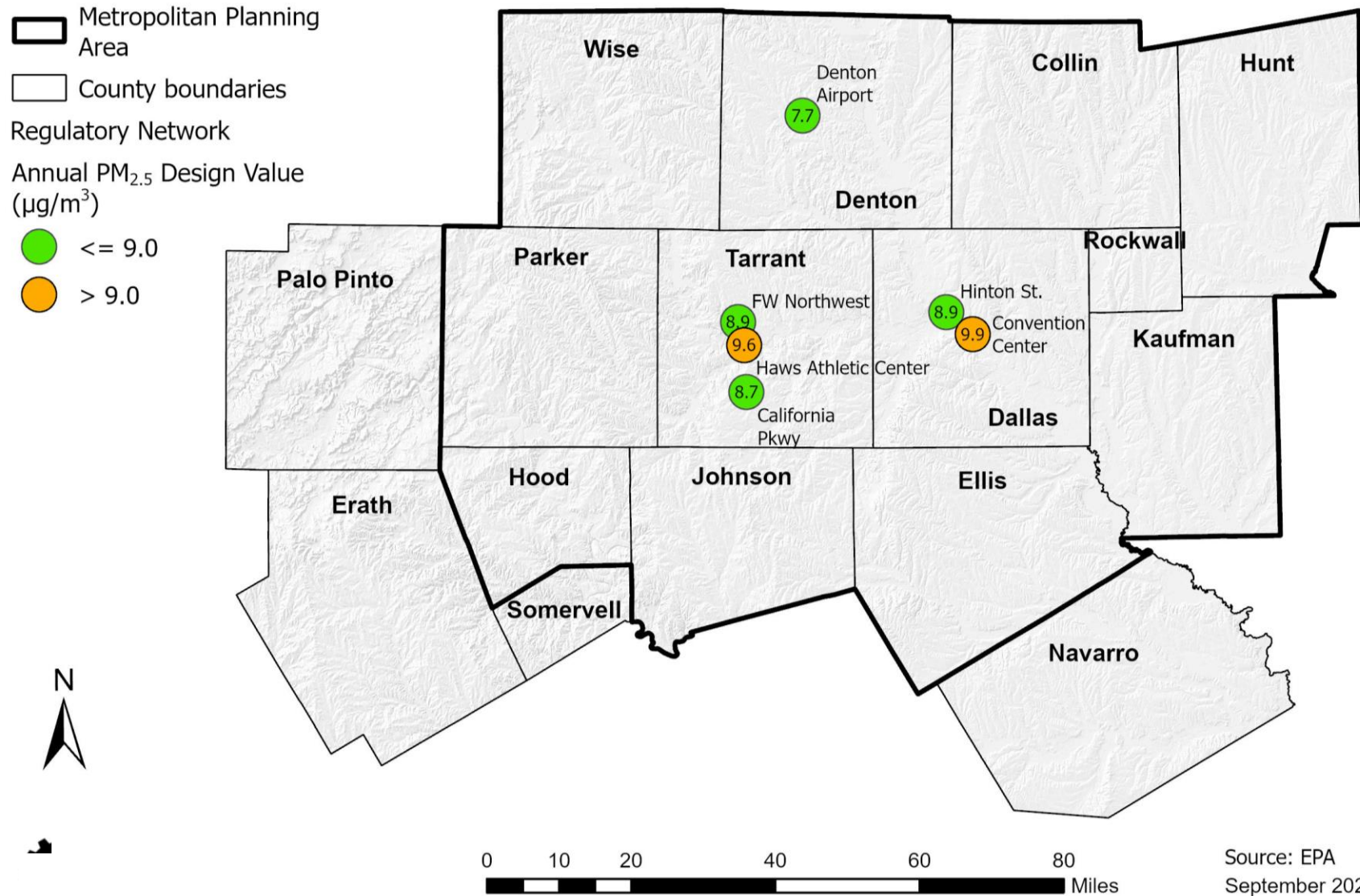
Special areas of interest (e.g., Hot-Spot-Detection, local industries, LIDAC, major transportation arteries)



Ozone Nonattainment as of October 2024



2023 PM_{2.5} Annual Design Values



Why a Non-Regulatory Monitoring Network?

Track Movement of Air Pollutants Into and Within DFW

Improve Information about Spatial and Temporal Pollution Distribution

Assist With Impactful Control Measures

Transportation (STTC/RTC)

Other Sources

Correlate to Health Impacts

Core Sample Size May Have Erroneous Results



Air Quality Monitoring Policy

Identify Funding Sources

- Federal, state, and local funding opportunities
- Explore innovative financing options

Develop Partnerships: local governments and industry leaders

- Identify suitable locations for monitor deployment
- Local community engagement
- Ensure reputable technology

Implementation and Deployment

- High-quality, non-regulatory monitors
- Proper installation and maintenance
- Data management and storage



Air Quality Monitoring Policy

Public Engagement and Communication

- Display air quality data collected from monitors
- One-stop-shop for air quality and health data results
- Develop educational materials
- Engage residents and stakeholders

Evaluation and Reporting

- Assess performance and impact of air quality monitors
- Provide updates on findings and insights gained
- Adjust strategies and actions based on evaluation

Ongoing Effort to Bring Low-Cost Monitors to Region

- Enhance spatial coverage and evaluate local condition



Requested RTC Action – October 17, 2024

Staff requested RTC approval of the

Air Quality Monitoring Policy to

- ✓ Develop local partnerships
- ✓ Pursue upcoming federal and other funding opportunities
- ✓ Extend the non-regulatory monitoring network
- ✓ Develop and provide a collective source for health-related air quality information
- ✓ Enhance public engagement and information



Moving Forward

The Air Quality Monitoring Policy was approved by the RTC.

What are your current efforts in air monitoring?

What additional monitoring would you like to conduct?

What obstacles are you currently facing?



For More Information

CHRIS KLAUS
Senior Program Manager
cklaus@nctcog.org
817-695-9286

JENNY NARVAEZ
Program Manager
jnarvaez@nctcog.org
817-608-2342

VIVEK THIMMAVAJJHALA
Transportation System Modeler
vthimmavajjhala@nctcog.org
817-704-2504

DANIELA TOWER
Air Quality Planner
dtower@nctcog.org
817-704-5629

ANALISA GARCIA
Air Quality Planner
agarcia@nctcog.org
817-695-9170

<https://www.nctcog.org/trans/quality/air>



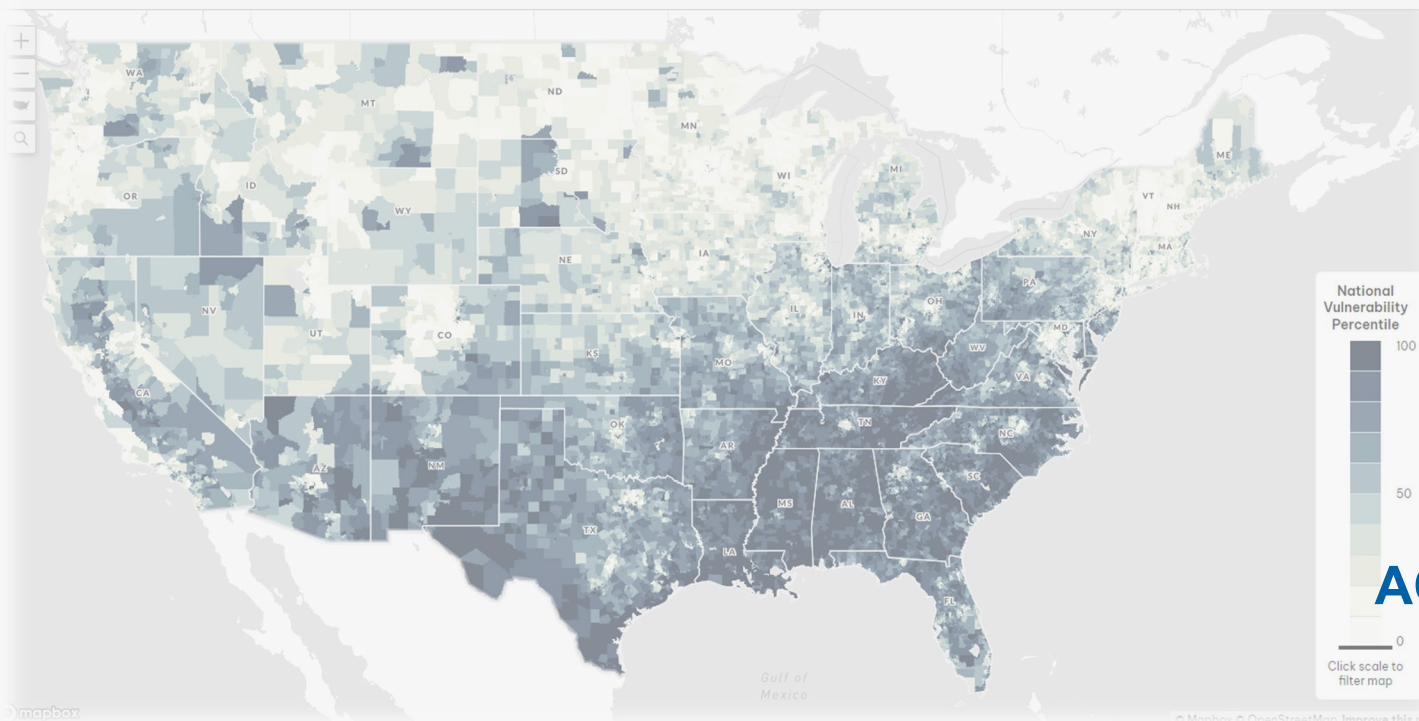
Implementing Climate Vulnerability Index (CVI) to Address Transportation Problems in Texas

Overall Climate Vulnerability

Score combining environmental, social, economic, and infrastructure effects on neighborhood-level stability.

MAP BOUNDARIES

Counties Tracts



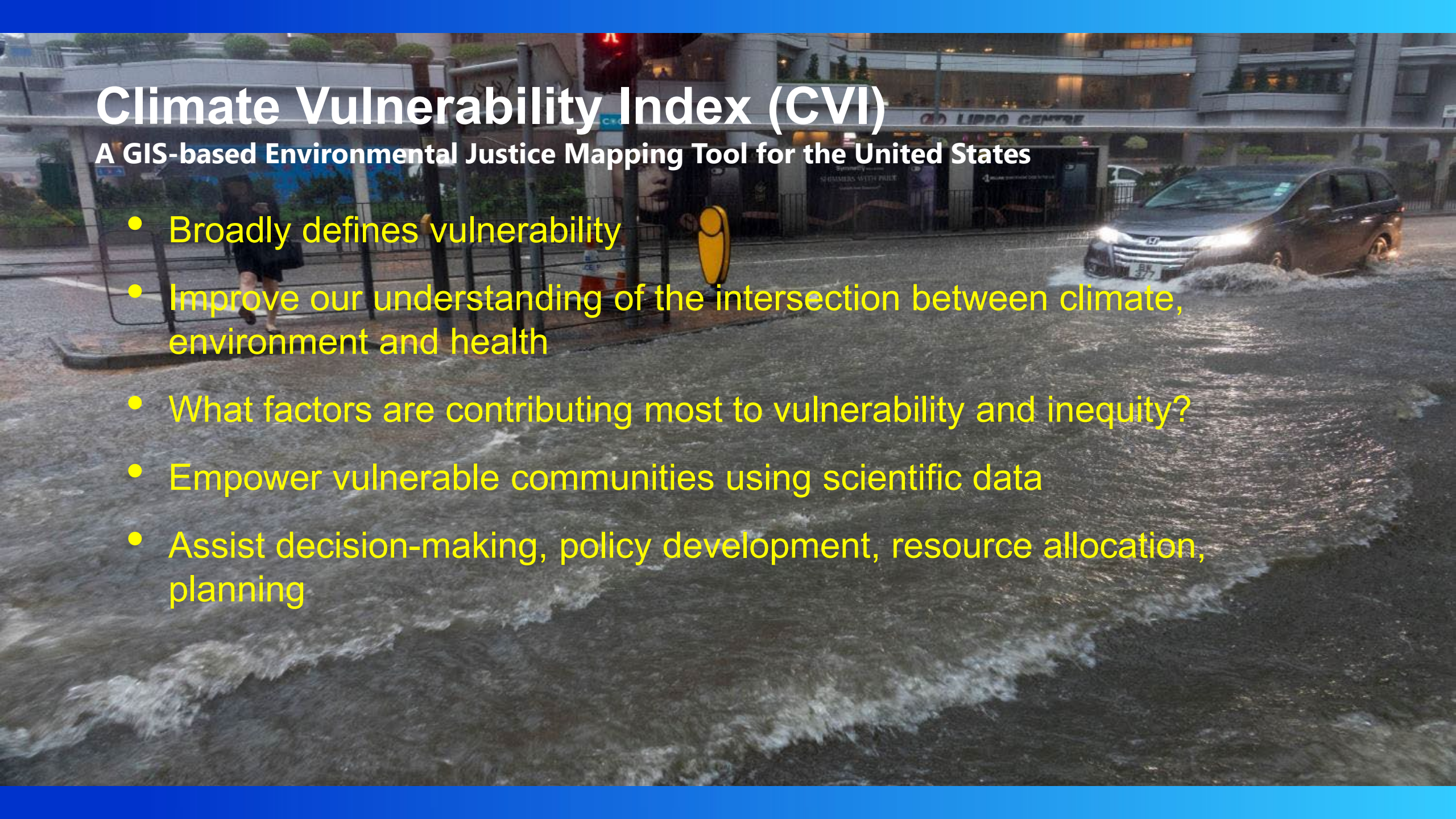
Sponsored by
Environmental Defense Fund

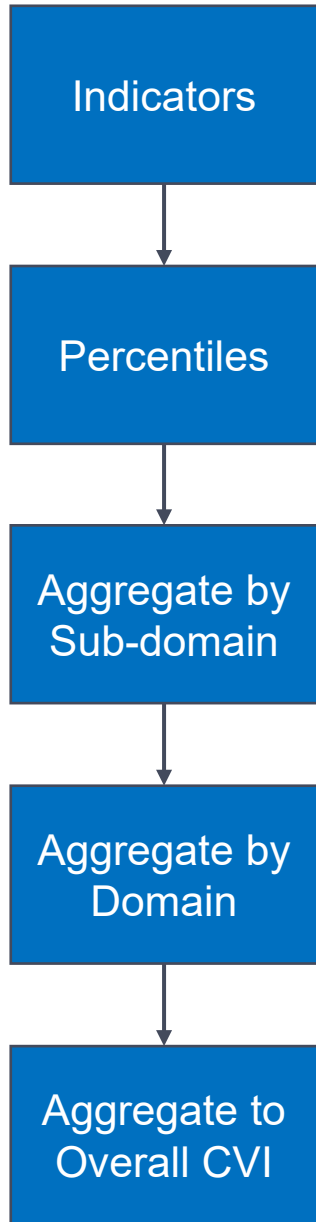
**AQ Health Monitoring Task Force Meeting
October 24, 2024**

Climate Vulnerability Index (CVI)

A GIS-based Environmental Justice Mapping Tool for the United States

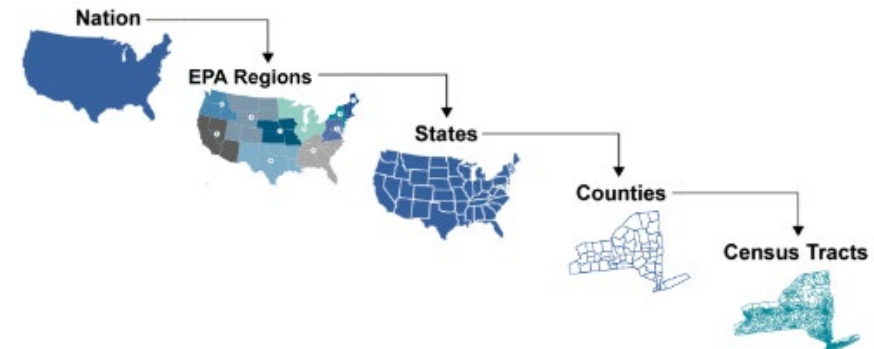
- Broadly defines vulnerability
- Improve our understanding of the intersection between climate, environment and health
- What factors are contributing most to vulnerability and inequity?
- Empower vulnerable communities using scientific data
- Assist decision-making, policy development, resource allocation, planning





Climate Vulnerability Index

- Evaluated more than 200 datasets
- Existing, publicly available, nationally consistent data
 - Annual data
 - 2017-2019
- All 50 States + District of Columbia
- Neighborhood level/ Census Tracts
 - 73,057 Census Tracts
- Data at smallest available geographic scale (census tract, county, state)
- Missing values imputed with median at next larger scale (county, state, country)
- EPA Toxicological Prioritization Index (ToxPi™)
- Unitless Index Score
 - Equal weighting at each level of aggregation



Includes factors that limit climate resilience

Community Baseline data represents the factors and conditions within a community that can limit its resilience to climate challenges



**Social and
Economic**



Health



Infrastructure



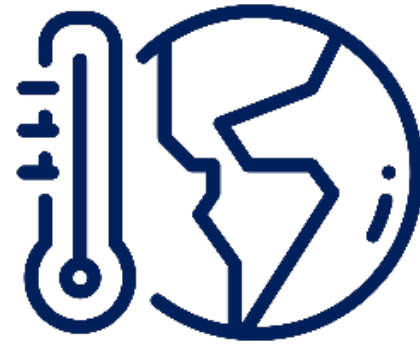
Environment

Includes data about past and future climate threats

Climate Impacts data represents information about past and future impacts of a warming planet



Health



**Extreme
Events**



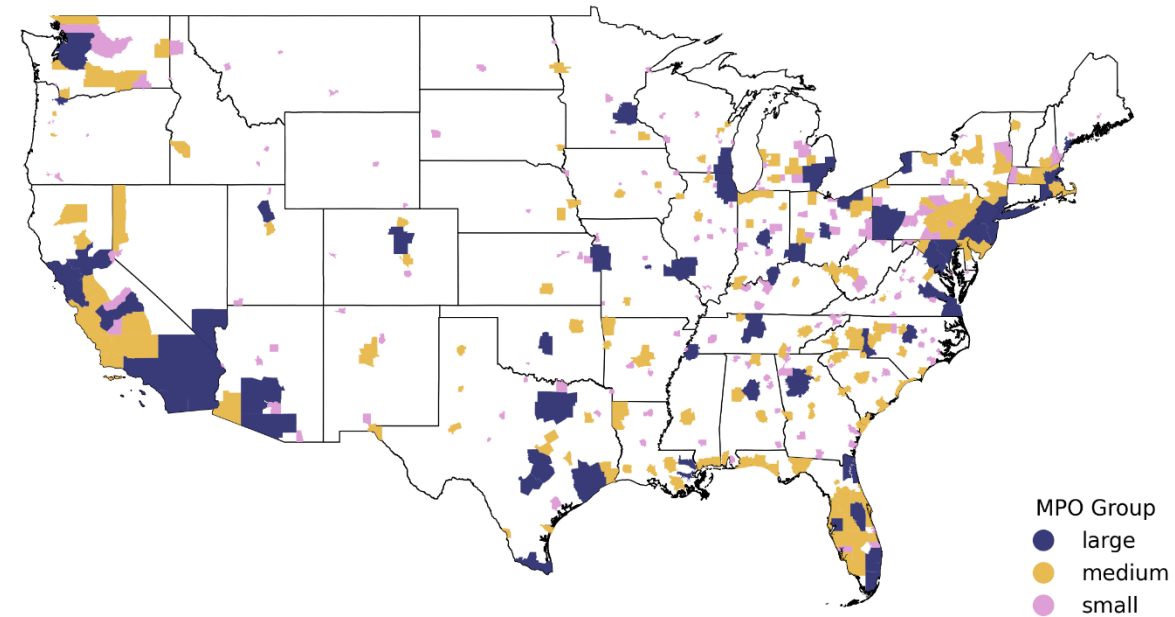
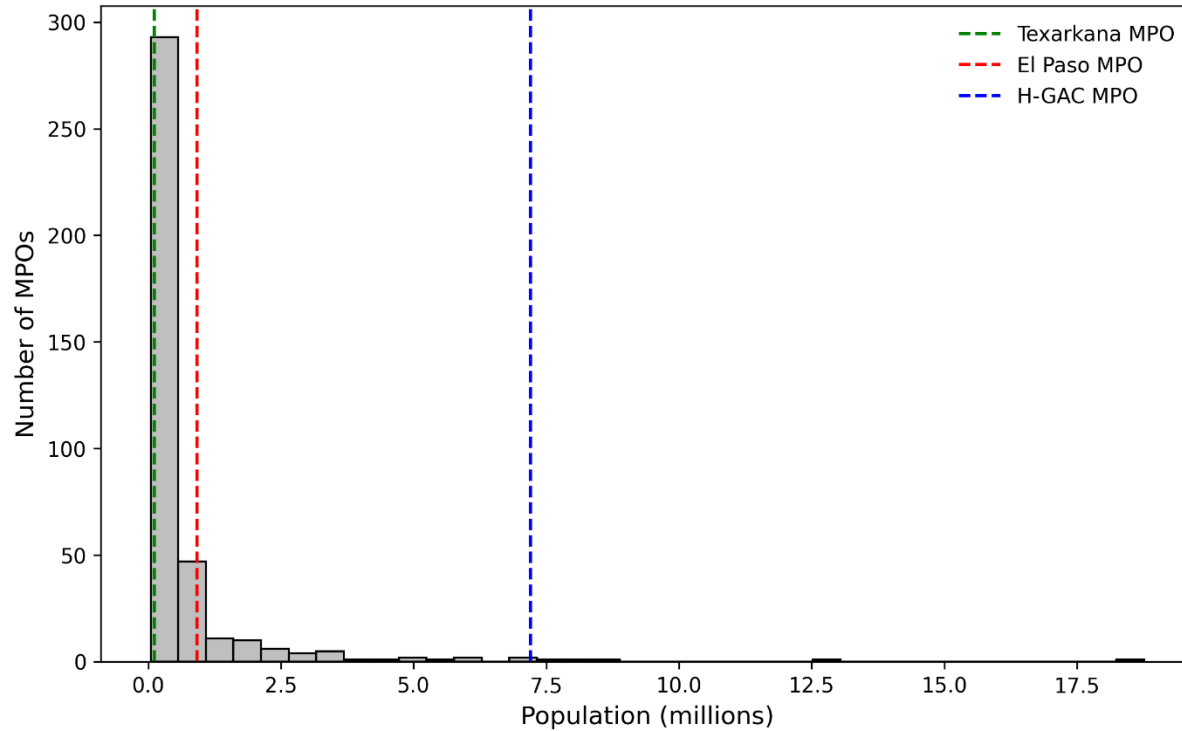
**Social and
Economic**

What CVI can do

- Identify the area of issues in MPO
 - Use multiple indicators from different domains
 - Plot aggregated score by census tract level to identify which area needs more attention
 - Identify/Compare MPO with other similar MPOs
 - Classified MPOs into three categories (based on 2020 census population)
 - Small: Population less than 200,000
 - Medium: Population between 200,000 and 999,999
 - Large: Population greater than 1,000,000
- Source: <https://www.gao.gov/products/gao-09-867sp>
- Use CVI for grant proposals
 - Demonstrate the necessity/rationale of the project (by comparing other MPOs)

MPOs in the U.S.

■ MPO Classification



- Large: 55 MPOs, including NCTCOG, 3.47 M of Population
- Medium: 163 MPOs including El Paso, 0.46 M of Population
- Small: 171 MPOs including Texarkana, 0.13 M of Population

Addressing Transportation Issues

Equity

	CVI
Soc. & Econ.	Low Income
	Aged 65 or Older
	Aged 17 or Younger
	No Vehicle
	Lane miles per capita
	Public Transit Performance
Infrastructure	Walkability
	Bikability
	EV Charging Stations
	Housing Affordability (renters)
	Housing Affordability (owners)
	Passenger VMT per capita
Environment	Traffic Proximity and Volume
	Days with maximum temperature above 40C
Extreme Event + Others	Urban Heat Island Extreme Heat Days

Resilience

	CVI
	Flooding risk to roads
	Road Quality and Maintenance
	Bridge Quality and Maintenance
	Total VMT per capita
	Passenger VMT per capita
	Truck VMT per capita
	Heavy Duty Vehicle VMT per capita
	Cold Wave - Annualized Frequency
	Frost Days
	Urban Heat Island Extreme Heat Days
	Coastal Flooding - Annualized Frequency
	Riverine Flooding - Annualized Frequency

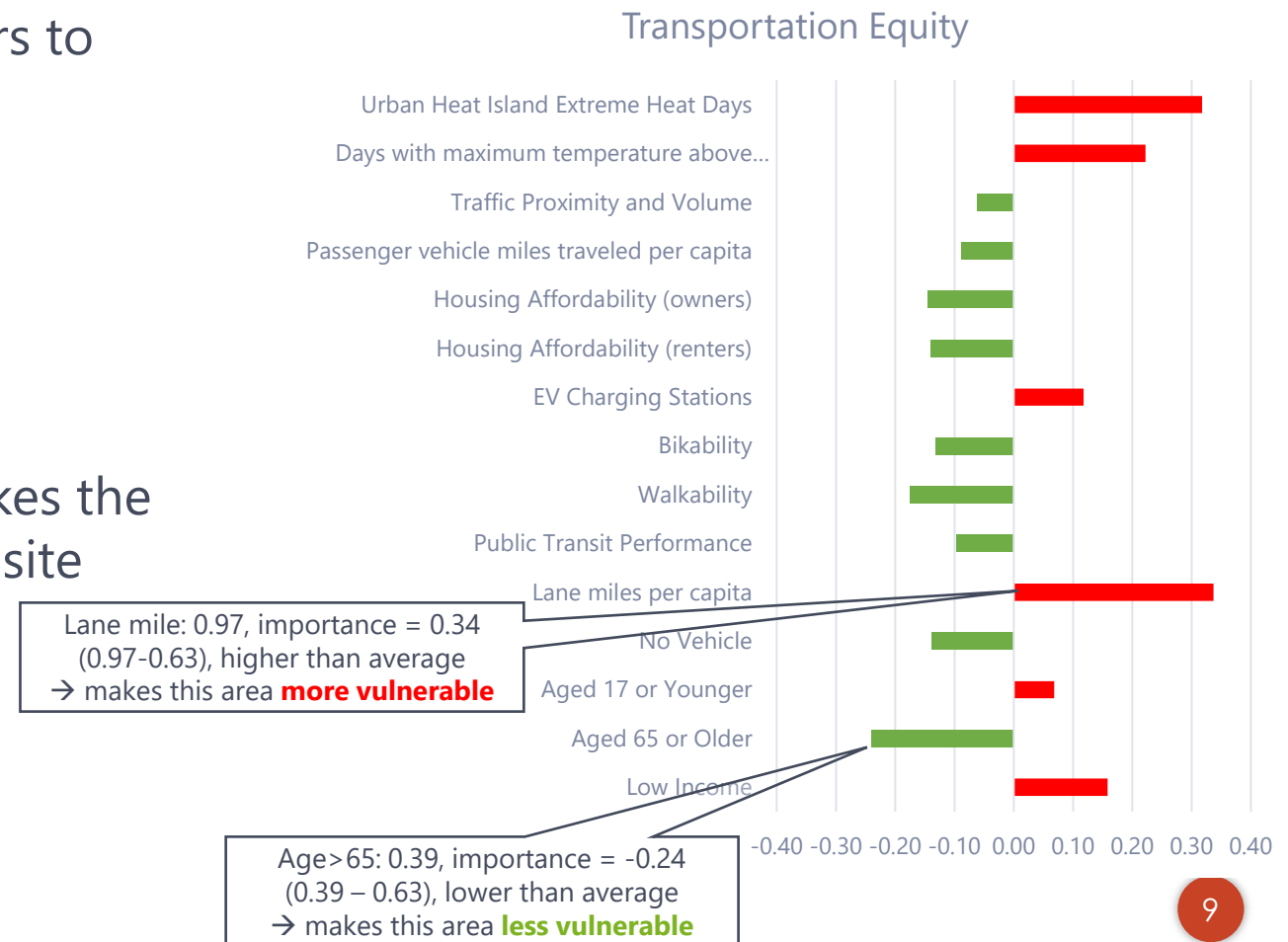
Carbon Reduction Strategy

	CVI
	Delay (congestion) per capita/census tract
	Walkability
	Bikability
	EV Charging Stations
	Total VMT per capita
	Passenger VMT per capita
	Truck VMT per capita
	Heavy Duty Vehicle VMT per capita
	Air Tox Respiratory
	Air Tox Neurological
	Air Tox Total Cancer Risk
	Increased Ozone mortality (all ages)
	Methane Emissions
	Urban Heat Island Extreme Heat Days

Addressing Transportation Issues

- Aggregate CVI
 - All CVI ranges from 0 (most vulnerable) to 1 (least vulnerable)
 - Use the average of all relevant indicators to represent a specific issue
- Variable Importance
 - Difference between individual CVI and aggregated score
 - Positive means the individual score makes the avg. score worse, negative means opposite

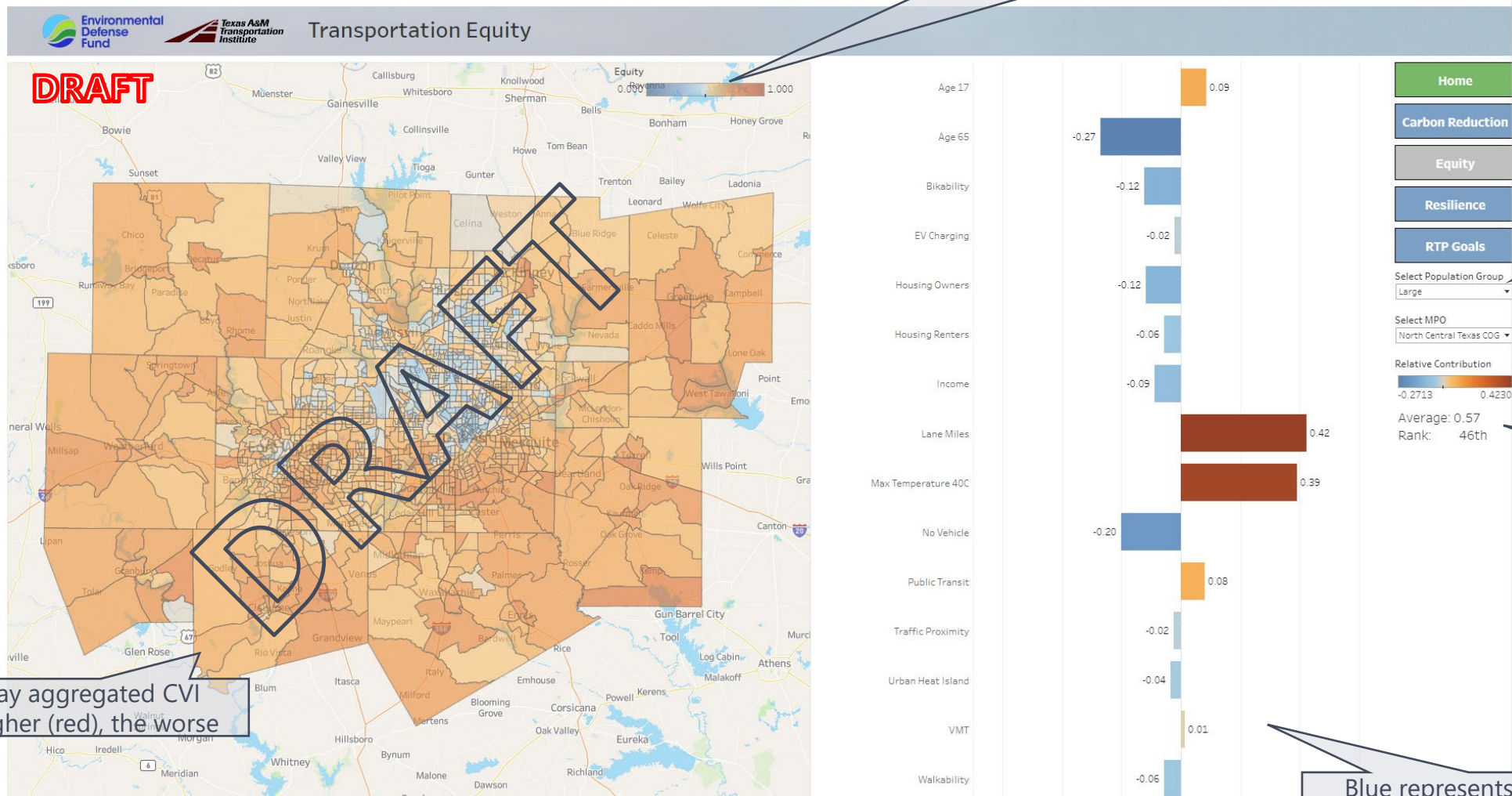
- Variable Importance Example : El Paso Equity Score (Avg: 0.63)



Addressing Transportation Issues

- Integrated Dashboard - Tableau

Blue represents the score is less than the National average, and Red represents the opposite



Dashboard Selector

MPO Population Group Filter

MPO Name Filter

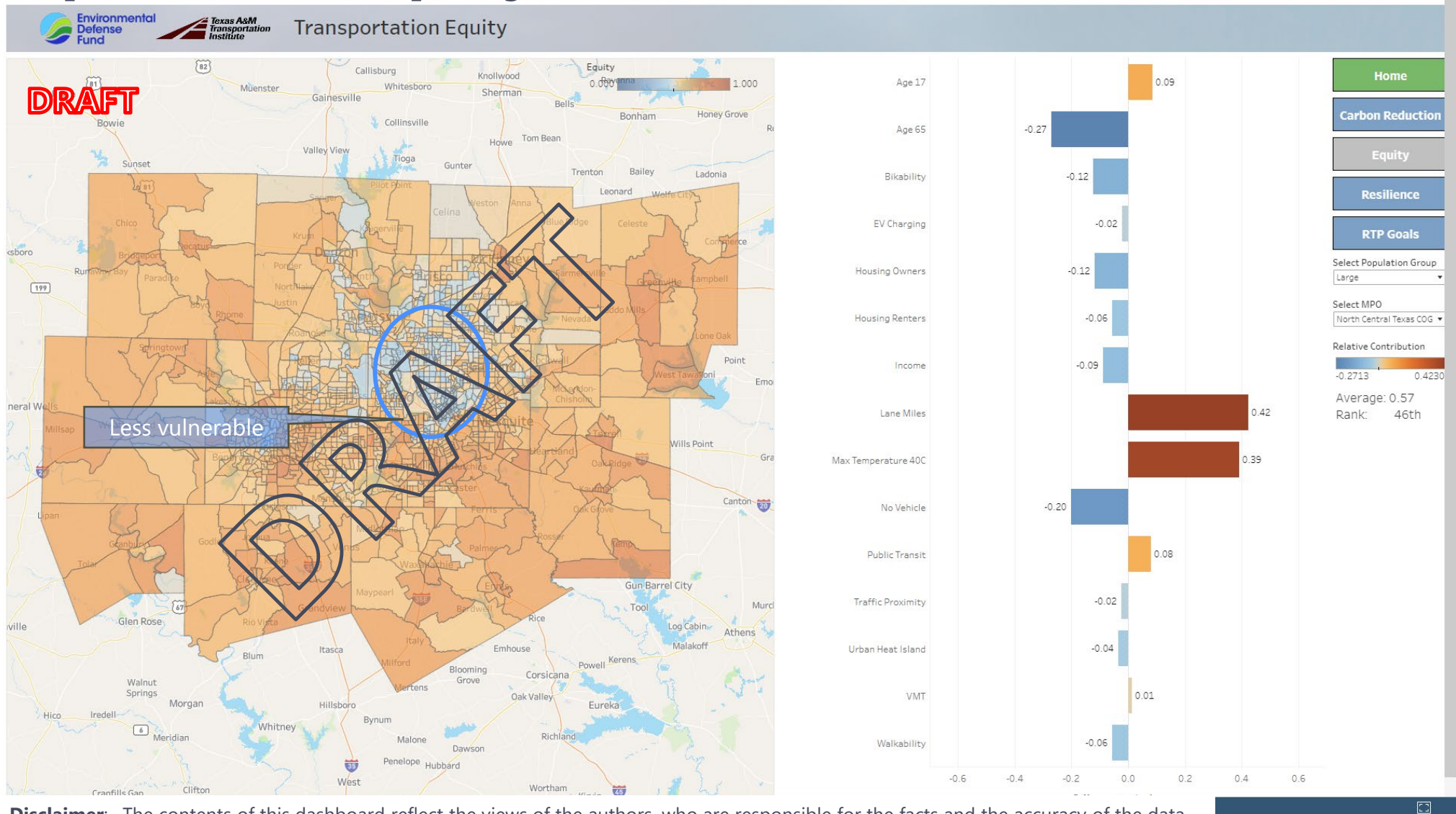
Rank (the higher, the worse)

Display aggregated CVI
The higher (red), the worse

Blue represents the indicator reduce score, Red represents the opposite

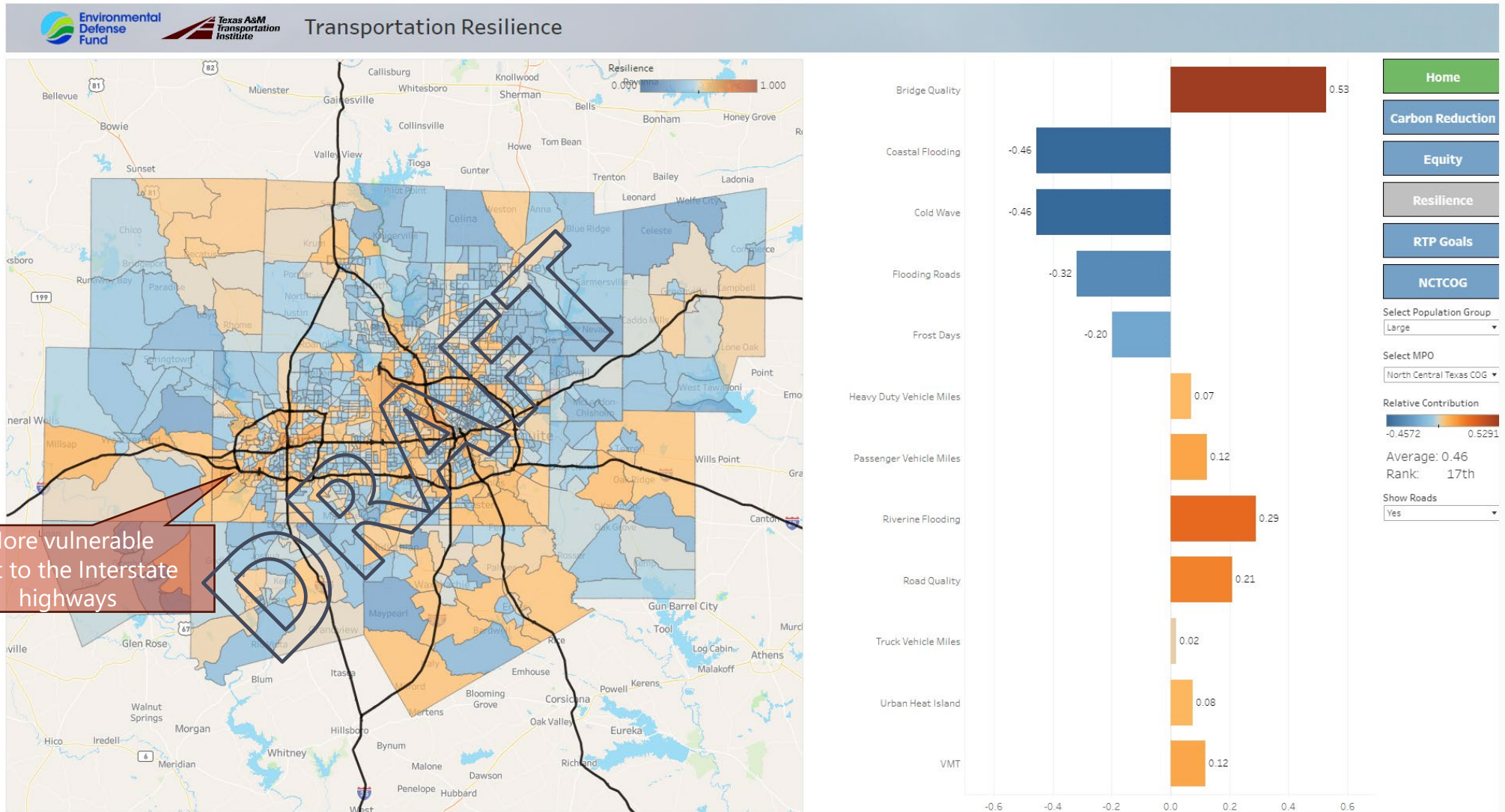
Disclaimer: The contents of this dashboard reflect the views of the authors, who are responsible for the facts and the accuracy of the data. The contents do not necessarily reflect the official view or policies of NCTCOG.

Transportation Equity in NCTCOG



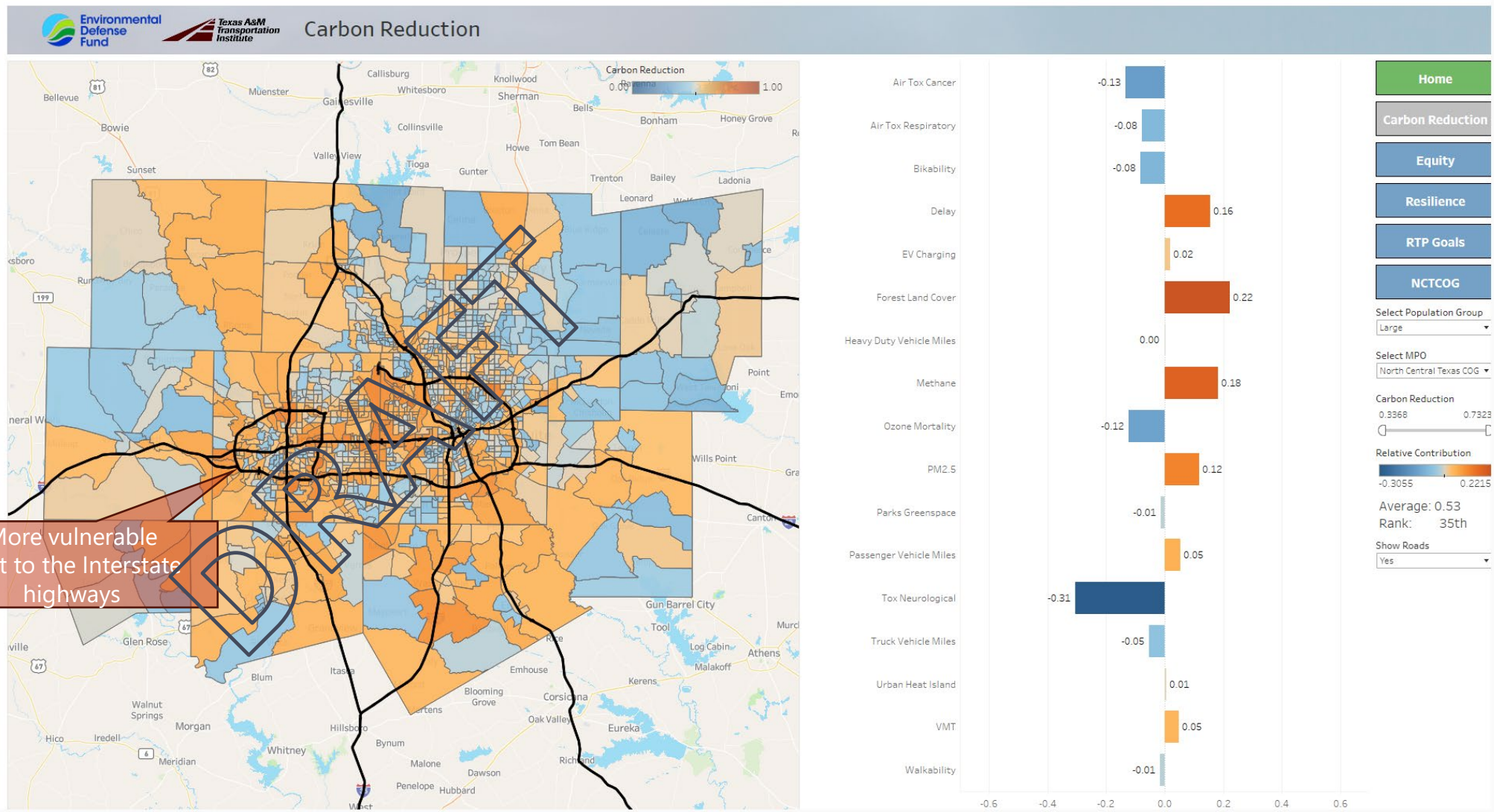
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Transportation Resilience in NCTCOG



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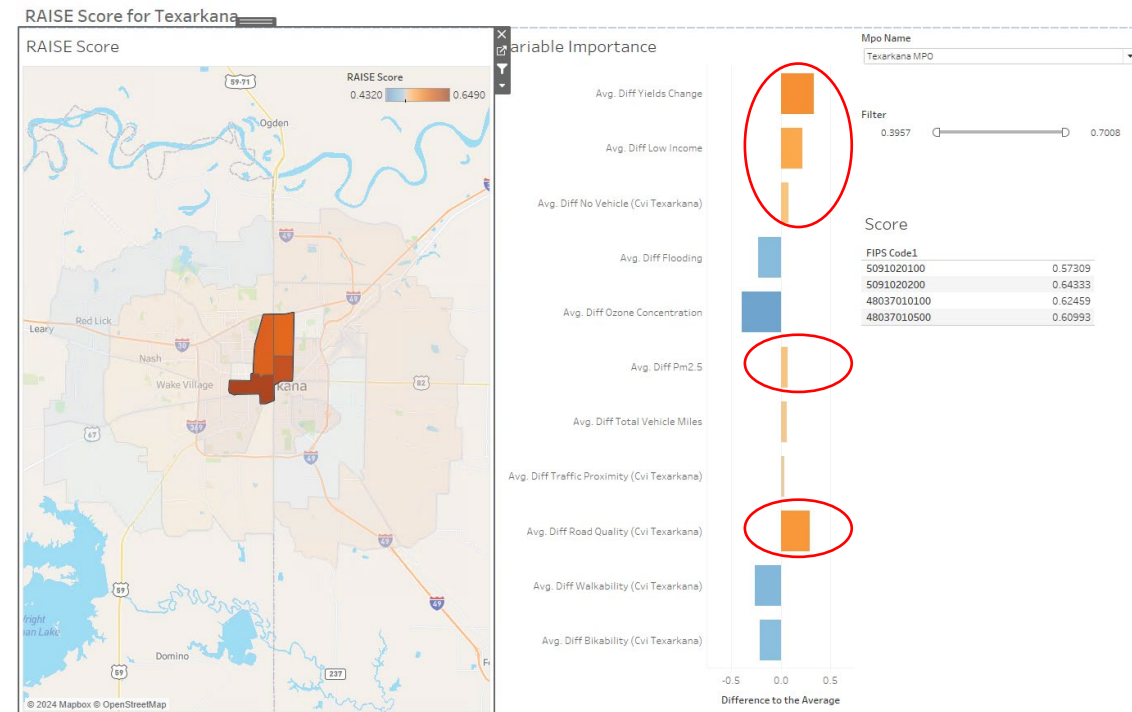
Carbon Reduction Necessity in NCTCOG



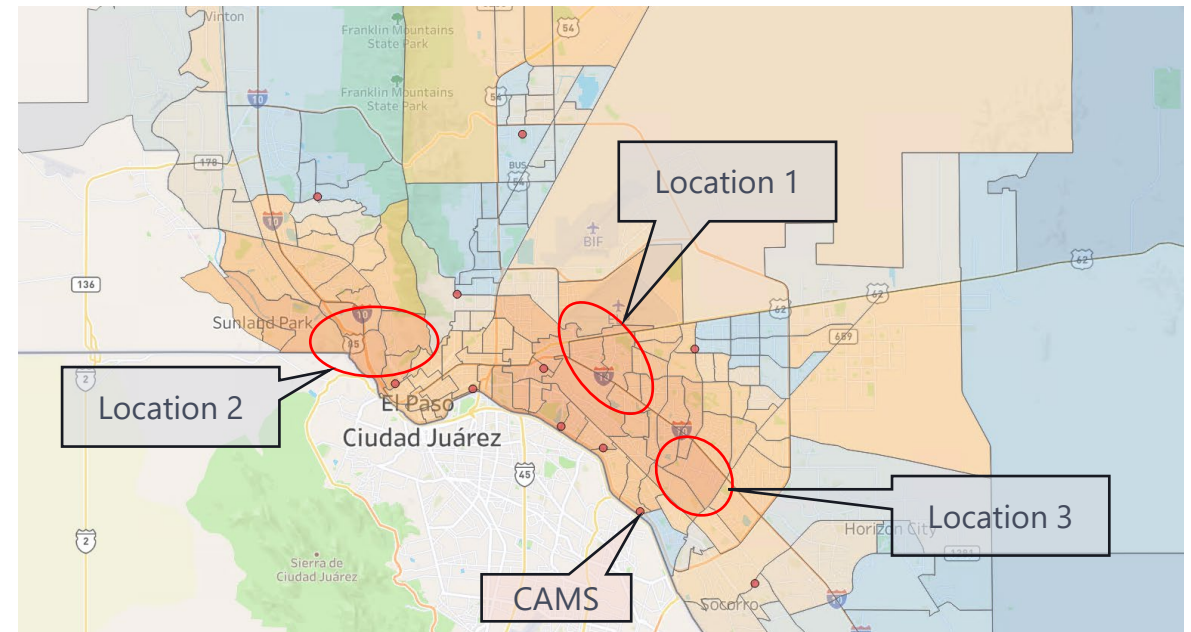
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Use Cases: Texarkana MPO and El Paso MPO

- USDOT RAISE Grant for Texarkana
 - 3.25mile between I-30 and Union Station
 - The tool showed relatively **poor road quality**, significant **economic issues**, and **air quality problems**




- New CAMS Locations for El Paso
 - Suggested potential new CAMS locations considering **current CAMS location** and developed score including **ten indicators**





Indicators for NCTCOG 2045 MTP goals

- NCTCOG 2045 Metropolitan Transportation Plan (MTP)
 - Four core goals for solving NCTCOG's important transportation problems


MOBILITY

 Improve transportation **options** for people and goods

 Support travel **efficiency** strategies


 Ensure community **access** to the transportation system and planning process

QUALITY OF LIFE

 Enhance **environment** and **lifestyles**

 Encourage **sustainable** development

SYSTEM SUSTAINABILITY

 Ensure adequate **maintenance, safety,** and **reliability**

 Pursue long-term, sustainable **financial** resources

IMPLEMENTATION

 Provide timely **planning** and **implementation**

 Develop **cost-effective** projects and programs

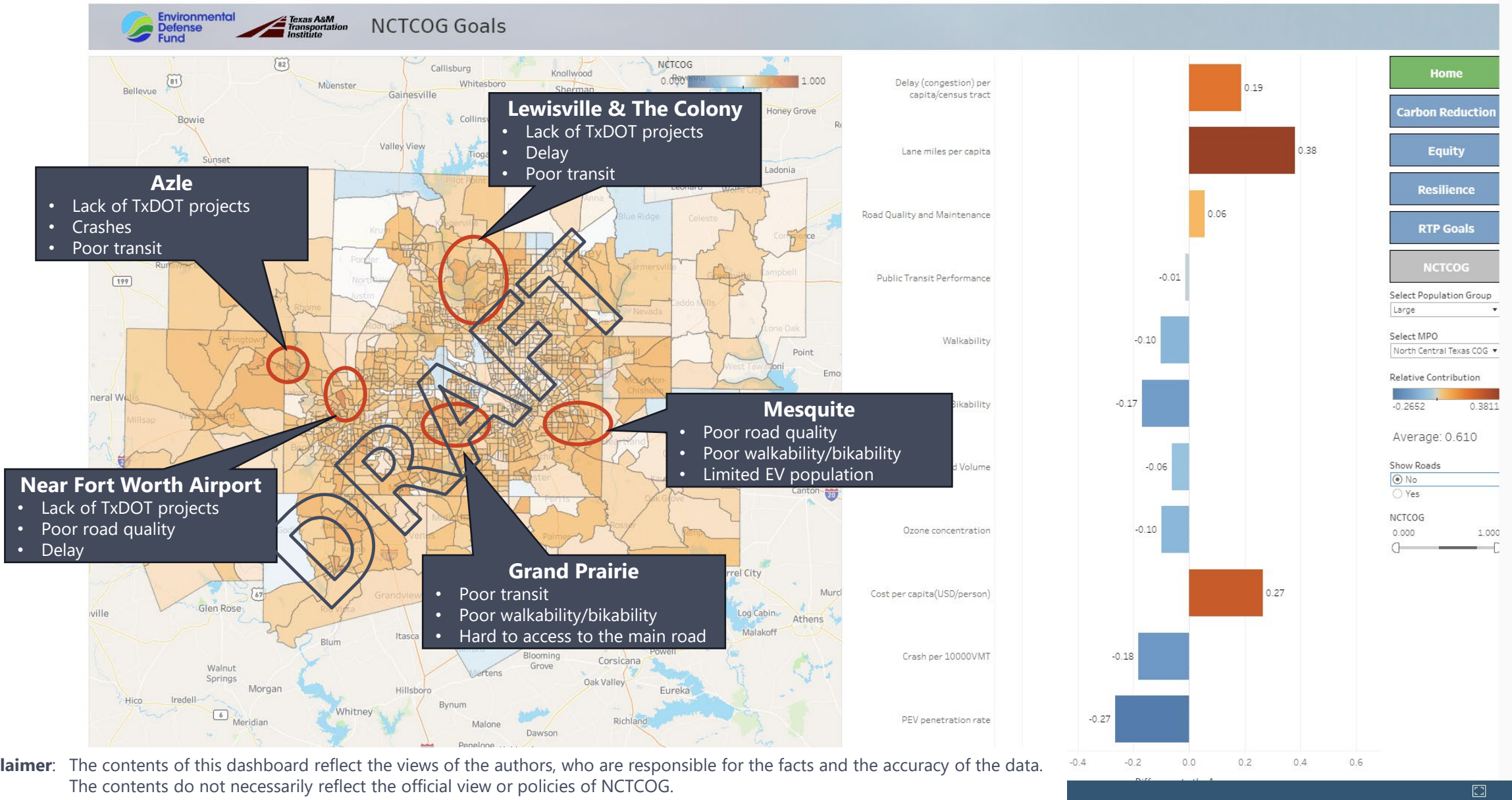
Indicators for NCTCOG 2045 MTP goals

- Select CVI to represent 2045 RTP goals

Indicator	Indicator Unit	MTP Goal
Total vehicle miles traveled per capita	Total VMT per capita, 2018.	Mobility
Heavy Duty Vehicle miles traveled per capita	Combination Truck (HDV) VMT per capita, 2018.	
Delay (congestion) per capita/census tract	Weighted yearly average commute delay (congestion) per commuter, 2019.	
Public Transit Performance	Transit performance score from 0-10,2019.	
Lane miles per capita	Lane miles per capita, 2018.	
Annual average PM2.5 concentrations	PM 2.5 annual average concentration - 3 year average, 2017-2019.	Quality of Life
NO2 concentration	NO2 concentration, 2018.	
PEV Market Penetration	DFW Clean Cities, 2023.	
Road Quality and Maintenance	International Roughness Index, 2018.	System Sustainability
Flooding risk to roads	Flooding risk score average for the census tract, 2020.	
Crashes per 10000VMT	TxDOT CRIS, number of crashes in 2022.	
TxDOT Project Cost per Capita (USD/Person)	TxDOT Project Data (DCIS), 2023.	Implementation

* Colored indicators are only available in Texas

Indicators for NCTCOG 2045 MTP goals



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Final Products of the Project

- Web-based dashboard
 - <https://u.tamu.edu/transportation-cvi>

- Project Report – Whitepaper

- TRBAM Submission
 - TRBAM-25-04424
 - Will present at AEP70 (Environmental Analysis and Ecology) poster session on January 6 (Monday), 2025

TRB Annual Meeting
Develop Screening Applications to Identify Transportation Issues in Large Areas using the Climate Vulnerability Index (CVI)
 --Manuscript Draft--

Full Title:	Develop Screening Applications to Identify Transportation Issues in Large Areas using the Climate Vulnerability Index (CVI)
Abstract:	In 2023, Environmental Defense Fund (EDF) has developed the Climate Vulnerability Index (CVI) tool to assist agencies and decision-makers in determining indicators vulnerable to climate change in the United States at the census tract level. While CVI includes rich data, interpreting 184 results would be overwhelming, making it challenging to use that information directly. Therefore, this study suggested a methodology to simplify screening transportation challenges in the target area. The methodology enables to develop an aggregated score focusing on each agency's interest so that users can easily compare it with other MPOs in the United States. Moreover, the methodology suggested the variable importance factor that reflects the importance of each variable to the aggregated score, which can be interpreted as the vulnerable point in the area. Three transportation challenges (equity, resilience, prioritization of carbon reduction program) were addressed in the two study area, Texarkana and El Paso MPO. The result provided comparison with other similar sized MPOs in the United States to show how vulnerable are they. Also, the variable importance factors provides insight why these results happen and how they can improve their challenges. The methodology can apply to any subjects and any jurisdictions in the United States since CVI is open to public, wide range of the index, unitless score, and a consistent data source for all census tracts across the nation.
Additional Information:	
Question	Response
The total word count limit is 7500 words including tables. Each table equals 250 words and must be included in your count. Papers exceeding the word limit may be rejected. My word count is:	5510
Manuscript Classifications:	Sustainability and Resilience; Transportation and Society; Equity in Transportation AME10; Community Impact Assessments; Environment; Environmental Justice; Health Impacts; Social and Economic Factors; Transportation Equity; Transportation and Sustainability; Air Quality and Green House Gas Mitigation AMS10; Policy Analysis; Economic Development and Land Use AMS50; Environmental Impact; Transportation Systems Resilience AMR00; Transportation Infrastructure Protection and Preparedness AMR10; Community Resilience
Manuscript Number:	TRBAM-25-04424
Article Type:	Presentation and Publication
Order of Authors:	Bumsik Kim Rodolfo Souza Grace Tee Lewis Maia Draper Madhusudhan Venugopal

Contacts

- Bumsik Kim, TTI (b-kim@tti.tamu.edu)
- Maia Draper, EDF (mdraper@edf.org)
- Grace Lewis, EDF (glewis@edf.org)

Questions / Answers

City of Denton Non-regulatory Air Quality Sensors

October 22, 2024



Program Goals

- Increased understanding of air quality distribution across the City
- Improved communication with Denton residents and access to air quality information for the community
- High level improvements to decision making such as priority areas for green infrastructure and active transportation implementation



Why?

- TCEQ Regulatory Monitor in Denton consistently exceeded ozone standard
- GreenHouse Gas Inventory since 2006 community reduction 36%
- Science Based Target adopted April 2022
 - Net Zero by 2050
- More localized Air Quality data



Create Sampling Plan and identify locations

Staff Developed a Sampling Plan

Plan reviewed/recommended by Sustainability Framework Advisory Committee (SFAC)

SFAC - Citizen Committee appointed by Council to advise on the implementation of the Sustainability Framework.

Funding for Monitors from Sustainability Framework fund. Dedicated funding to support implementation of Sustainability Framework

- SFAC approved Sampling Plan October 2023



Acquire & Install Monitors

Acquisition

- City Solicitation processes
- Solicitation for monitors – 2 phases

Installation

- Phase 1 January/February 2024
- Phase 2 September/October 2024

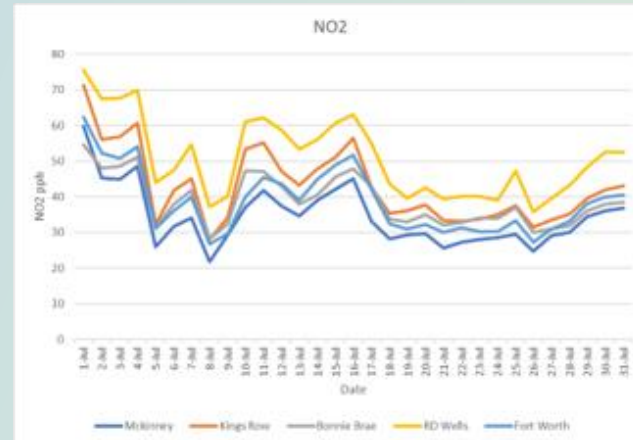
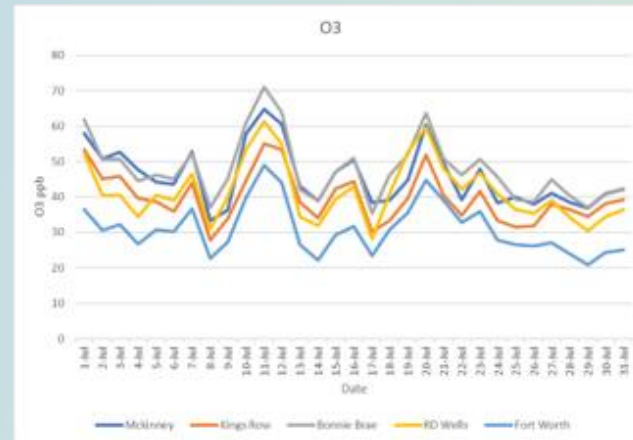
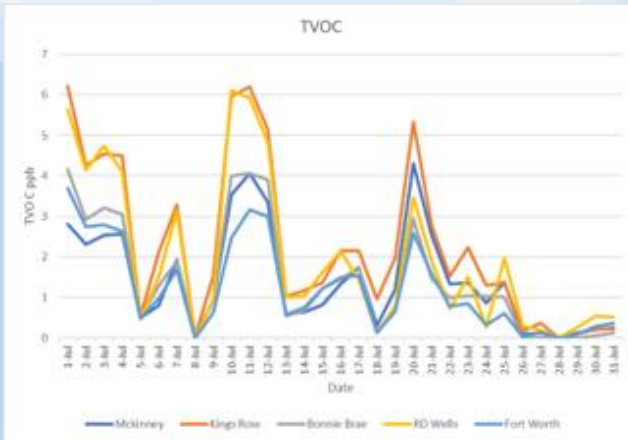


Installation

Locations

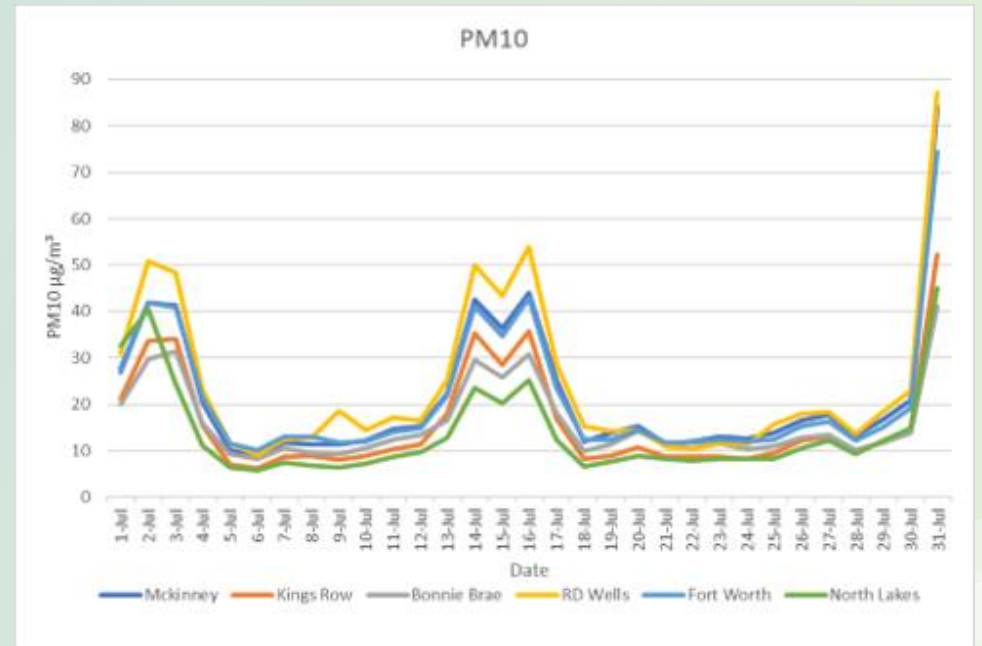
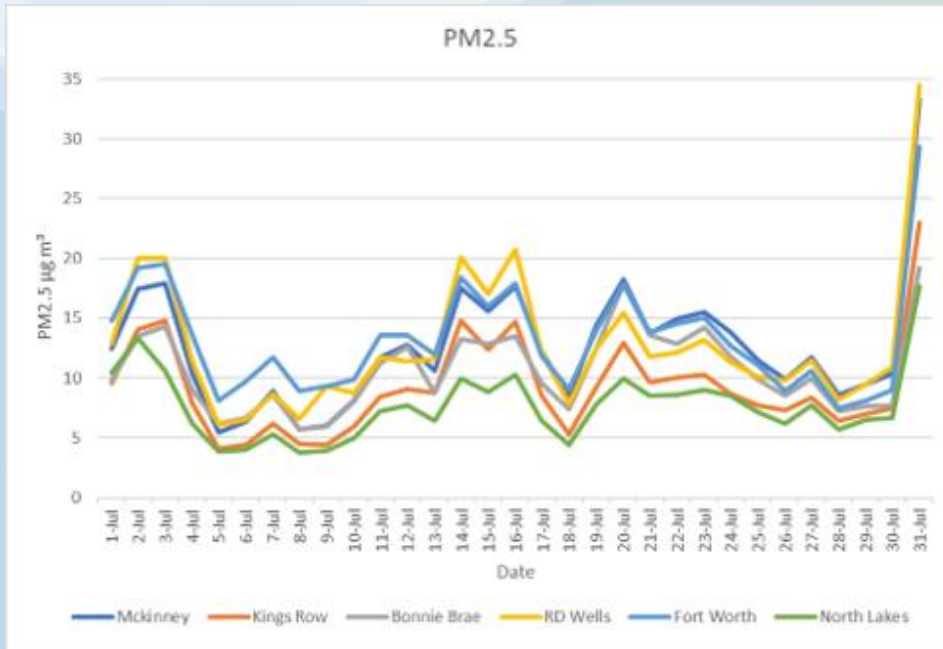
- Phase 1 Electric Substations throughout the community
- Phase 2 Street light installs
- All direct wired to power.
 - Chose direct instead of adding plug or solar panel
 - Solar power does not support heated inlet for PM sensor

Data



- Daily averages over the course of one month (July 2024)
- Current summary provides staff with opportunity to address any sensor maintenance and best data presentation methods for public-facing dashboard

Data



- Assess impacts of ambient weather and location-specific variation in emissions and air quality



Next Steps

Next Steps

Continue to Collect & Monitor Data

- Create Web Dashboard
 - Initially update monthly

Monitor and Report to Community

Questions

Katherine Barnett

Katherine.Barnett@cityofdenton.com

Kaitlynn Davis

Kaitlynn.Davis@cityofdenton.com

We are looking for Health Data!

Asthma occurrence/outpatient visits and/or COPD hospital discharge data by county/city or smaller geographic scale.

Known Data Sources

Texas Department of State Health Services (DSHS) Asthma Hospitalization and Outpatient Data – *Annual Data by County*
[Asthma | Texas DSHS](#)

Dallas County Community Health Needs Assessment – *Annual Data for Dallas County by Zip Code (2016, 2019, 2022)* [Community Health Needs Assessment | Parkland Health](#)

DFW Hospital Council Foundation Data – *Community Health Data: Adults with Asthma, COPD by County, City Zip Code, Census Tract*
[Healthy North Texas :: Home \(healthyntexas.org\)](#)

Smart Growth for Dallas Tool – *Annual Data for City of Dallas*
[Smart Growth for Dallas : Planning and GIS \(tplgis.org\)](#)

Cooks Children's Hospital Data – *Hospital Discharges for Cooks Children's Hospitals* [Cook Children's Health Care System \(cookchildrens.org\)](#)

Texas Inpatient Public Use Data File (PUDF) – *Texas Health Care Information Collection Center for Health Statistics* [Public Use Data File \(PUDF\) Inpatient Free Download | Texas DSHS](#)

Parkland Health – *Parkland Health Statistics*
Not publicly available



Goal: One-Stop-Shop Monitoring Network



MONITORING

Facilitate and create a more localized monitoring network, bundle access to the currently available monitoring stations and resources at one website, increase monitoring



HEALTH DATA

Collect and provide access to impersonalized health data with correlate to AQ data, facilitate the understanding of AQ impact on public health



COLLABORATION

Bring all interested parties together for information exchange, create an accessible public information platform, identify sources and mechanisms of AQ impacts



CPRG Program

- CPRG Program deadline extended to December 30, 2025.
- Greenhouse Gas Inventory and projections updated from 2019 to 2022.
- **Online Survey** - www.publicinput.com/dfwaqip
 - 12 out of 16 NCTCOG counties have responded
 - Goal: All 16 counties respond with at least half of responses representing low-income and disadvantaged communities.

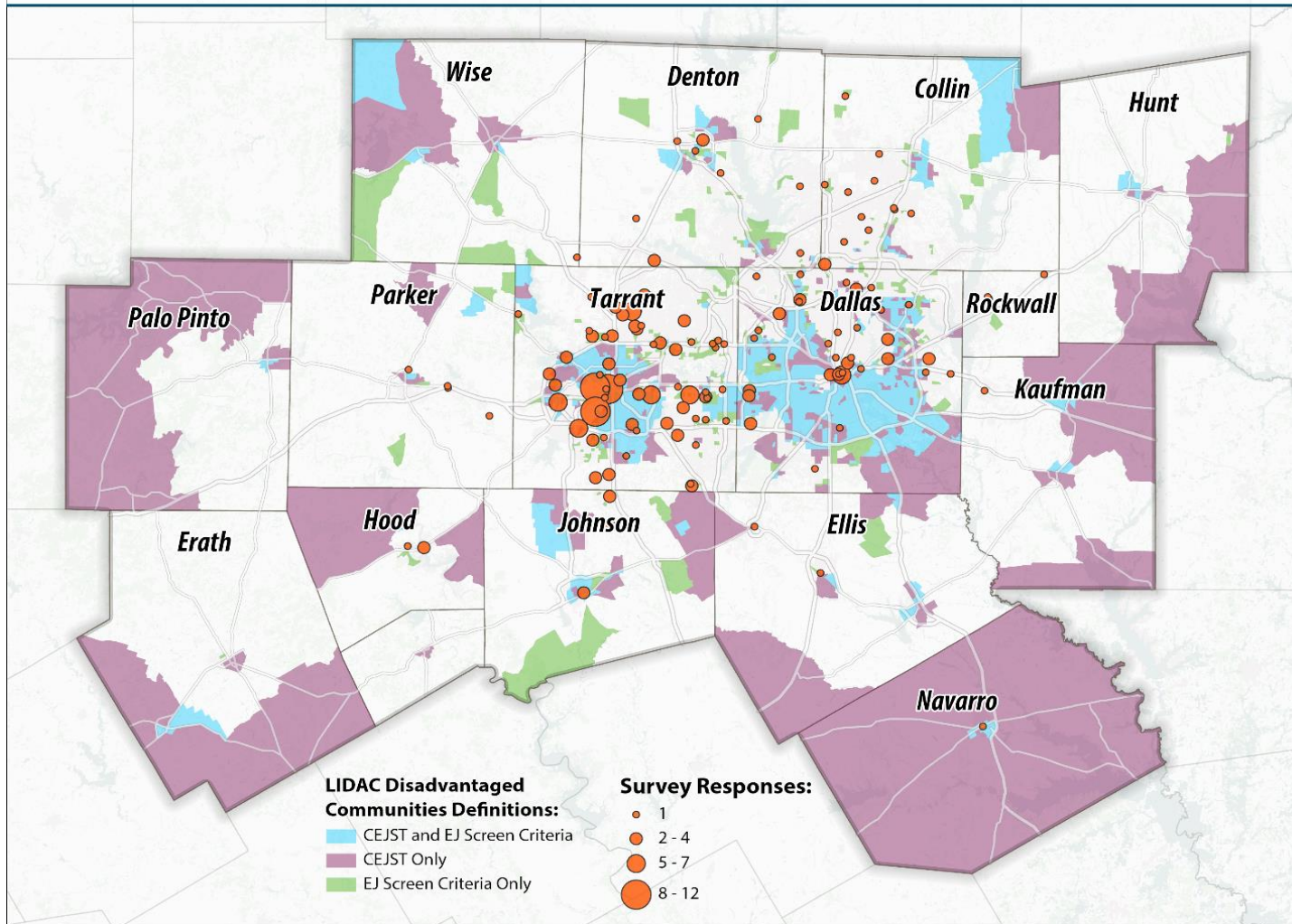


PCAP Engagement Results and CCAP Goals

PCAP Survey Results

CCAP Goals

Survey Responses and LIDAC Communities in NCTCOG



- 📍 Double survey responses (~280 responses for PCAP)
- 📍 50% of respondents represent a low-income or disadvantaged community (increase from 45% for PCAP)
- 📍 All 16 counties represented (PCAP was 12 counties)

Upcoming Engagement Opportunities:

- November 7, 2024, at Weatherford College - Transportation for the DFW AQIP
- November 12, 2024, virtual meeting on water, wastewater, agriculture and solid waste measures
- Online Survey -

www.publicinput.com/dfwaqip

Photo Source: NCTCOG

