

# International Border Crossings (IBCs) Strategic Plan

PRESENTATION TO EL PASO CITY COUNCIL

JULY 30, 2024

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EDUARDO CALVO, AICP  
EXECUTIVE DIRECTOR

# Today's Topics

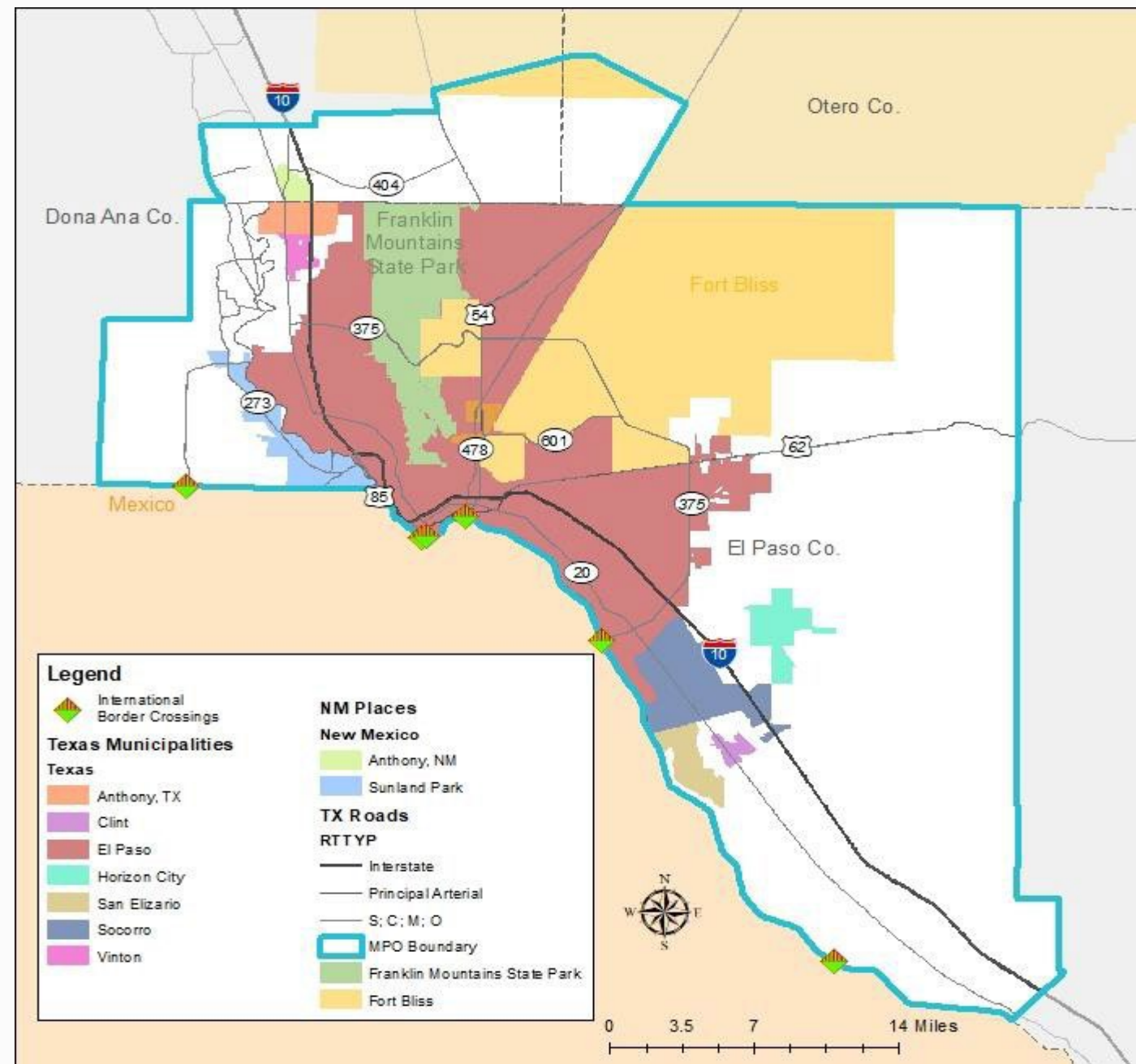
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- Background
- Why a Strategic Plan
- Key Elements of the IBC Strat-Plan (Scope)
- Analytical tools (Macro and Micro)
- Preliminary Tests
- Q & A

# Background

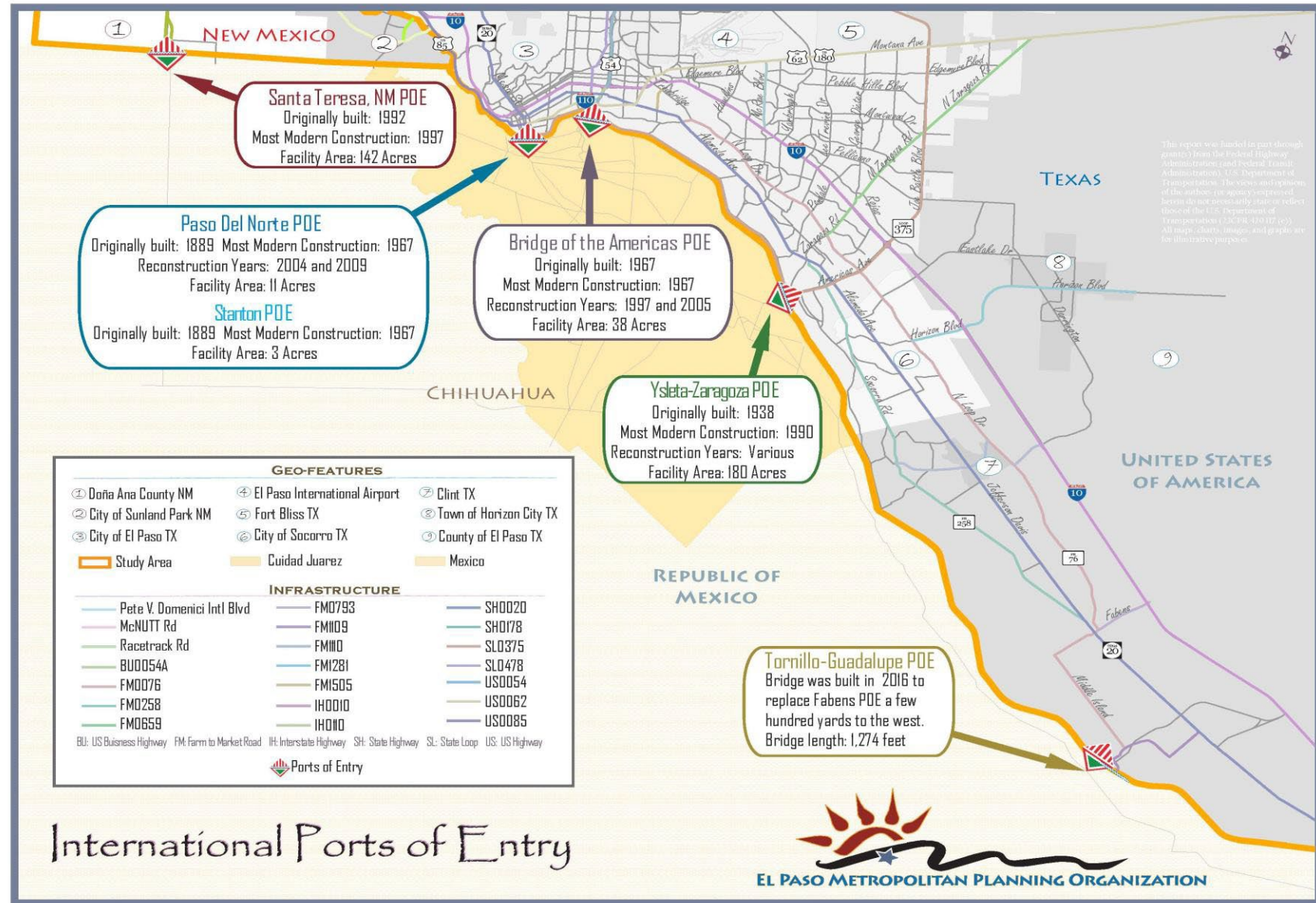
## El Paso MPO Region

- El Paso County, TX and southern Doña Ana and Otero Counties, NM
- Population 900,000 approx., close to 3 million with Ciudad Juárez
- Key Regional Partners
  - TxDOT & NMDOT
  - El Paso County, Doña Ana County
  - Municipalities
  - Transit Providers: Sun Metro, SCRTD, EPATS
  - Municipio Ciudad Juárez and IMIP
  - State of Chihuahua
- Private sector both sides



# IBCs in the El Paso MPO Region

- Santa Teresa:
  - Cargo/Auto/Ped
  - Non-tolled
- Paso del Norte
  - Northbound only (incl 1 SENTRI lane)
  - Auto/Ped
  - Tolled
- Stanton
  - Auto/Ped Southbound
  - SENTRI Northbound
  - Tolled
- Bridge of the Americas (BOTA)
  - Cargo/Auto/Ped
  - Non-tolled
- Ysleta-Zaragoza
  - Cargo/Auto/Ped
  - Tolled
- Tornillo-Guadalupe
  - Cargo/Auto/Ped
  - Tolled (currently \$0 toll)



# Why a Strategic Plan?

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- Cross-border status quo is unacceptable.
- Are we ready for Nearshoring? Competition is brutal.
- Multiple bottlenecks along border crossing trip
- Complex ownership/control – “silos”
- Need to look at IBCs as a regional system
- Region lacks specific improvements (i.e., projects)
- Need for continuous robust coordination from both sides

# Scope IBC StratPlan

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1. Literature review
2. Stakeholder and Public Engagement
3. Evaluation systemwide current conditions (2024)
4. Future systemwide scenarios
5. Specific improvements to individual IBC (i.e., projects)
6. Economic Development Opportunities
7. Feasibility Binational 3-state Port Authority



# Scope IBC StratPlan

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## Task 1. Literature review

- Border Master Plans
- Capital Improvement Programs Operators
- Studies on Crossing times Delay, Economic Impact (TTI, MPO, EP Chamber, Hunt Institute, etc.)
- El Paso Area Operations Plan (2011)
- Border Improvement Plan (2004)

## Task 2. Stakeholder and Public Engagement

- Identify critical stakeholders
  - Public and Private sectors U.S. and Mexico
  - Community and Interest groups
- Steering Committee
- Task Force(s)
- Meetings:
  - One-on-ones
  - Steering Committee
  - General Public

# Scope IBC StratPlan (con't)

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## Task 3. Evaluation systemwide current conditions (2024)

- Geometric layout and physical characteristics IBC and connections
- Operational characteristics
- Ownership/jurisdiction
- Crossing volumes all modes
- Demographic and land use
- External and local policies (e.g., CBP, DPS, ANAM, etc.)
- Establish performance measures
  - Total crossing times
  - Delay
  - Regional VMT and VHT
  - Emissions pollutants: ozone, PM2.5, PM10



# Scope IBC StratPlan (con't)

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## Task 4. Future systemwide scenarios – multiple options

- New IBCs
- Additional capacity on existing
- Truck only or SOV/ped only
- FAST/SENTRI-only IBCs or lanes
- Emerging technologies
- Improved accessibility/connectivity to networks
- Support Infrastructure (warehousing, parking, retail services, etc.)
- Evaluate same performance measures

# Scope IBC StratPlan (con't)

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## Task 5. Specific improvements individual IBC

- Based on systemwide approach
- Feasibility level
- Conditions on both sides of border
- Geometric elements
- ROW needs
- Traffic and operational analysis
- Planning level cost estimates
- Stakeholder and community support

# Scope IBC StratPlan (con't)

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## Task 6. Economic Development Opportunities

- Nearshoring capture
- Expansion high value supply chains
- Job creation and additional tax base on both sides
- Borderplex Competitiveness

## Task 7. Feasibility Binational 3-state Port Authority

- Case studies
  - Port Authority of NY/NJ (bi-state)
  - Otay-Mesa east POE (binational planning, construction and operations)
- Win-Win for the region and individual stakeholders
- What does it take?

# Analytical Tools

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- Data collection: Intercept surveys
- MACRO and MICRO levels
- Individual analysis for Ciudad Juarez, El Paso, and IBCs
- Combined for all

# Intercept Surveys at IBCs

- CTIS (UTEP), COLEF, EPMPO.

- Five IBCs:

- ✓ Santa Teresa

- ✓ Paso del Norte

- ✓ Stanton

- ✓ BOTA

- ✓ Zaragoza

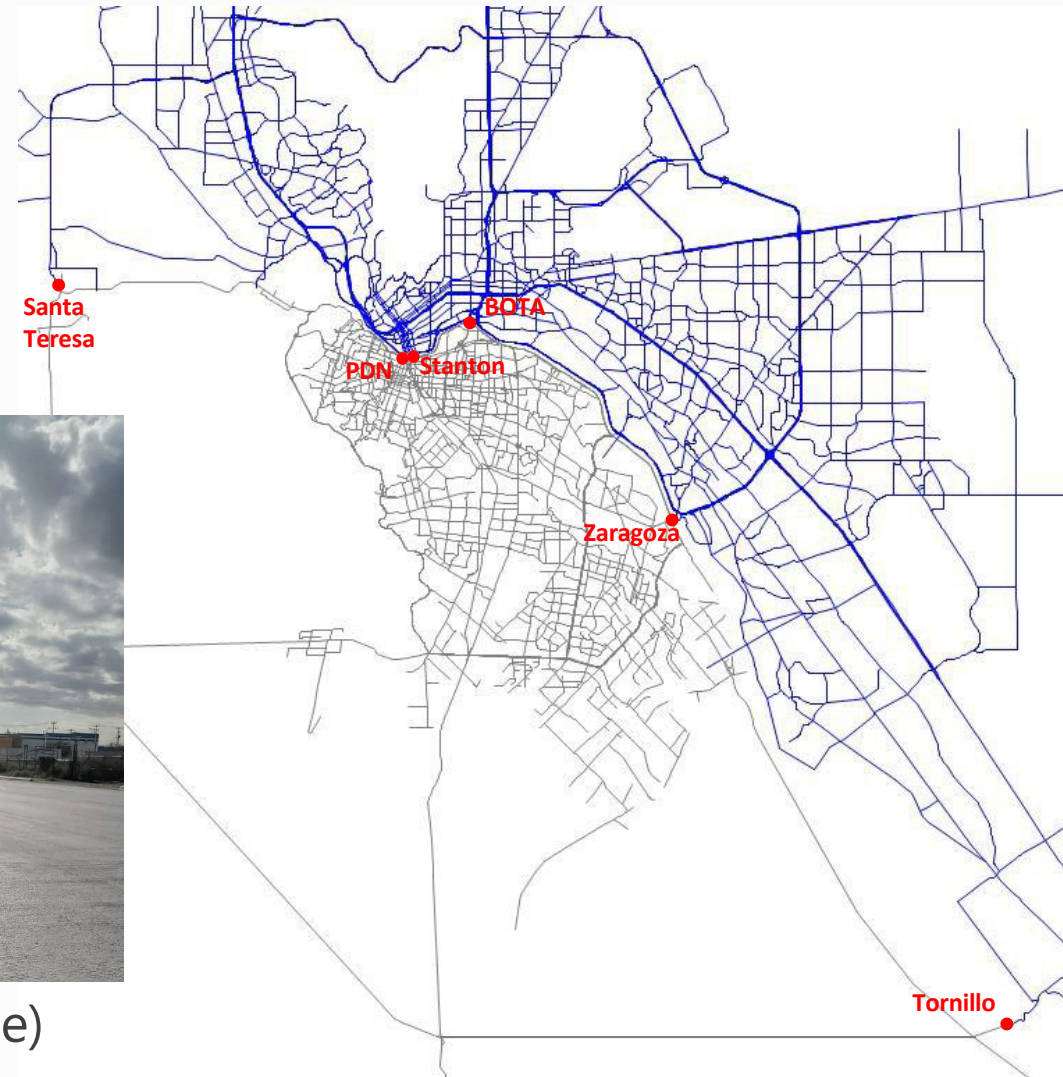
- ✓ Tornillo (not surveyed - closed to trucks)

- Modes:

- ✓ AUTO: cars, motorcycle, trucks, vans (non-commercial use)

- ✓ PED: pedestrians

- ✓ TRUCK: commercial vehicles



# Survey Instrument: PED

Pedestrian 1	
1. Time	_____ : _____ am _____ : _____ pm
2. In what city and state do you live?	<input type="checkbox"/> Cd. Juárez <input type="checkbox"/> El Paso <input type="checkbox"/> other: _____ city / state
3. ¿What was the last place you visited before coming here? (nearest street intersection/place and city)	
3a. At what time did you leave this place?	_____ : _____ am _____ : _____ pm
3b. What was the purpose of this trip?	<input type="checkbox"/> home <input type="checkbox"/> work/work related <input type="checkbox"/> school <input type="checkbox"/> medical services <input type="checkbox"/> social/entertainment/vacations <input type="checkbox"/> shopping/resataurants/gasoline <input type="checkbox"/> Leave or pick up someone <input type="checkbox"/> other _____
3c. From that place, what trasnportation mode you use to arrive to this international bridge?	<input type="checkbox"/> walking <input type="checkbox"/> bus <input type="checkbox"/> taxi <input type="checkbox"/> auto, pick-up, moto, etc
4. What is your next destination? (nearest street intersection/place and city)	
4b. What was the purpose of this trip?	<input type="checkbox"/> home/ returning home <input type="checkbox"/> work/ work related <input type="checkbox"/> school <input type="checkbox"/> medical services <input type="checkbox"/> social/entertainment/vacations <input type="checkbox"/> shopping/eating out/gasoline <input type="checkbox"/> Leave or pick up someone <input type="checkbox"/> other _____
4c. What trasnportaion mode will you use to go to your next destination?	<input type="checkbox"/> walking <input type="checkbox"/> bus <input type="checkbox"/> taxi <input type="checkbox"/> auto, pick-up, moto, etc

5. To measure the number of trips you have made, we need to know what places you've visited today :		
5a. Where did your first trip started? (nearest street intersection/place and city)		
5b. From that place, what was your next destination? (nearest street intersection/place and city)		
5c. Where did you go next? (nearest street intersection/place and city)		
5d. Where did you go next? (nearest street intersection/place and city)		
5e. Where did you go next? (nearest street intersection/place and city)		
5f. Where did you go next? (nearest street intersection/place and city)		
5g. How many other places did you stop at today?		
6. Household montly income	\$ _____ dollars/month	
7. Including yourself, how many people live in you household?	_____ people	
8a. How much did you spend in US today? (shopping, gasoline, banking, medical services, etc.)	\$ _____ dollars	
Mexican Residents Only	8b. Wait time spent in lane to cross to USA today (hr : min)    cruzó a pie <input type="checkbox"/> Yes <input type="checkbox"/> No (hr : min)    DCL (auto) <input type="checkbox"/> Yes <input type="checkbox"/> No	
	8c. We are interested on knowing the demand of crossing Indicate what waiting time would make you decide not to cross the border TODAY (for any time, international bridge, and transportation mode)	0:15 <input type="checkbox"/> Yes <input type="checkbox"/> No    1:45 <input type="checkbox"/> Yes <input type="checkbox"/> No 0:30 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:00 <input type="checkbox"/> Yes <input type="checkbox"/> No 0:45 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:15 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:00 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:30 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:15 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:45 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:30 <input type="checkbox"/> Yes <input type="checkbox"/> No    3:00 <input type="checkbox"/> Yes <input type="checkbox"/> No

# Survey Instrument: AUTO

Passenger vehicle 1	
1. Time	_____ : _____ am _____ : _____ pm
2. Number of passengers in the vehicle (including driver)	
3. Vehicle type	<input type="checkbox"/> car <input type="checkbox"/> taxi <input type="checkbox"/> moto <input type="checkbox"/> pick-up <input type="checkbox"/> van <input type="checkbox"/> other _____
4. In what city and state do you live?	<input type="checkbox"/> Cd. Juárez <input type="checkbox"/> El Paso <input type="checkbox"/> other: _____ <div style="text-align: right;">city / state</div>
5. Last place where you got into your vehicle (nearest street intersection/place and city)	
5a. At what time did you leave this place?	_____ : _____ am _____ : _____ pm
5b. What was the purpose of this trip?	<input type="checkbox"/> home <input type="checkbox"/> work / work related <input type="checkbox"/> school <input type="checkbox"/> medical services <input type="checkbox"/> social/entertainment/vacations <input type="checkbox"/> shopping/eating out/gasoline <input type="checkbox"/> Drop off or pick up someone <input type="checkbox"/> other _____
6. ¿What is your next destination? (nearest street intersection/place and city)	
6b. ¿What is the purpose of this trip?	<input type="checkbox"/> home/ back home <input type="checkbox"/> work/ work related <input type="checkbox"/> school <input type="checkbox"/> medical services <input type="checkbox"/> social/entertainment/vacations <input type="checkbox"/> shopping/eating out/ gasoline <input type="checkbox"/> Leave or pick up someone <input type="checkbox"/> other _____






7. To measure the number of trips you have made, we need to know what places you've visited today :		
7a. Where did your first trip started? (nearest street intersection/place and city)		
7b. From that place, what was your next destination? (nearest street intersection/place and city)		
7c. Where did you go next? (nearest street intersection/place and city)		
7d. Where did you go next? (nearest street intersection/place and city)		
7e. Where did you go next? (nearest street intersection/place and city)		
7f. Where did you go next? (nearest street intersection/place and city)		
7g. How many other places did you stop at today?		
8. Household monthly income	\$ _____ dollars/month	
9. Including yourself, how many people live in your household?	_____ people	
10a. How much did you spend in US today? (shopping, medical, gasoline, banking.)	\$ _____ dollars	
Mexican Residents only	10b. Wait time spent in lane to cross to USA today _____ : _____ walking <input type="checkbox"/> Yes <input type="checkbox"/> No (hr : min) DCL (vehicle) <input type="checkbox"/> Yes <input type="checkbox"/> No	
	10c. We are interested on knowing the demand of crossing Indicate what waiting time would make you decide not to cross the border TODAY (for any time, international bridge, and transportation mode)	0:15 <input type="checkbox"/> Yes <input type="checkbox"/> No    1:45 <input type="checkbox"/> Yes <input type="checkbox"/> No 0:30 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:00 <input type="checkbox"/> Yes <input type="checkbox"/> No 0:45 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:15 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:00 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:30 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:15 <input type="checkbox"/> Yes <input type="checkbox"/> No    2:45 <input type="checkbox"/> Yes <input type="checkbox"/> No 1:30 <input type="checkbox"/> Yes <input type="checkbox"/> No    3:00 <input type="checkbox"/> Yes <input type="checkbox"/> No



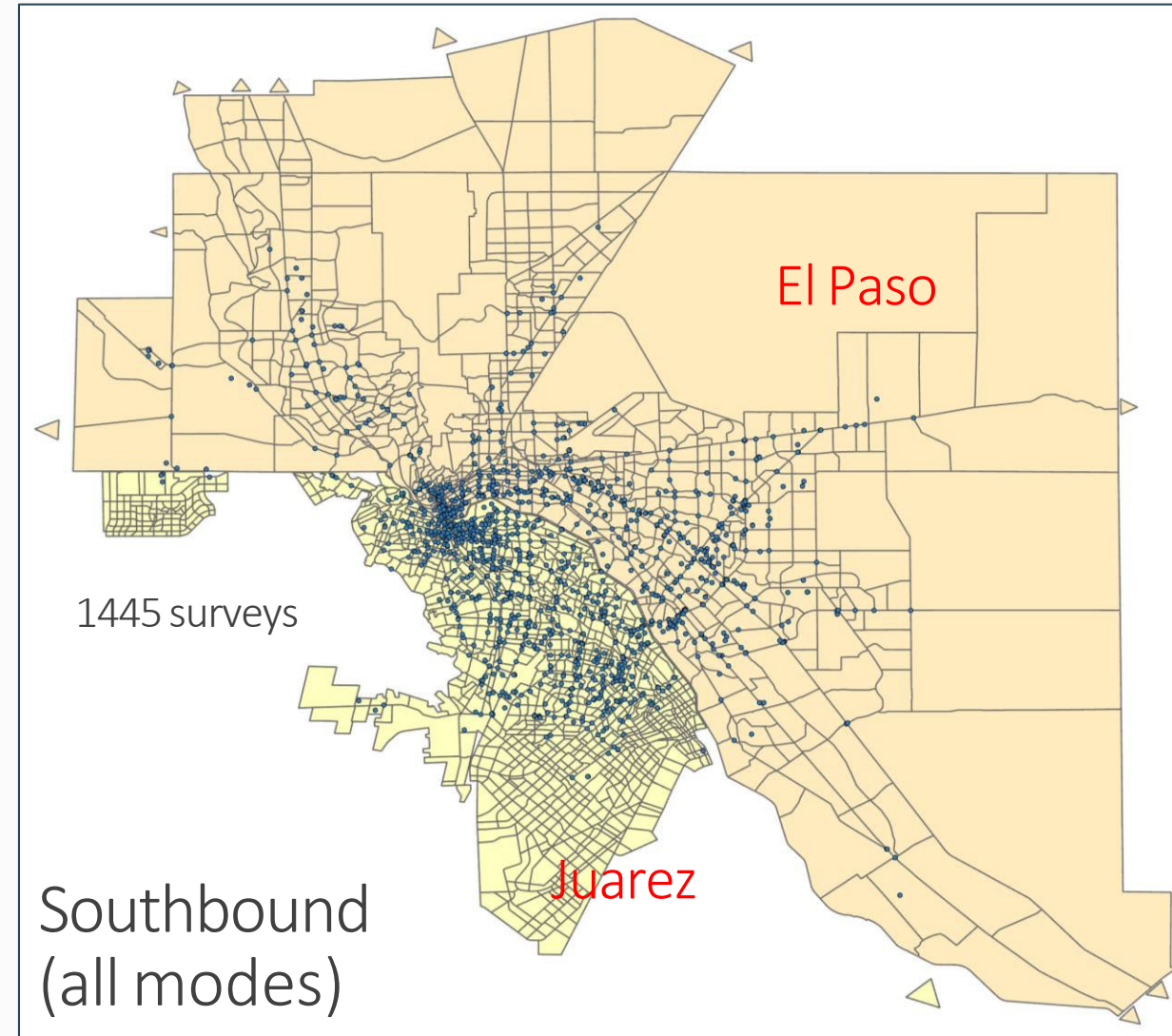
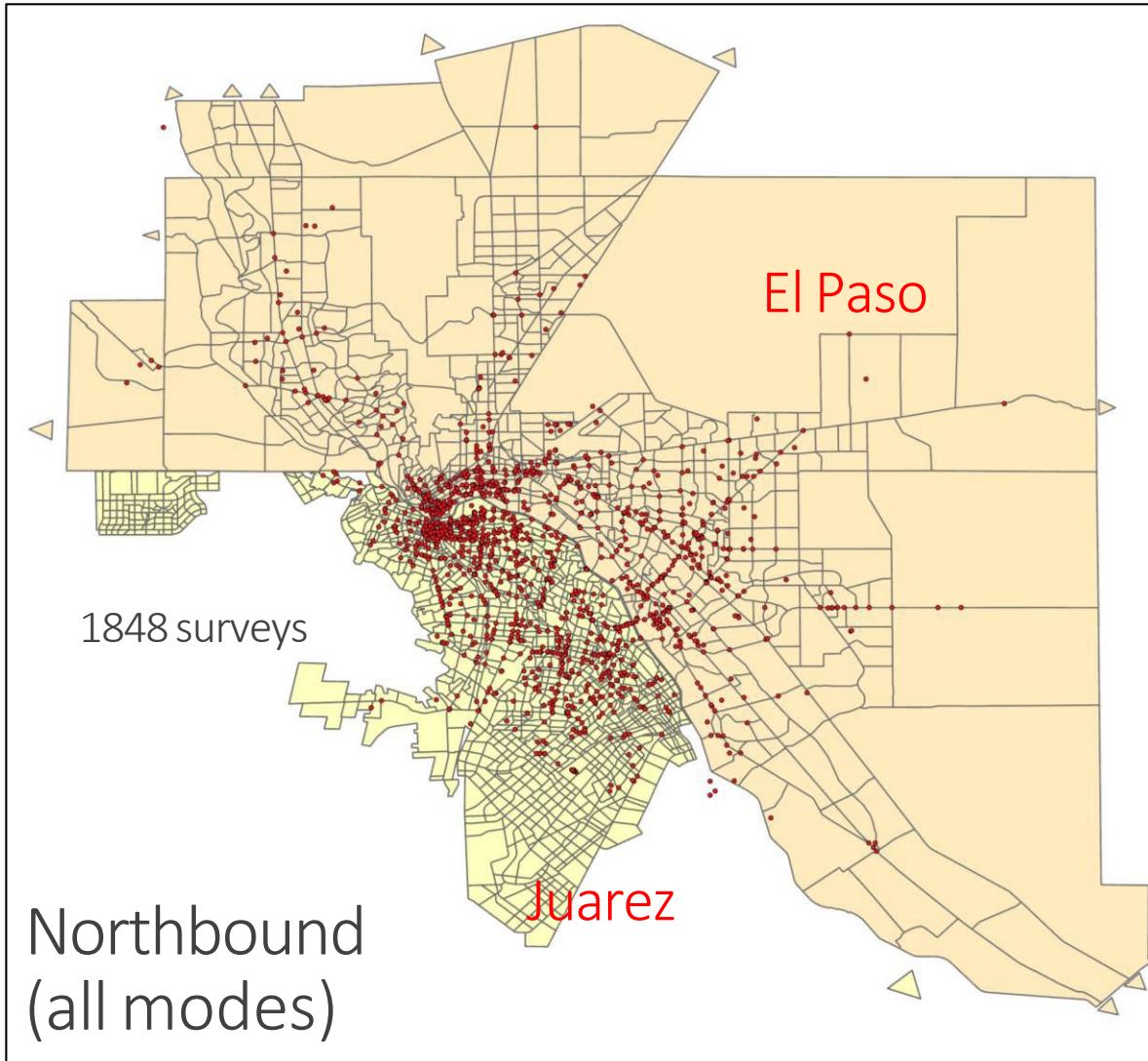
# Survey Instrument: TRUCKS

	Commercial Veh 1
1. Time	____:____am ____:____pm
2. Number of people in the vehicle	
3. Vehicle classification ( <b>Vehicle code</b> )	
4. Cargo type ( <b>Cargo code</b> )	_____ [ ] empty cargo
5. ¿Where did you pick up the shipment? (nearest street intersection/ place)	
6. ¿Was this place an intermodal station or a custom broker?	[ ] Yes [ ] No [ ] not sure
7. How was cargo transferred at the location? ( <b>Transfer code</b> )	
8. Where would you leave the cargo? (nearest street intersection/ place)	
9. Is the place a intermodal transfer station or a custom broker?	[ ] Yes [ ] No [ ] not sure
10. How will the load be transferred at that location? ( <b>Transfer classification</b> )	
11. Last place where you got into the vehicle (nearest street intersection/ place)	
11a. At what time did you leave this location??	____:____am ____:____pm
11b. What type of place it was? ( <b>PLACE code</b> )	
11c. What was the purpose of being at this location? ( <b>PURPOSE code</b> )	
12. What is your next destination? (nearest street intercection/ place)	
12a. What was the purpose of this trip? ( <b>PURPOSE code</b> )	
To measure the number of trips you have made, we need to know what places you've visited today :	
13. Where did you first trip started today? (nearest place/location/ city)	
14. Where did you go from there? (nearest place/location/ city)	
15. Where did you go next? (nearest place/location/ city)	
20. How many other places did you stop at today?	

## Vehicle classification

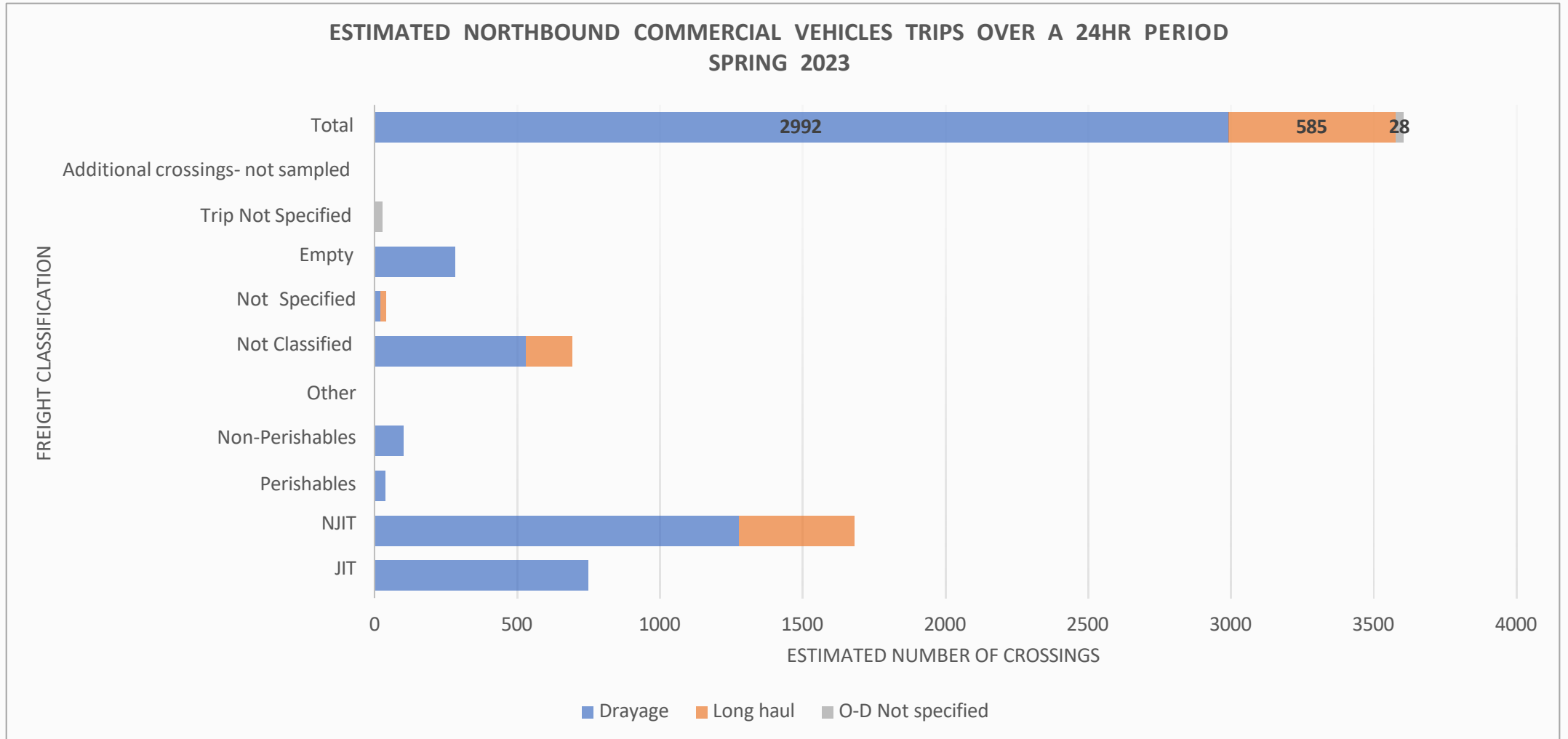
1. auto/pick-up/van	
2. Two axle single unit (6 tires)	
3. Three axle single unit (10 tires)	
4. Four axle unit (14 tires)	
5. tractor-trailer	 ... or larger vehicle type (more axles, double unit, etc.)

# Cross-border ODs from surveys



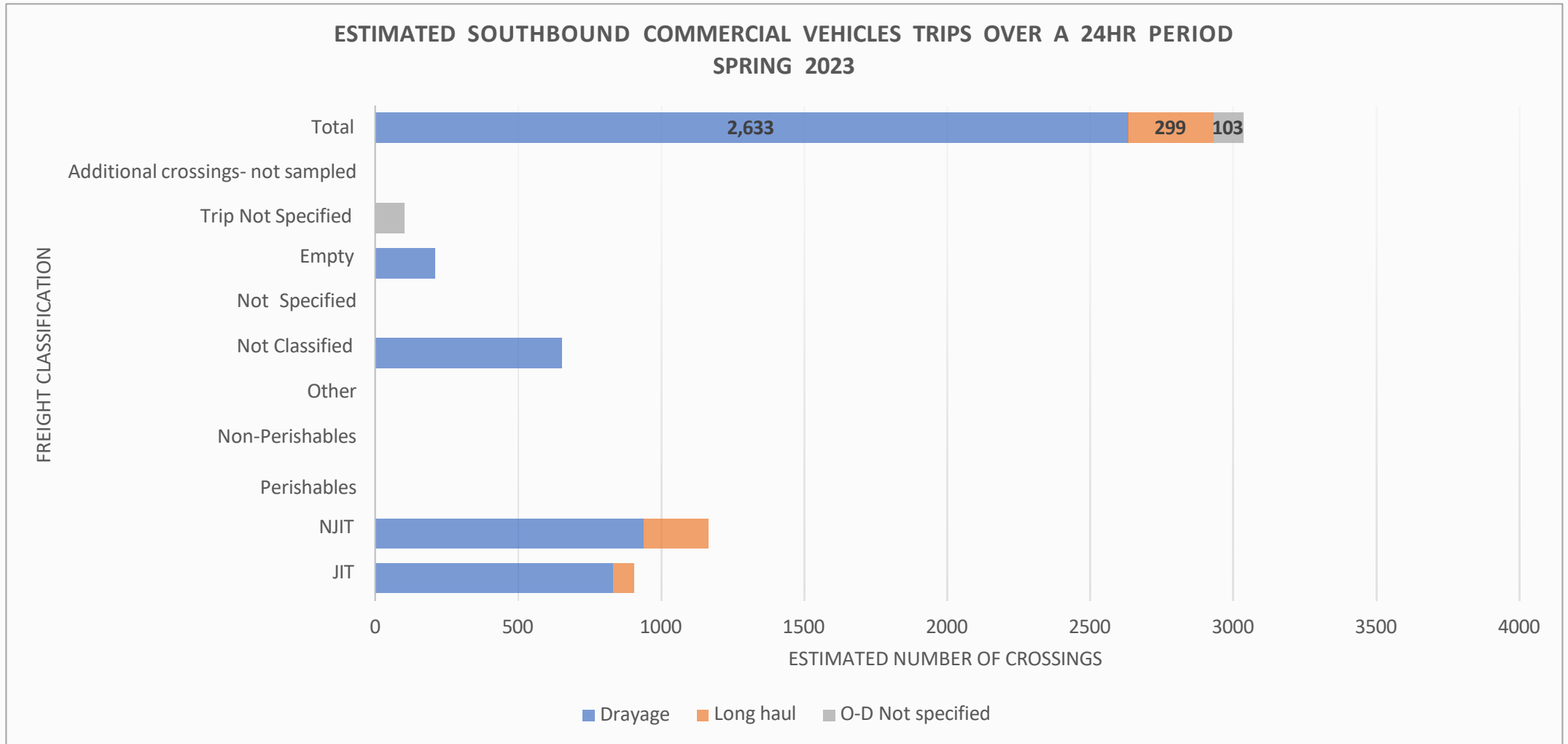
# IBC Survey Results:

## Daily Commercial Vehicle Trips, NB

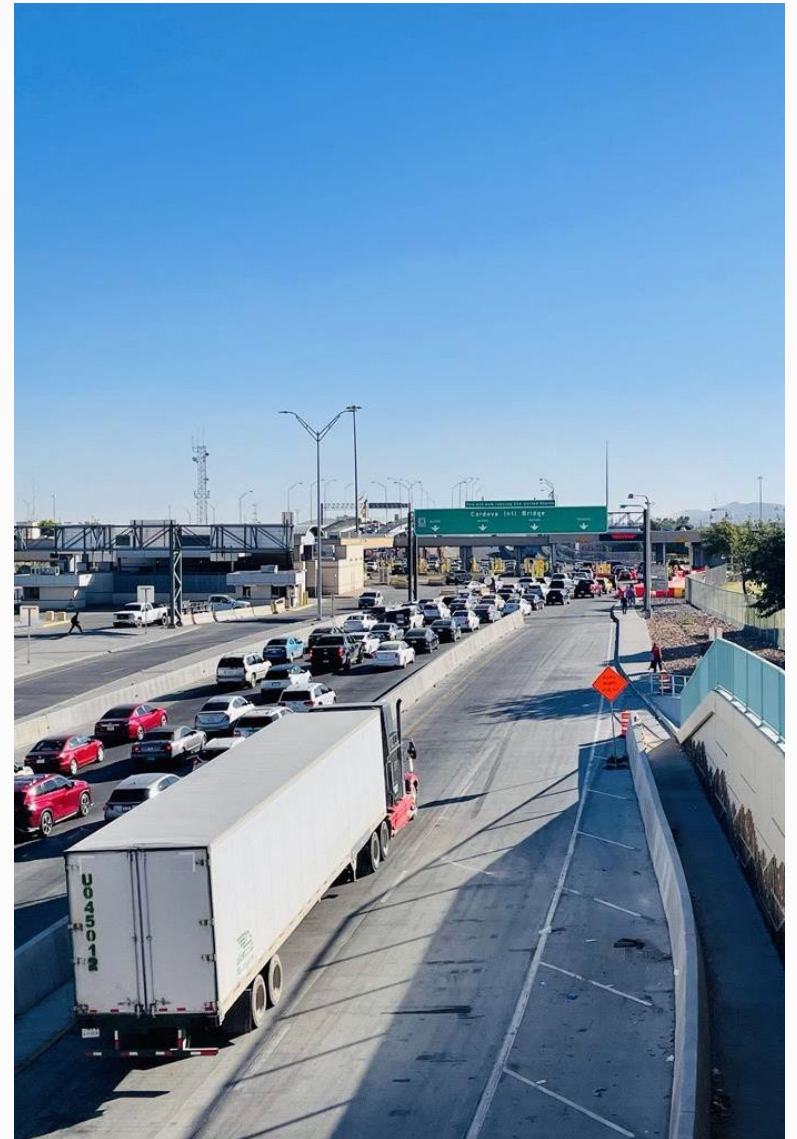


# IBC Survey Results:

## Daily Commercial Vehicle Trips, SB



# IBC traffic and emissions evaluation



# Macro Level Tools:

- ✓ International Travel Demand Model (iTDM) – 2017 validation
- ✓ Emission Sketch Tool (EST)

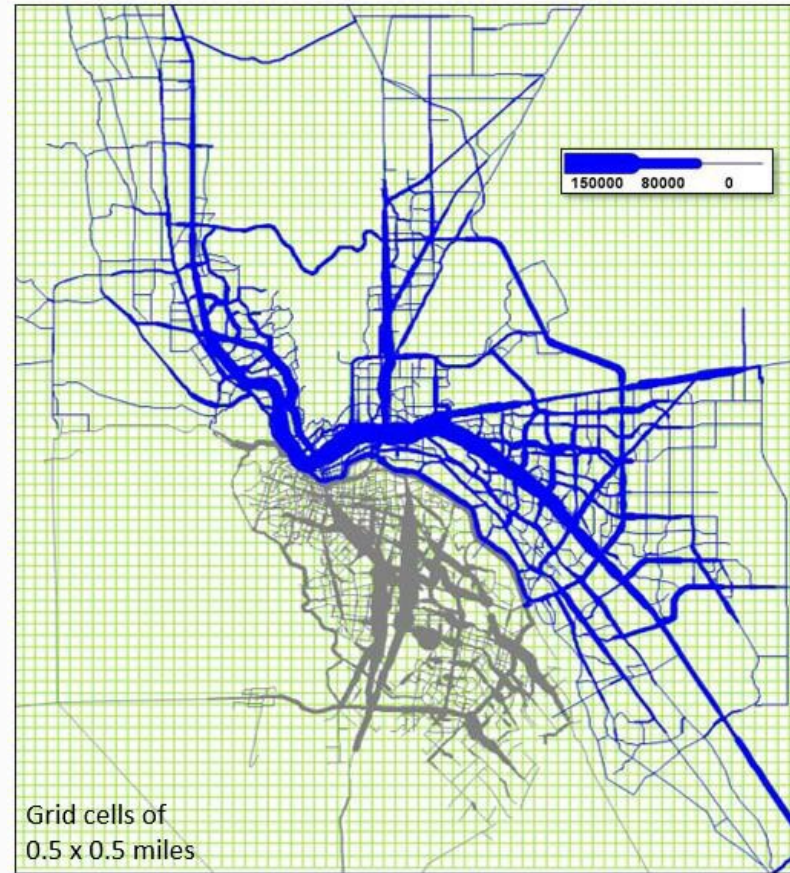
These tools allow the evaluation of the entire El Paso -Juarez Metropolitan area



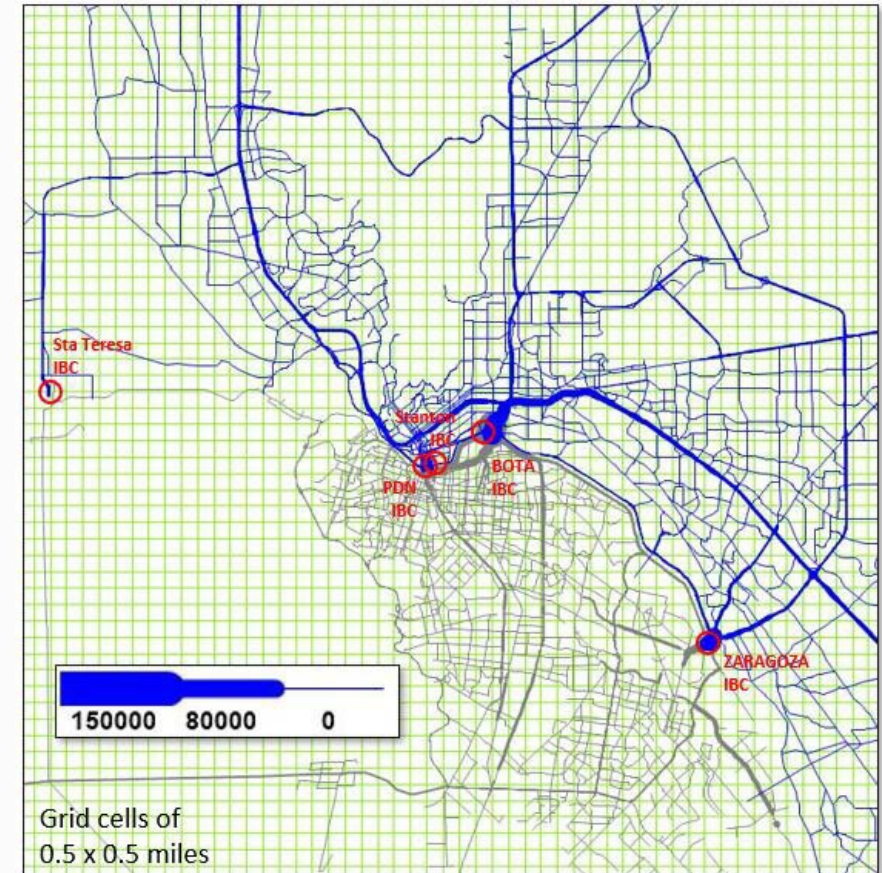
# El Paso - Juarez metropolitan area

## Daily traffic

Current conditions (2022)



ALL (internal & external)



External only



# Preliminary Results macro level

IBC scenario	Extension	daily VMT	daily NOx [kg]	daily VOC [kg]
<b>1</b> Baseline: current conditions all traffic ( <u>internal+external</u> )	El Paso MPO area	21,509,000	12,621	6,820
	Juarez urban area	15,876,000	10,367	7,314
	<b>El Paso-Juarez total</b>	<b>37,385,000</b>	<b>22,988</b>	<b>14,134</b>
<b>1</b> Baseline: current conditions only external & IBC traffic	El Paso MPO area	1,642,000	954	499
	Juarez urban area	962,000	571	371
	<b>El Paso-Juarez total</b>	<b>2,604,000</b>	<b>1,525</b>	<b>870</b>

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# Preliminary Results macro level

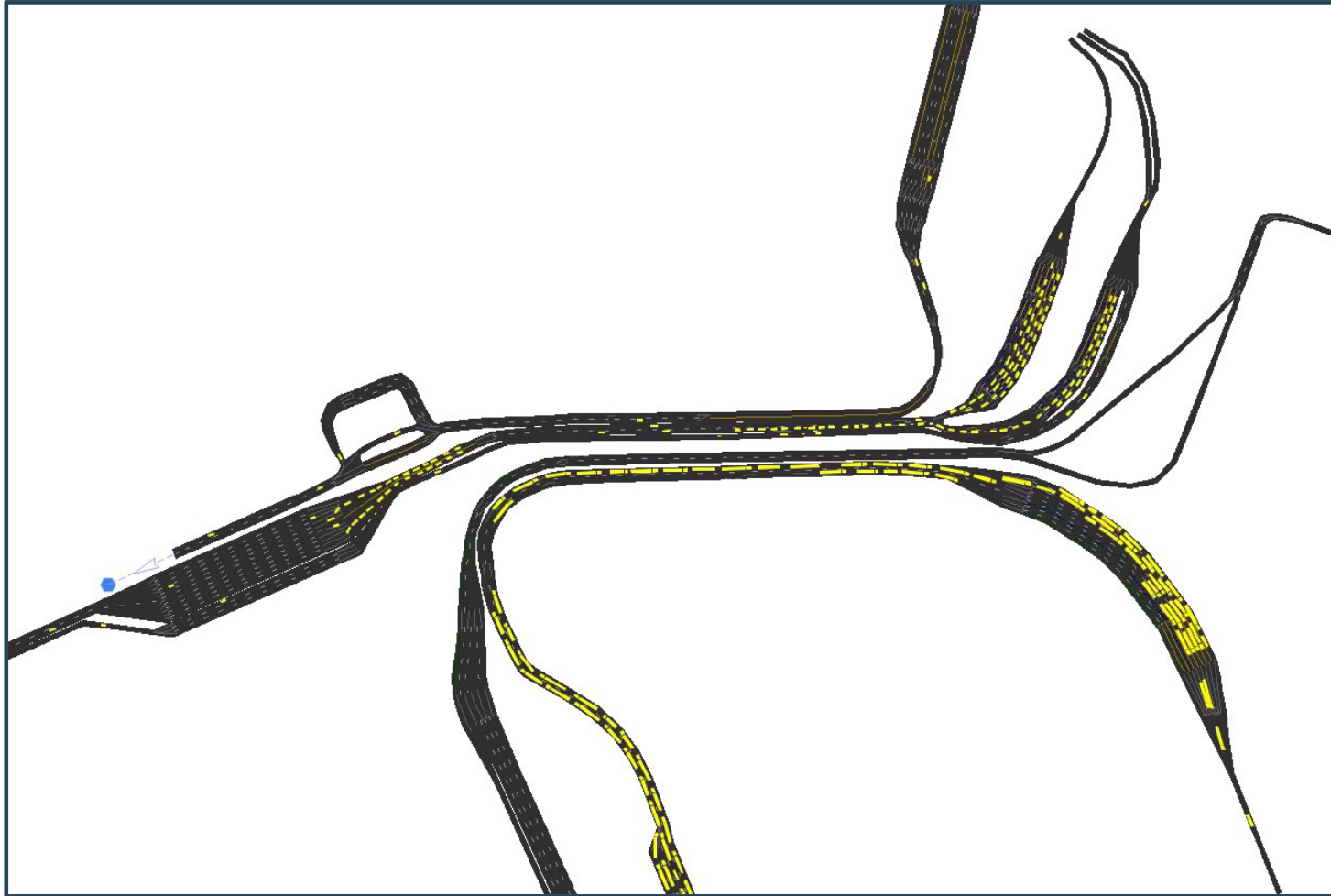
IBC scenario	Extension	daily VMT	daily NOx [kg]	daily VOC [kg]
<b>1</b> Baseline: current conditions only external & IBC traffic	El Paso MPO area	1,642,000	954	499
	Juarez urban area	962,000	571	371
	<b>El Paso-Juarez total</b>	<b>2,604,000</b>	<b>1,525</b>	<b>870</b>
<b>2</b> New IBC Sunland Park only external & IBC traffic	El Paso MPO area	1,655,000	961	503
	Juarez urban area	1,011,000	607	398
	<b>El Paso-Juarez total</b>	<b>2,666,000</b>	<b>1,568</b>	<b>901</b>
<b>3</b> No trucks BOTA only external & IBC traffic	El Paso MPO area	1,643,000	955	499
	Juarez urban area	1,231,000	747	492
	<b>El Paso-Juarez total</b>	<b>2,874,000</b>	<b>1,702</b>	<b>991</b>
<b>4</b> Improved Stanton & Zaragoza only external & IBC traffic	El Paso MPO area	1,609,000	938	490
	Juarez urban area	1,192,000	729	468
	<b>El Paso-Juarez total</b>	<b>2,801,000</b>	<b>1,667</b>	<b>958</b>

Draft – Subject to change

# Micro Level Tools:

- ✓ TransModeler traffic simulator
- ✓ Border Emission Estimator for Microsimulation (BEEM)

These tools allow the evaluation of individual IBCs

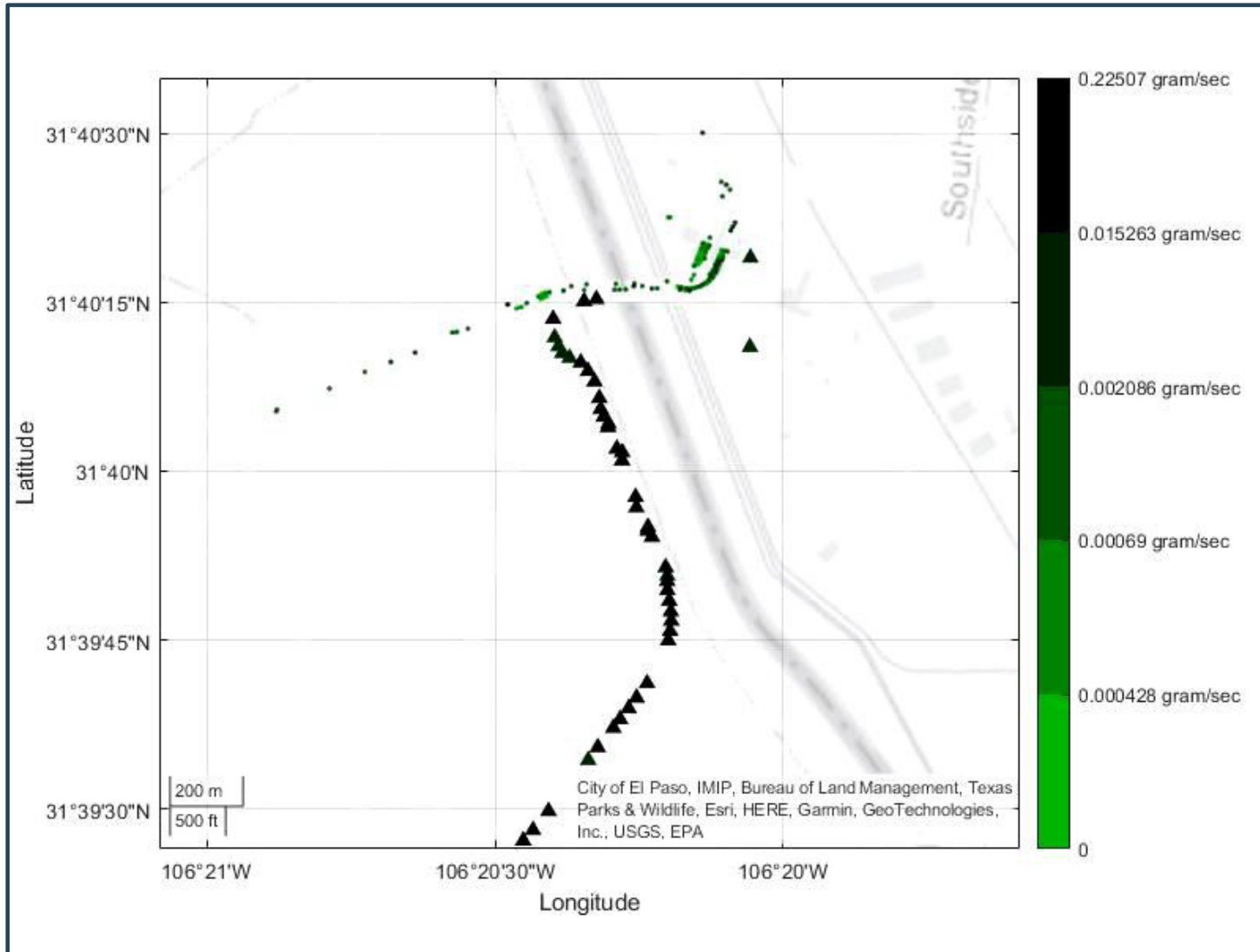


# Traffic Simulator

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- Ysleta-Zaragoza IBC, AM peak
- Data required
  - Traffic volume
  - Toll booth delay
  - Primary inspection booth delay
  - IBC detailed geometry
  - Available booths by hour
  - Traffic management strategies

## Example of NOx emission generation



# BEEM tool

- Data required
  - Trajectory tables per second from traffic simulator
  - Updated emission rates table (based on MOVES)

# Preliminary Results micro level

		daily NOX [kg]	All IBCs NOX [kg]	daily VOC [kg]	All IBCs VOC [kg]
<b>Scenario 1</b> Baseline Current conditions	Santa Teresa IBC	8.1	487	1.3	101
	PDN IBC	22.0		7.5	
	Stanton IBC	50.6		16.7	
	BOTA IBC	163.0		44.5	
	Zaragoza IBC	237.9		30.1	
	Tornillo IBC	5.3		1.3	

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# Preliminary Results micro level

		daily NOX [kg]	All IBCs NOX [kg]	daily VOC [kg]	All IBCs VOC [kg]
<b>Scenario 1</b> Baseline Current conditions	Santa Teresa IBC	8.1	487	1.3	101
	PDN IBC	22.0		7.5	
	Stanton IBC	50.6		16.7	
	BOTA IBC	163.0		44.5	
	Zaragoza IBC	237.9		30.1	
	Tornillo IBC	5.3		1.3	
<b>Scenario 2</b> New IBC Sunland Park	Santa Teresa IBC	8.1	487	1.3	101
	PDN IBC	21.9		7.5	
	Stanton IBC	50.5		16.6	
	BOTA IBC	162.5		44.4	
	Zaragoza IBC	237.2		30.0	
	Tornillo IBC	5.3		1.3	
	New SunlandPark IBC	1.6		0.3	
<b>Scenario 3</b> No Trucks allowed at BOTA IBC	Santa Teresa IBC	9.0	497	1.3	101
	PDN IBC	22.0		7.5	
	Stanton IBC	50.6		16.7	
	BOTA IBC	148.3		44.5	
	Zaragoza IBC	261.7		30.1	
	Tornillo IBC	5.3		1.3	
<b>Scenario 4</b> Improved Stanton and Zaragoza IBCs	Santa Teresa IBC	8.1	407	1.3	86
	PDN IBC	22.0		7.5	
	Stanton IBC	23.1		44.4	
	BOTA IBC	114.1		31.2	
	Zaragoza IBC	235.4		0.3	
	Tornillo IBC	4.0		1.0	

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# Macro and Micro integration:

Total emissions from regional IBC flows and idling

	daily IBC travel NOX [kg]	daily IBC idling NOX [kg]	total IBC related NOX [kg]	daily IBC travel VOC [kg]	All IBCs IBC idling VOC [kg]	total IBC related VOC [kg]
<b>Scenario 1</b>						
Baseline	1,525	487	<b>2,012</b>	870	101	<b>971</b>
Current conditions						

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# Macro and micro integration:

Total emissions from regional IBC flows and idling

	daily IBC travel NOX [kg]	daily IBC idling NOX [kg]	total IBC related NOX [kg]	daily IBC travel VOC [kg]	All IBCs IBC idling VOC [kg]	total IBC related VOC [kg]
<b>Scenario 1</b> Baseline Current conditions	1,525	487	<b>2,012</b>	870	101	<b>971</b>
<b>Scenario 2</b> New IBC at Sunland Park	1,568	487	<b>2,055</b>	901	101	<b>1,002</b>
<b>Scenario 3</b> No Trucks allowed at BOTA IBC	1,702	497	<b>2,199</b>	991	101	<b>1,092</b>
<b>Scenario 4</b> Improved Stanton and Zaragoza IBCs	1,667	407	<b>2,074</b>	958	86	<b>1,044</b>

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# Conclusions

- iTDM and EST (macro tools) determine emissions at regional level but do not account for idling at IBCs.
- Traffic micro simulators and BEEM provide IBC queuing and idling data, and accurate levels of emissions.
- Critical to combine macro and micro models to provide full picture of IBC regional system.
- Idling can add up to 25% of emissions to those from traveling to/from IBCs.
- Improving more than one IBC reduces idling emissions AND prevents increase in VMT and emissions from redirected flows between IBCs.
- El Paso MPO will improve the tools and initiate Strategic Plan with robust coordination with U.S and Mexico stakeholders.



# Questions

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