

El Paso MPO Multimodal Web Tool

Web-based Application to Visualize Performance of Regional Multimodal Corridors



El Paso Metropolitan Planning Organization

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1. Introduction

1.1 Context and Background

1.2 Motivation

1.3 Approach

2. Multimodal Performance Measures

3. Data Sources

4. Data Analysis

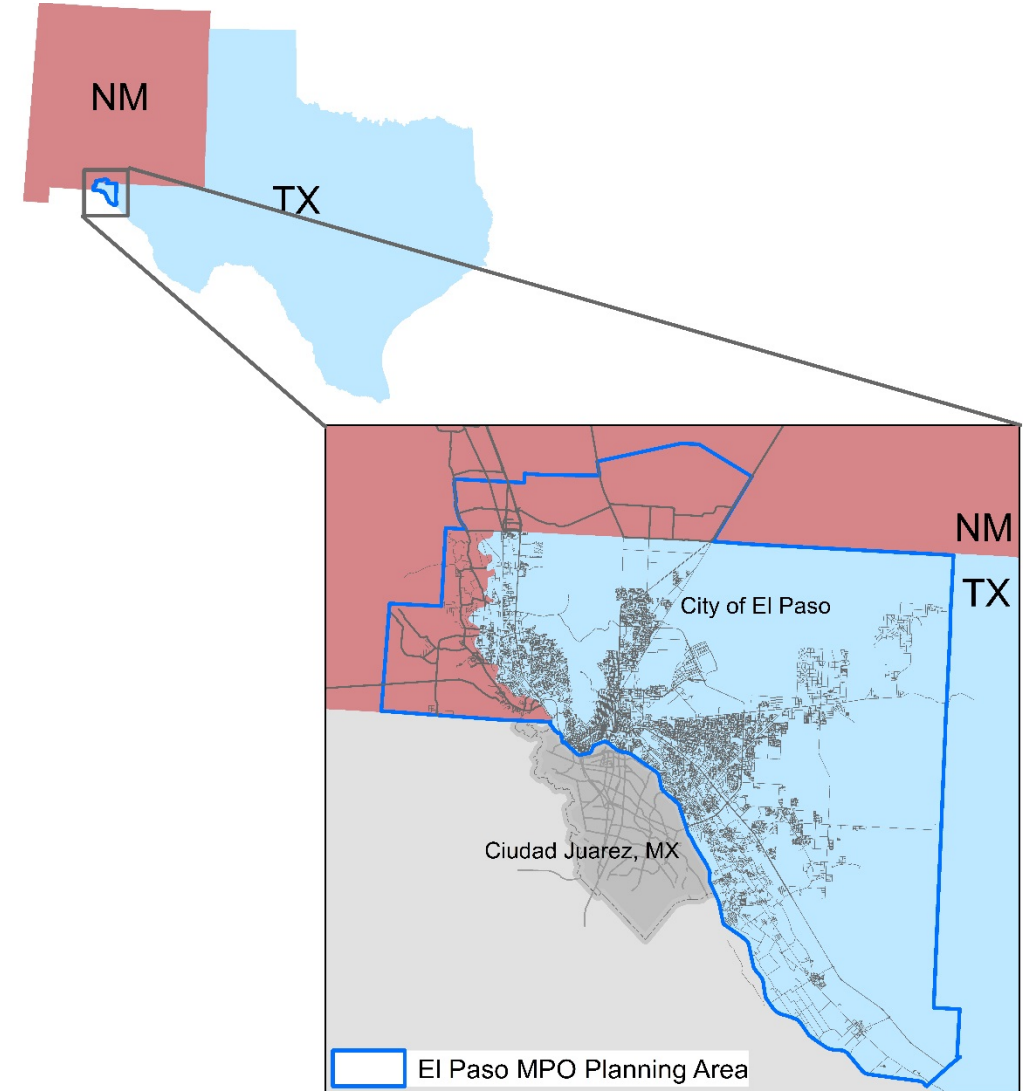
5. Web Tool Modules

6. Next Steps

7. Lessons Learned

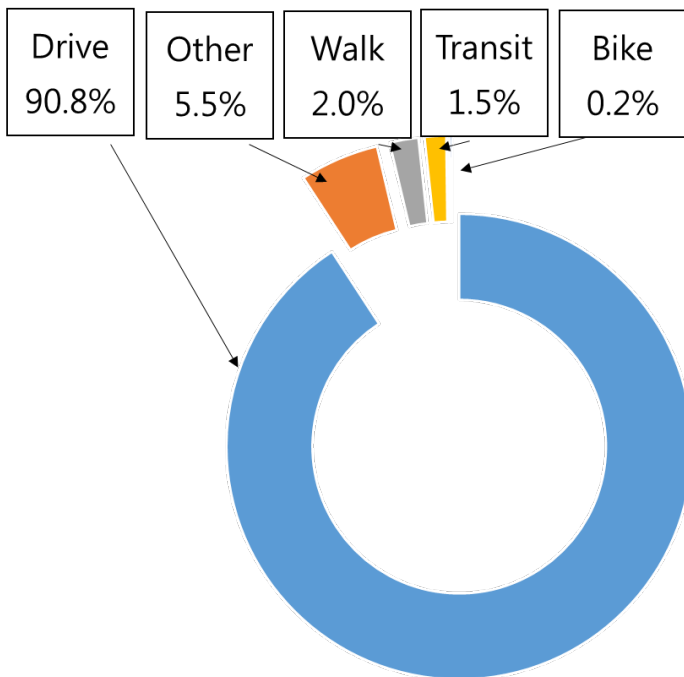
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- El Paso MPO (EPMPO)
 - bi-state: TX, NM
 - bi-national: USA, Mexico
- Population
 - El Paso, TX: 830,000
 - Ciudad Juarez, Mexico: 1.3 million
 - Annual northbound crossings:
 - Passenger Cars: 13,073,997
 - Pedestrians: 7,222,224



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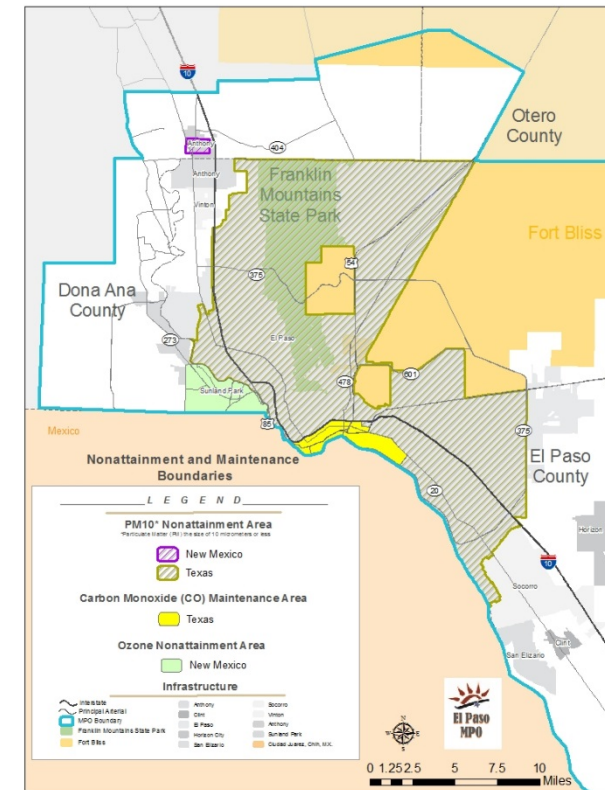
➤ Modeshare



Source: American Community Survey 2017

➤ Air Quality

- CO maintenance
- O₃ marginal non-attainment
- PM₁₀ non-attainment

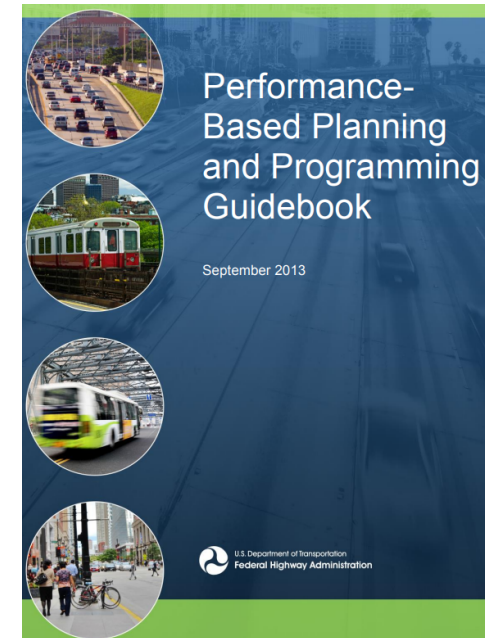
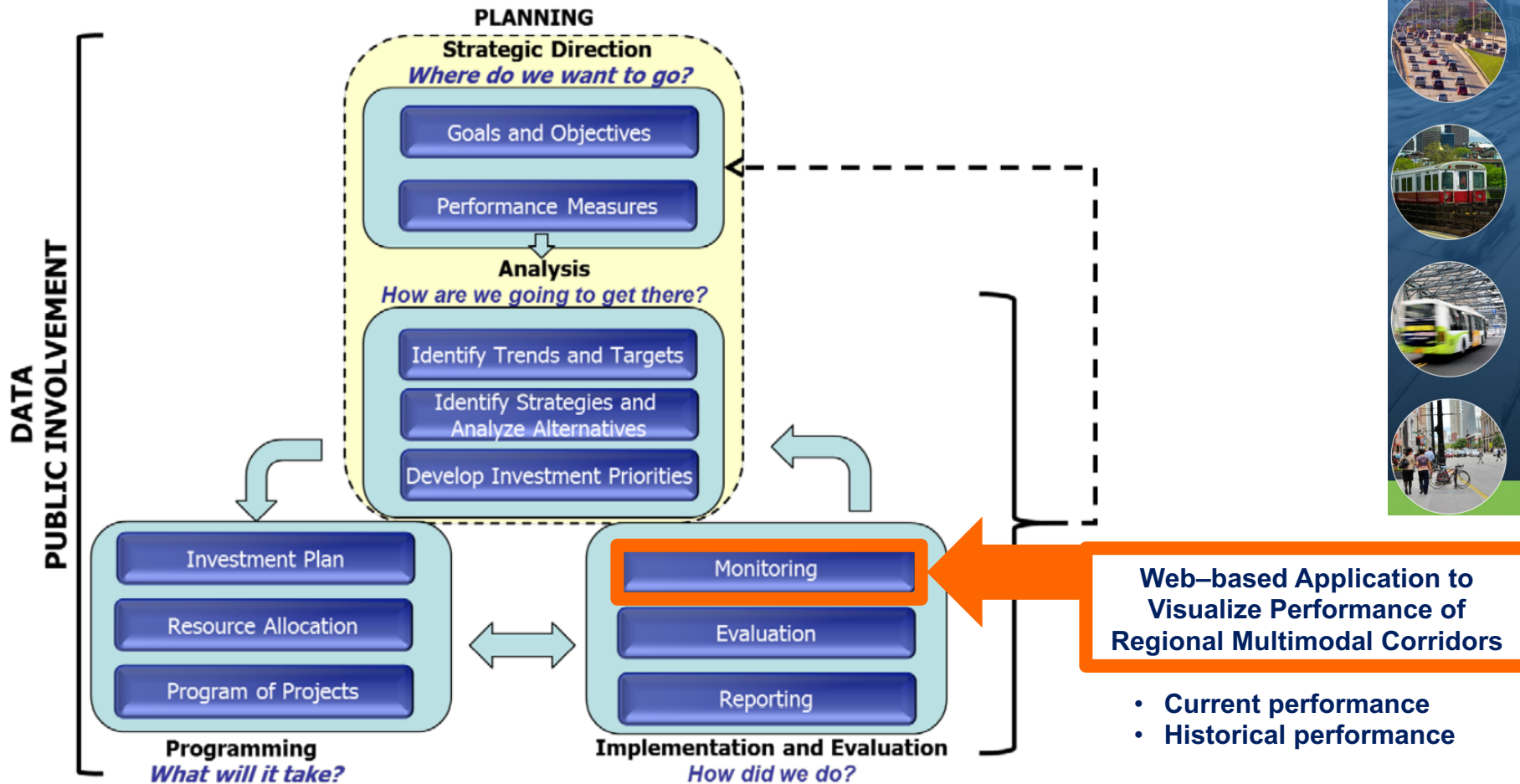


➤ Safety

- TxDOT: zero traffic fatalities by 2050
- El Paso County (2018): 91 fatalities, 41% pedestrian

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➤ Framework for Performance-Driven Planning and Programming



FHWA (2013): Performance-Based Planning and Programming Guide

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➤ **Goal:**

- To track transportation performance over time.
- To support identification of gaps in infrastructure across transportation modes.
- To inform planning and programming decisions.
- To be a resource for local planning partners and general public.

<p>Is pavement condition improving?</p>	<p>Are travel times getting longer?</p>	<p>Has transit ridership been increasing?</p>	<p>Have all planned bikeways been built?</p>	<p>Is air quality improving?</p>	<p>Have fatal crashes decreased?</p>

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- Develop a **Multimodal Web Tool**

The screenshot displays the 'Multimodal Web Tool' interface. On the left is a dark sidebar menu for the 'El Paso Metropolitan Planning Organization'. The menu items include: Regional Performance, Benchmarking, MTP Projects, Regional Data Repository, Existing Studies, Tutorial, About, Clear, and Print. The main area shows a map of El Paso, Texas, with various landmarks and transportation routes. The map includes labels for 'El Paso International Airport', 'Fort Bliss', 'Sunland Park', 'Anapra', 'Chihuahuita', 'Chaveña', 'Prado Verde', 'Canutillo', 'Santa Teresa', 'La Union', 'Vinton', 'Anthony', 'NORTHEAST EL PASO', 'Homestead Meadows North', 'Homestead Meadows South', and 'Butterfield'. Major highways like I-10, I-62, and US-54 are visible. The map is titled 'Map' and 'Satellite' at the top, and the overall tool title 'Multimodal Web Tool' is in the top right corner.

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- Collaboration between El Paso MPO and University of Texas at El Paso (UTEP)
 - Project started in 9/2018, v.1 completed 1/2020
 - Builds on previous efforts:
 - 2016-2017 Review of multimodal performance measures
 - 2017-2018 Pilot web application for one corridor
 - UTEP research team includes undergraduate and graduate students (civil engineering, computer science) guided by staff researchers
 - MPO staff oversees and provides feedback

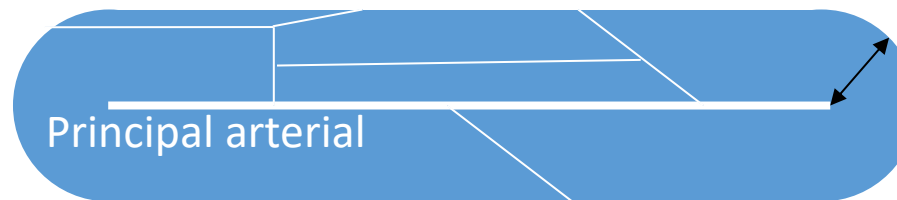
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- Select **Multimodal Performance Measures** for Driving, Transit, Freight, Walking, Biking



- **Gather** Data from National, State, Local Sources
- **Analyze** Data
- Identify **Multimodal Corridors**

Corridor =



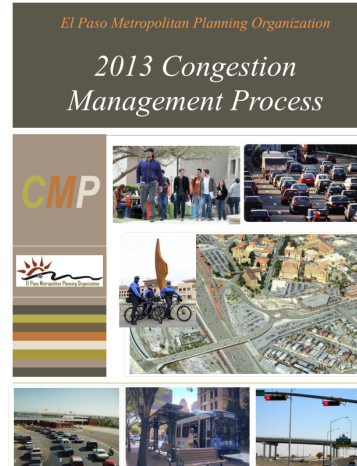
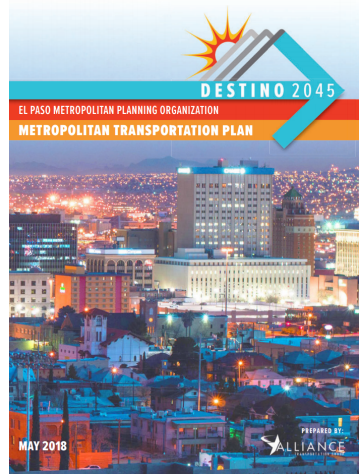
1-mile analysis area

- Visualize Data in **Web Tool**

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Where we looked for performance measures:

- **Metropolitan Transportation Plan (EPMPO 2018)**
- **Congestion Management Process (EPMPO 2013)**
- **National Performance Measures (FHWA 2017)**



Transportation Performance Management (TPM) Implementation Plan



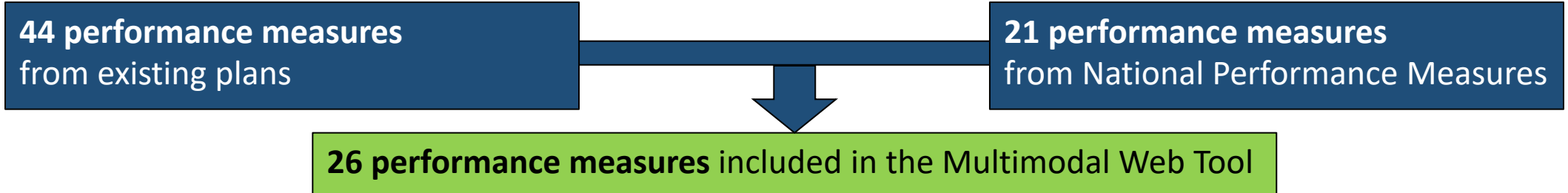
↓

**Identified
44 performance measures
from existing plans**

↓

**Identified
21 performance measures
from National Performance Measures**

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MTP Community Ranking	Multimodal Web Tool
1. Improve safety	4 performance measures for safety
2. Improve quality of life	10 performance measures for accessibility 2 performance measures for infrastructure condition
3. Protect environment	3 performance measures for environment
4. Reduce congestion	3 performance measures for reliability 4 performance measures for modeshare



2. Multimodal Performance Measures (cont'd)

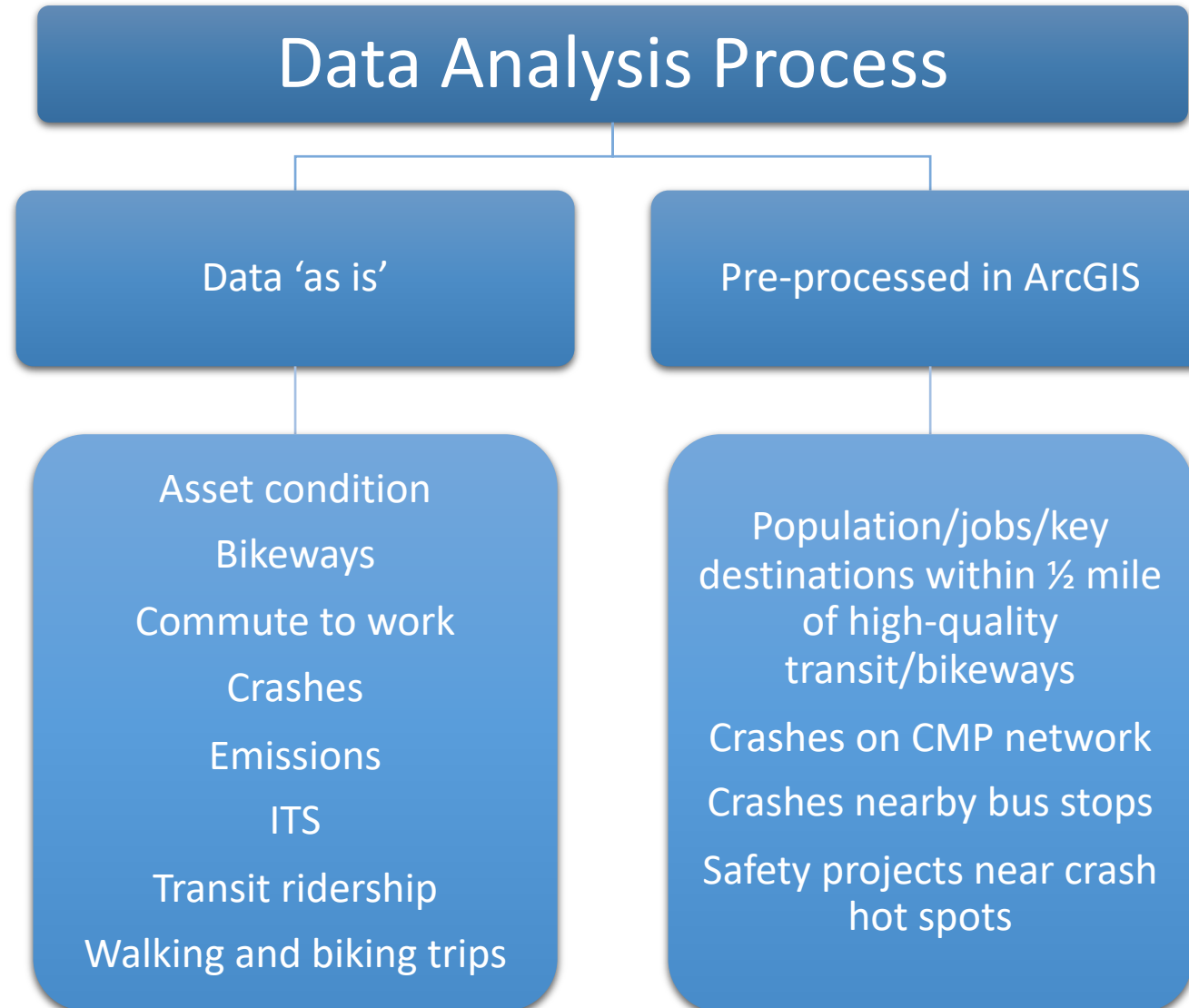


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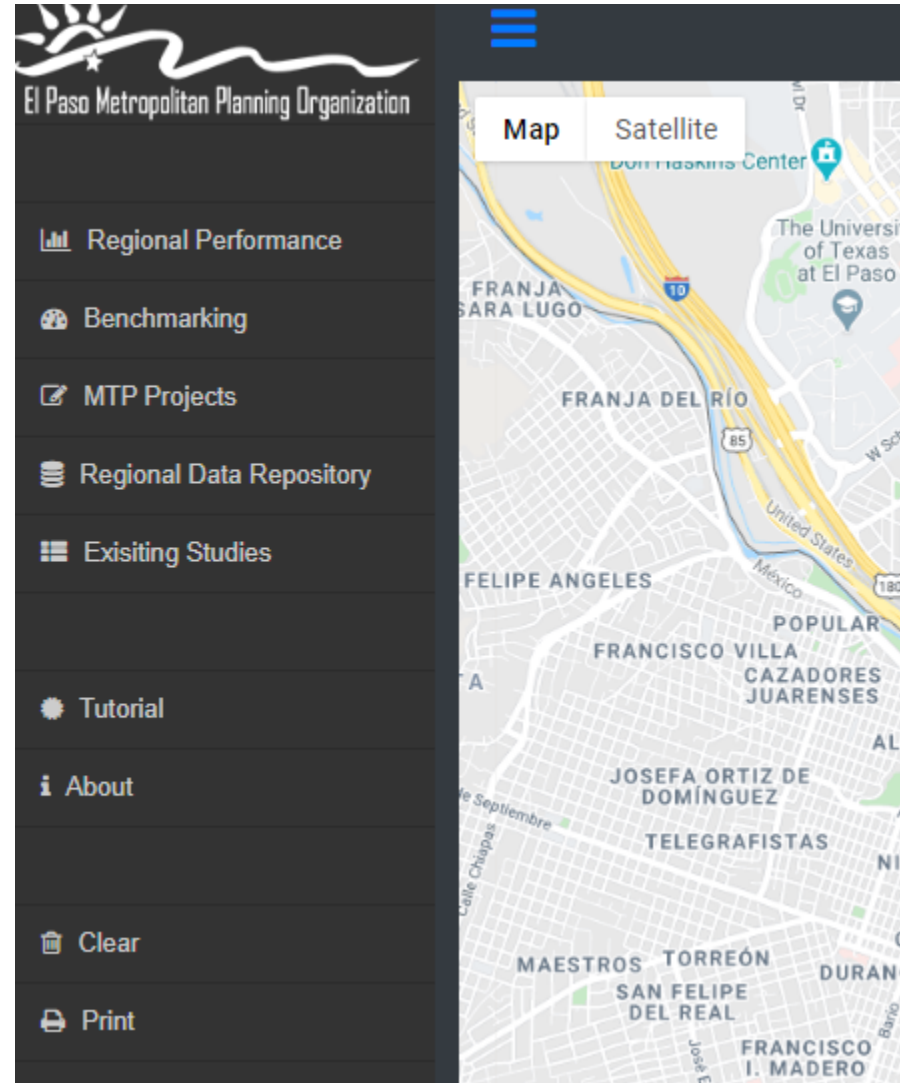
Category	Driving	Freight	Transit	Walking	Biking	Performance Measures for El Paso MPO Multimodal Web Tool	
Modeshare						1. Single occupancy vehicle (SOV) travel	1 *
						2. Workers commuting by transit/walking/biking	2
						3. Transit ridership	2
						4. Walking/biking trips recorded by activity apps	2
Accessibility						5. Jobs within ½ mile of high-quality rapid transit	3
						6. Jobs within ½ mile of bikeways	2
						7. Key destinations within ½ mile of high-quality rapid transit	3
						8. Key destinations within ½ mile of bikeways	2
						9. Population within ½ mile of high-quality rapid transit	3
						10. Population within ½ mile of bikeways	2
						11. Sidewalks per corridor mile	4
						12. Bikeway network buildout	4 *
						13. Border northbound crossings	4
						14. Border northbound wait times	4
Environment						15. Ozone	1 *
						16. Carbon monoxide	1 *
						17. Particulate matter	1 *
Safety						18. Traffic fatalities	1 *
						19. Traffic serious injuries	1 *
						20. Crashes between motorized vehicles and pedestrians/bicyclists nearby bus stops	2
						21. Projects that include safety enhancements located near crash hotspots	3
Reliability						22. Traffic crashes on the CMP Network	4
						23. Traffic detectors, CCTV, and DMS coverage	4
						24. Travel time index	4 *
Infrastructure Condition						25. Pavements in poor condition	1 *
						26. Bridges in poor condition	1 *
PMs per mode	14	8	8	9	10	<i>Performance Measure identified from: 1 National TPM, 2 Peer practice, 3 MTP, 4 CMP, *modified from original</i>	

- National
 - Travel times ([NPMRDS](#))
 - Commute to work, population, jobs ([U.S. Census](#))
 - Pavement condition ([HPMS](#))
- State
 - Crashes: fatalities, serious injuries ([TxDOT and NMDOT crash databases](#))
 - Emissions: ozone, carbon monoxide, particulate matter ([NM Environment Department, TX Commission on Environmental Quality](#))
 - Active transportation: walking and biking trips ([Strava Metro via TxDOT](#))
 - Intelligent Transportation Systems: traffic detectors, CCTV, and DMS ([TxDOT District](#))
 - Bridges and culverts: condition ([TxDOT, NMDOT](#))
- Local
 - Ridership, bus stop locations ([transit providers](#))
 - Presence of sidewalks and bikeways, northbound crossings and wait times ([municipalities](#))
 - Planned and existing trails ([health foundation, municipalities](#))
 - Projects enhancing safety, Congestion Management Process (CMP) network ([MPO](#))

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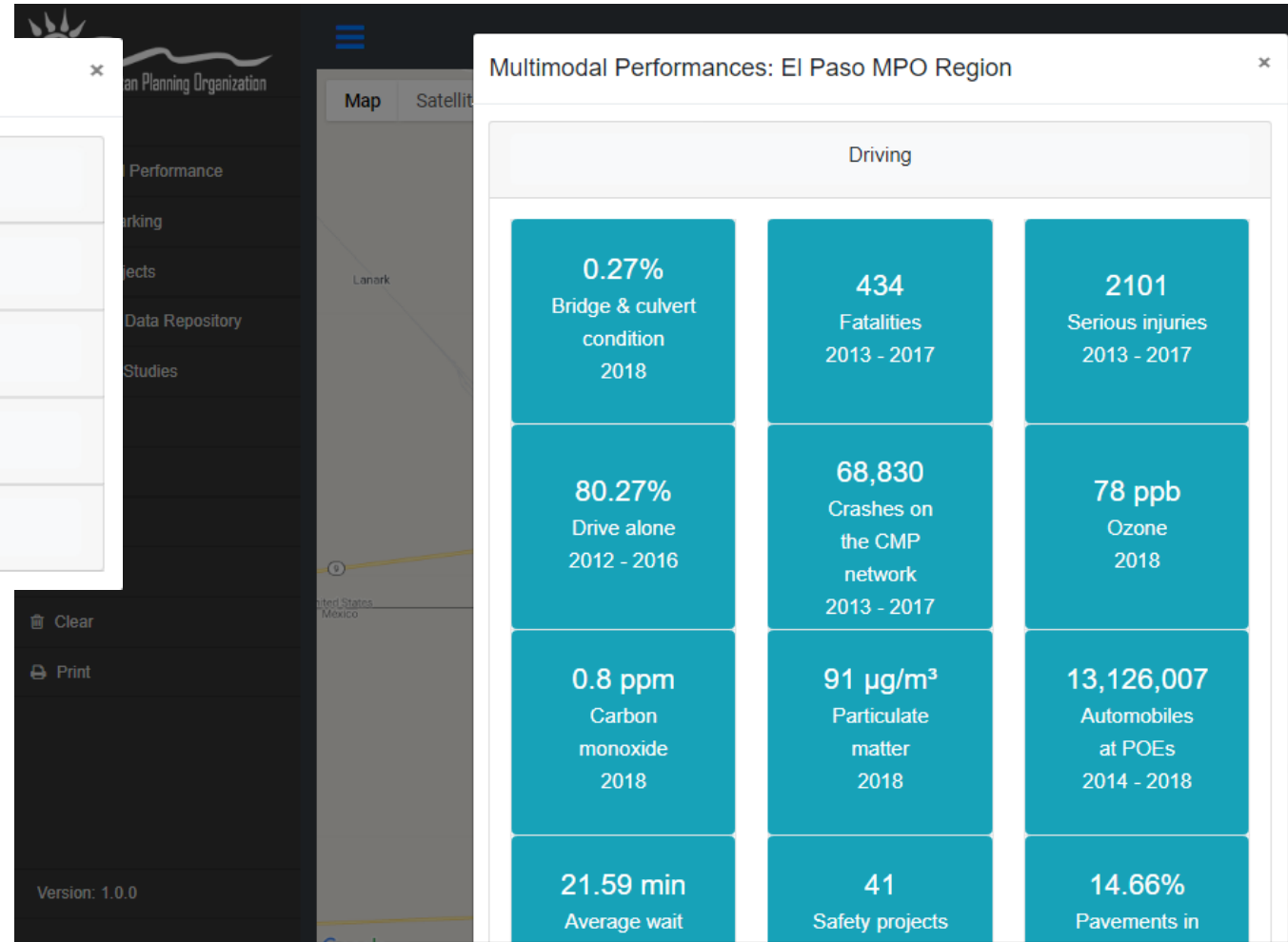


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• Multimodal Performance Overview

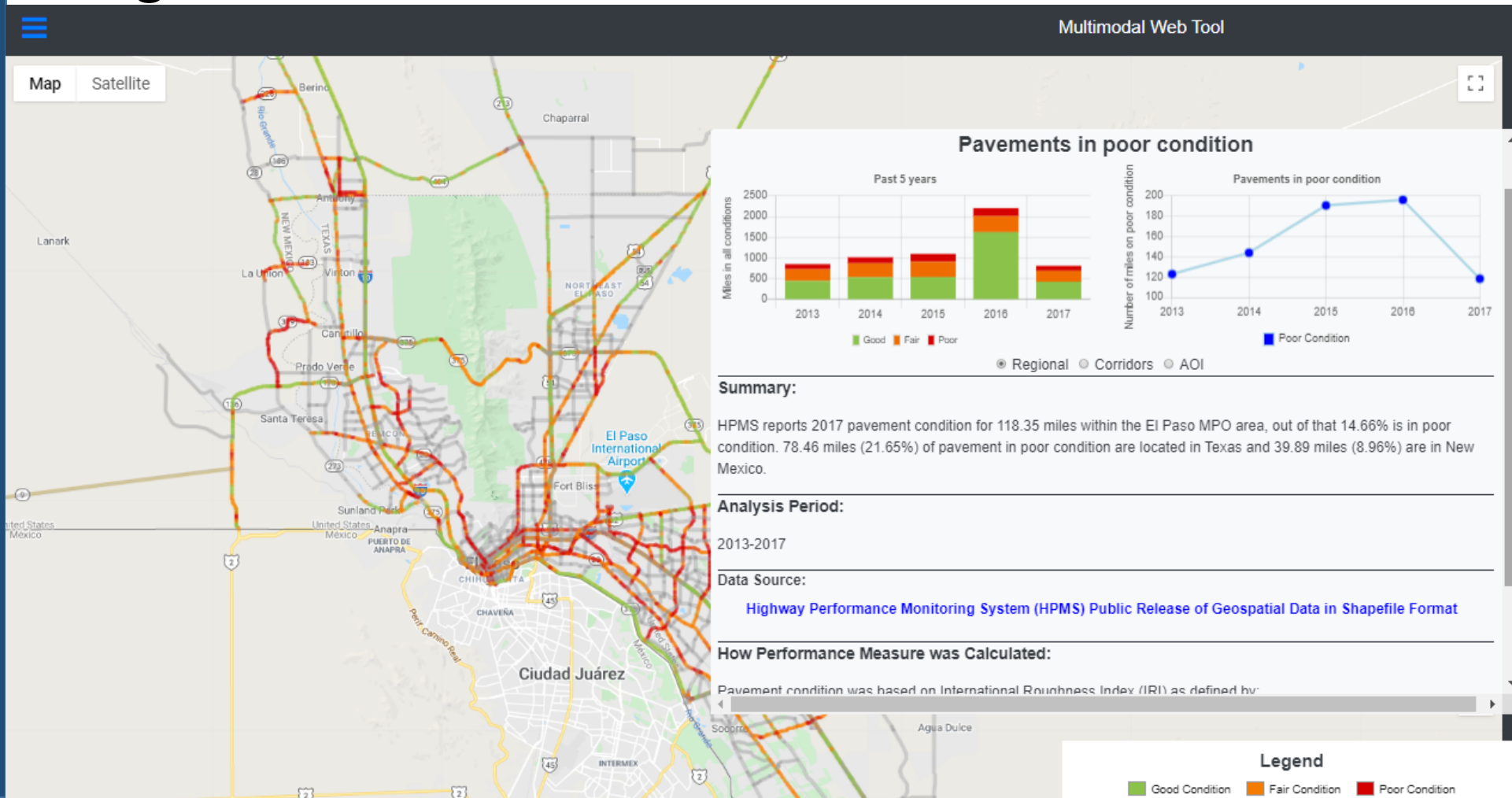
Multimodal Performances: El Paso MPO Region

Driving
Freight
Transit
Walking
Biking



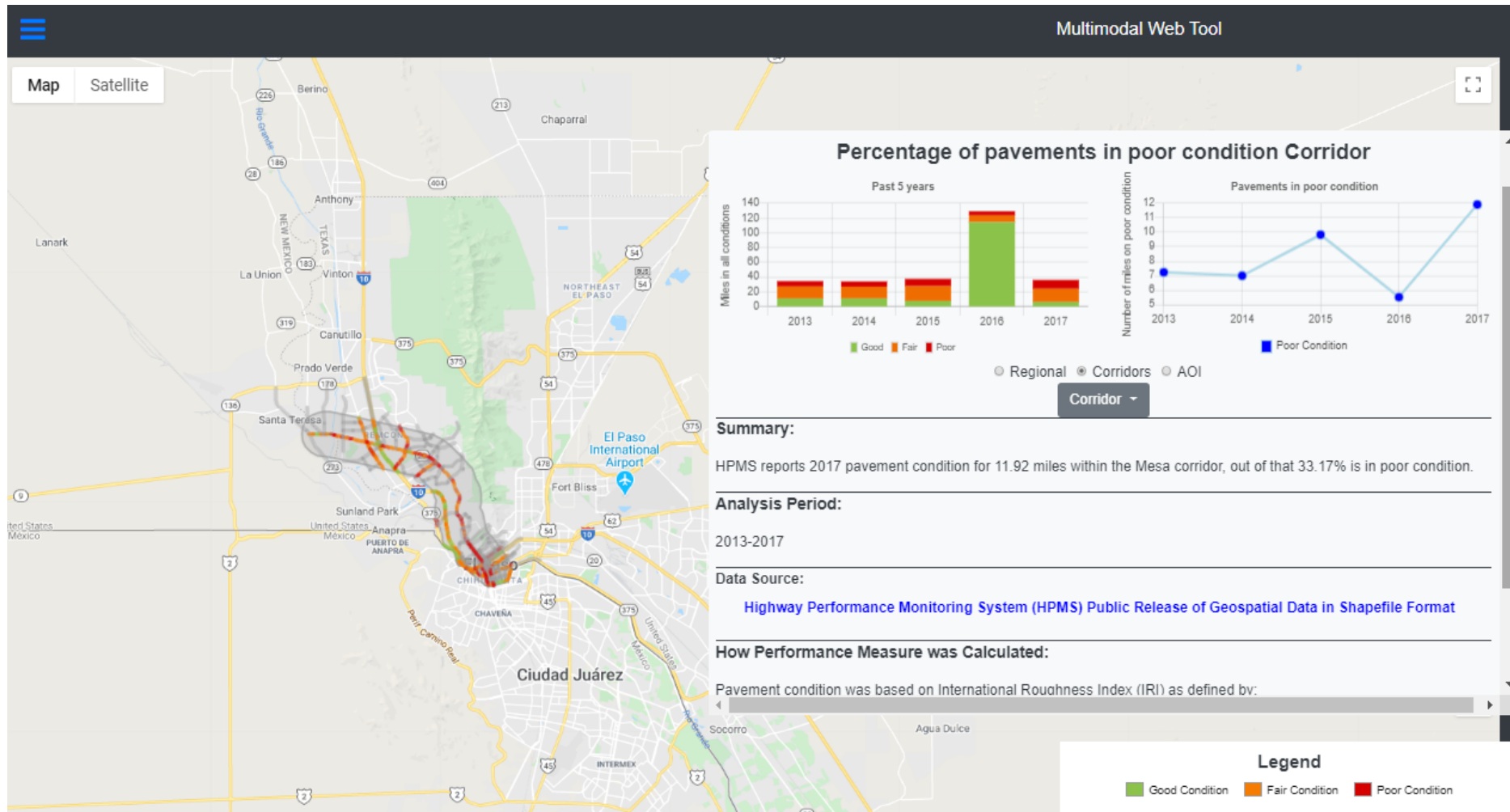
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• Regional Performance



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• Corridor Performance



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- Benchmarking

Benchmarking

Benchmarking +	Regional -	Mesa -																		
<p>Driving</p> <p>Freight</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Fatalities 2013 - 2017</td></tr> <tr><td style="text-align: center;">Serious Injuries 2013 - 2017</td></tr> <tr><td style="text-align: center;">Truck at POEs 2014 - 2018</td></tr> <tr><td style="text-align: center;">Average wait times at POEs 2018</td></tr> <tr><td style="text-align: center;">Travel Time Index 2018</td></tr> <tr><td style="text-align: center;">Pavements in Poor Condition 2013 - 2018</td></tr> </table> <p>Transit</p> <p>Walking</p> <p>Biking</p>	Fatalities 2013 - 2017	Serious Injuries 2013 - 2017	Truck at POEs 2014 - 2018	Average wait times at POEs 2018	Travel Time Index 2018	Pavements in Poor Condition 2013 - 2018	<p>Driving</p> <p>Freight</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">50</td></tr> <tr><td style="text-align: center;">102</td></tr> <tr><td style="text-align: center;">859,733</td></tr> <tr><td style="text-align: center;">13.48</td></tr> <tr><td style="text-align: center;">1.16</td></tr> <tr><td style="text-align: center;">12.55%</td></tr> </table> <p>Transit</p> <p>Walking</p> <p>Biking</p>	50	102	859,733	13.48	1.16	12.55%	<p>Driving</p> <p>Freight</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">3</td></tr> <tr><td style="text-align: center;">7</td></tr> <tr><td style="text-align: center;">Data not calculated</td></tr> <tr><td style="text-align: center;">Data not calculated</td></tr> <tr><td style="text-align: center;">1.15</td></tr> <tr><td style="text-align: center;">1.61%</td></tr> </table> <p>Transit</p> <p>Walking</p> <p>Biking</p>	3	7	Data not calculated	Data not calculated	1.15	1.61%
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• MTP Projects Overview

El Paso Metropolitan Planning Organization

- Regional Performance
- Benchmarking
- MTP Projects
- Regional Data Repository
- Existing Studies
- Tutorial
- About

El Paso Streetcar System 2nd Year Operating Assistance
 MPO | T108X-2
 CSJ | 0924-06-552

DESCRIPTION
 Operating Assistance for 2nd year of new transit service intended to reduce congestion and CO emissions.

MTP Projects

Project ID	CSJ	Project Name	Project Mode	Functional Class	CMP Strategy	From	To	City Area	Network Year	Total Project Cost	Sponsor	YOE
A433X-CAP	0924-06-563	Arterial 1 (1682 Blvd.)	Added Capacity	Minor Arterial	Road Capacity	Future Border Highway East	IH-10	East	2020	\$4,832,941	Socorro	2019
P410X-15A	0924-06-534	Pellicano Dr Widening/Build	Added Capacity	Proposed Minor Arterial	Road Capacity	Joe Battle (Loop 375)	Berryville St	East	2020	\$27,576,800	County EP	2020

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• Existing Studies Overview

Multimodal Web Tool

Existing Studies

STUDY	Alameda	Artcraft Dominici	Doniphan	Dyer	Eastlake	Horizon	McNutt	Mesa	Montana	Montwood	Socorro	Yarborough	Zaragoza
County Regional Transit Study	✓	✓		✓	✓	✓	✓		✓		✓	✓	✓
El Paso Bike Plan	✓	✓	✓		✓	✓	✓	✓	✓			✓	
FM 1281 Horizon				✓									
I-10 Collector-Distributor Lanes		✓			✓					✓			
I-10 Connect	✓		✓			✓							
I-10 Operational Improvements							✓	✓	✓				
Loop 375 - Border Highway East	✓	✓										✓	✓
Loop 375 - Border Highway West		✓								✓			
Loop 375 Managed Lanes	✓												✓
Northeast Parkway			✓										
Regional Mobility Strategy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Reimagine I-10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SH20 Alameda Avenue	✓												✓
SH20 Alameda/Paisano	✓												
SH20 Doniphan Drive		✓								✓	✓		

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- Tutorial

The screenshot displays the 'Multimodal Web Tool' interface. A 'Tutorial' window is open, featuring a navigation menu on the left with the following items: Regional Performance Module, Interacting with Performance Measures, Benchmarking Module, MTP Projects Module, Data Repository Module, and Existing Studies Module. The main content area of the tutorial window shows a video player with a progress bar at 0:42 / 1:36. The video content includes a map of the El Paso region with bridge locations marked by colored dots (green for good, yellow for fair, red for poor, and grey for no data). A summary box titled 'Bridges in poor condition' contains two bar charts and text: 'Within the Texas portion of the El Paso MPO area, there are 272 bridges (38.83%) in fair condition, 1 bridge (0.14%) in poor condition.' and 'Within the New Mexico portion of the El Paso MPO area, there are 2 bridges (0.27%) in good condition, 7 bridges (0.96%) in fair condition, 1 bridge (0.14%) in poor condition.' Below the charts, it states 'Condition data was not available for 160 bridges within the El Paso MPO area.' and 'Analysis Period:'. The background of the interface shows a map of El Paso with various neighborhood names like TELEGRAFISTAS, NIÑOS HEROES, BELLAVISTA, CUAUHTÉMOC, CATALÁN, LOS SAUCOS, URANGA, VILLAS DEL BRAVO, VILLAS ADLII, EXCELENCIA, MEXICO, MONUMENTAL, Sicomoros, ERA DE SAN LORENZO, LA FORTUNA, DEL MAESTRO, PARTIDO ROMERO, DEL NTE, CENTRO MONUMENTO, FRANCISCO I. MADERO, GREGORIO M. SOLIS, ALTO, DURANGO, ARROYO COLORADO, SAN FELIPE DEL REAL, ROS TORREÓN, and SAN FELIPE DEL REAL.

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- Tools Used



Short-term:

- Launch in May 2020
- Incorporate the Web Tool into planning & programming process
 - Training for MPO board members and planning partners
- Gather feedback and opportunities for improvement

Long-term:

- Revise performance measures
- Tailor to suit planning and programming needs
- Add newly available data in predetermined intervals

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- Work with what is available
- Inter-agency relationships are important
- Identify opportunities for improvement
- Attainable complexity



Thank you.



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