Measuring Progress on Border Delays

Border Delay Facts, ITS at the Border & Moving Forward
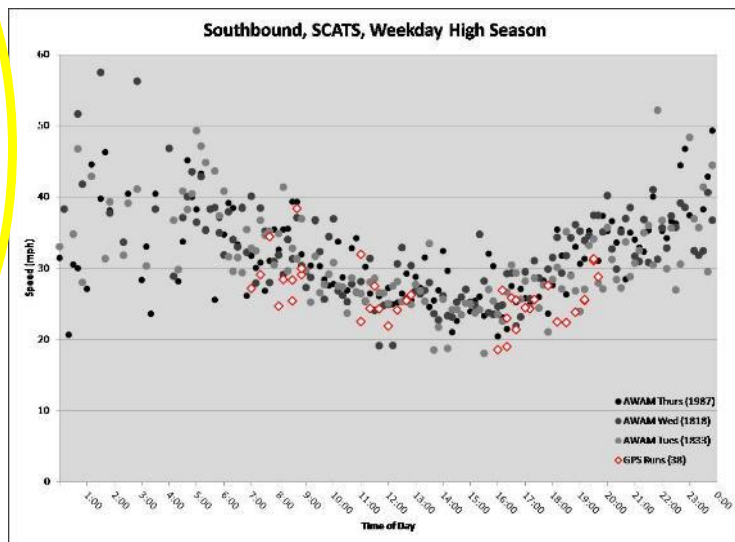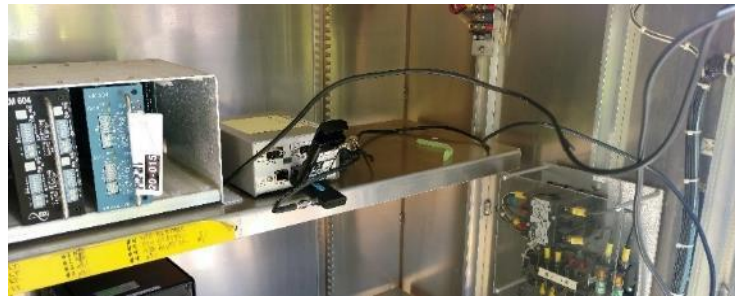
Crossborder GROUP

About Crossborder Group

- Founded in 1996 by Kenn Morris

- Key consulting & research staff:
  - San Diego, USA
  - Tijuana, Mexico
  - Phoenix, USA*

- Specialists in Mexico & North American border market research, data collection, surveys, and strategies – for business, transportation, and site selection

- Our Focus:
  - US-Mexico & US-Canada border markets
  - Transportation & freight planning
  - Site selection, cost & feasibility studies
  - Crossborder strategies & market entry
  - Maquiladora & NorthAm industrial research
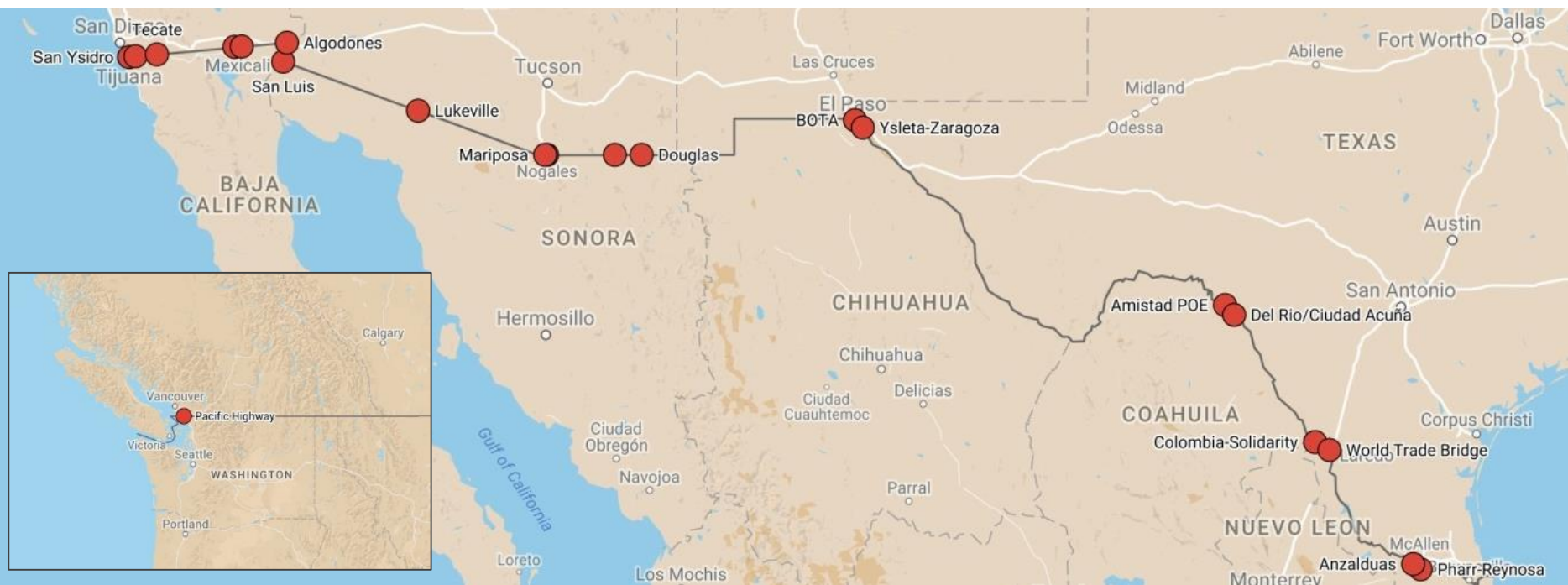 - Crossborder retail & tourism research

Crossborder
G R O U P

ITS:
Intelligent Transportation System

Applied IT & telecom tech to improve traffic and transportation management/planning

ITS At the Border: How Common?

- To-date, **Crossborder Group has collected data at 22 Land Ports of Entry** (21 US-Mexico, 1 US-Canada)

- Of these, only **3** had ITS systems in place to measure border crossing times for POVs (2 in TX, 1 in WA/BC – BT)

- More had ITS for cargo: RFID - **7** currently in TX, **1** in AZ (new)

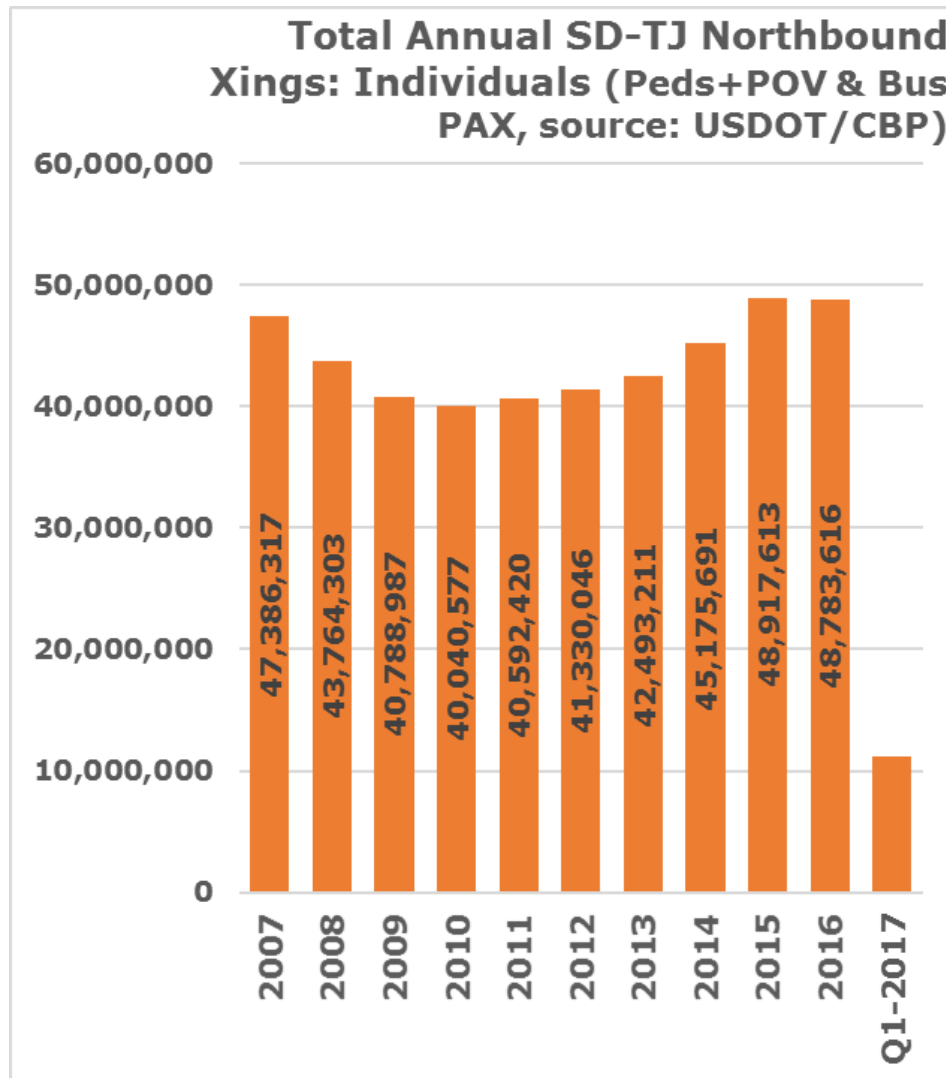- So…of 48+ US-Mexico crossings, most do not have ITS in place

Personal Border Crossings & Border Delays:

What We Know

Total Annual SD-TJ Northbound Xings: Individuals (Peds+POV & Bus PAX, source: USDOT/CBP)

- **Peds + Car PAX + Bus PAX = total crossers**

- **Low-points 2009-2011: 40.5M/yr**

- **2015 & 2016: nearly 49M individuals crossed**

  - **+20% more crossers**

- **Q1-2017 vs 2016: -5%**

- **Border xings have been increasing despite 25-30% drop in value of MXN peso...**

  - *What if peso stronger?*

- **Looking at monthly crossings by mode (Ped, Car & Bus PAX), see growth of +700K/mo (approx. 23K/day)**

- **Also see growing use of Otay Mesa & mode shift (from Ped to Car) following expansion of SYPOE...**

Monthly NB Indiv. Xings by Type & POE
(PEDs, POV & Bus PAX; source: USDOT/CBP)
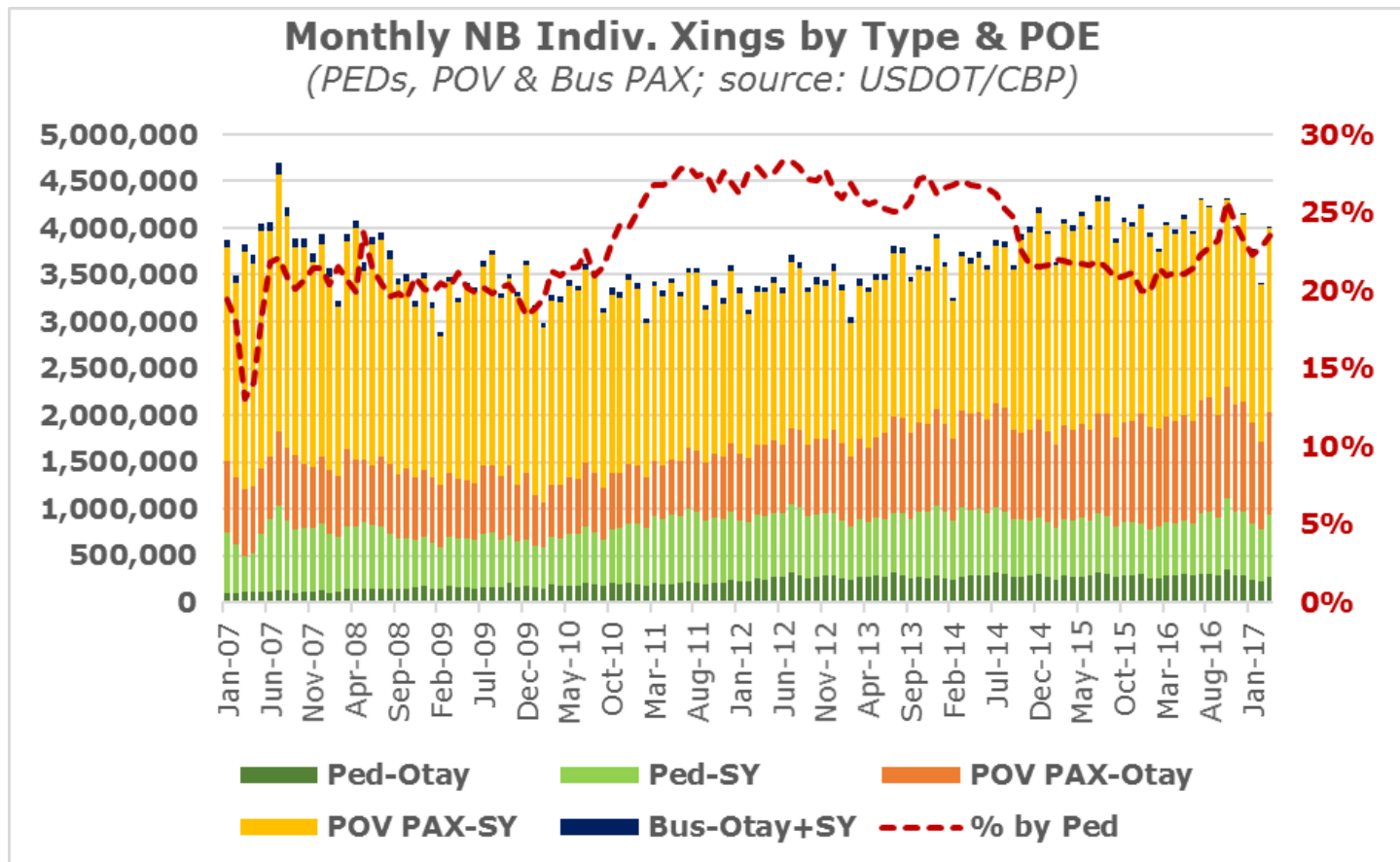
Why Delays? Southbound SY/Chaparral

- **Few ITS systems in place...but one is PeMS: can help us understand why we see SB delays at SY...**
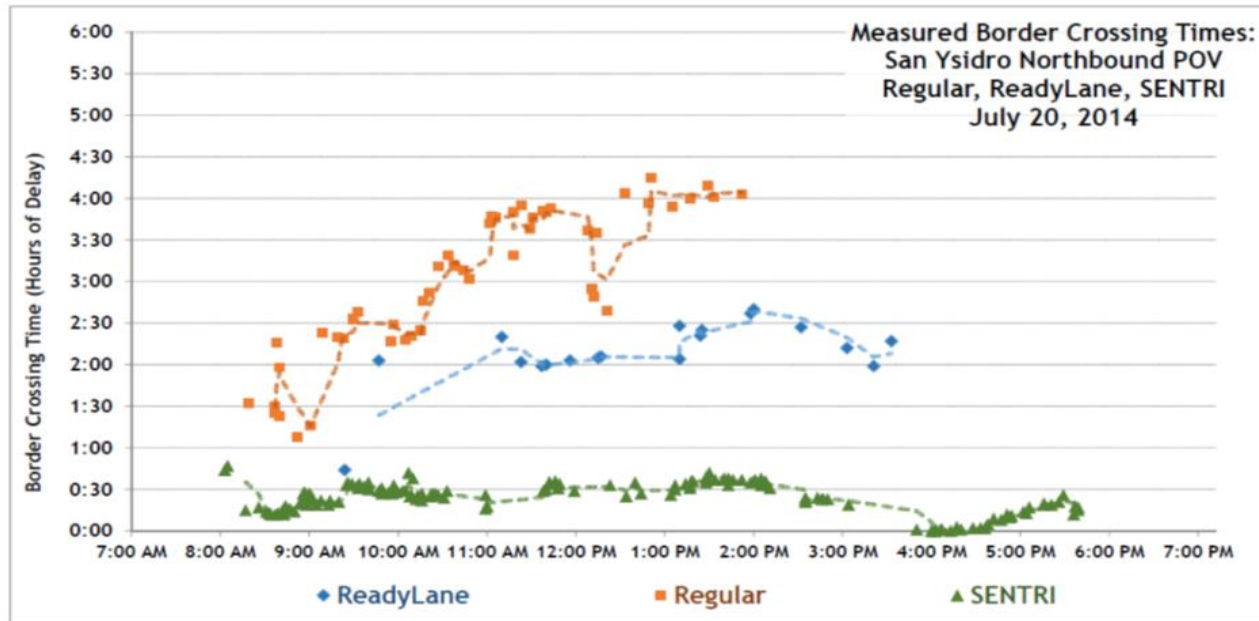
- **Data from last week...**

Southbound POVs/Hr at SY/Chaparral
Aug 30-Sept 1, 2017; source: Caltrans PEMs
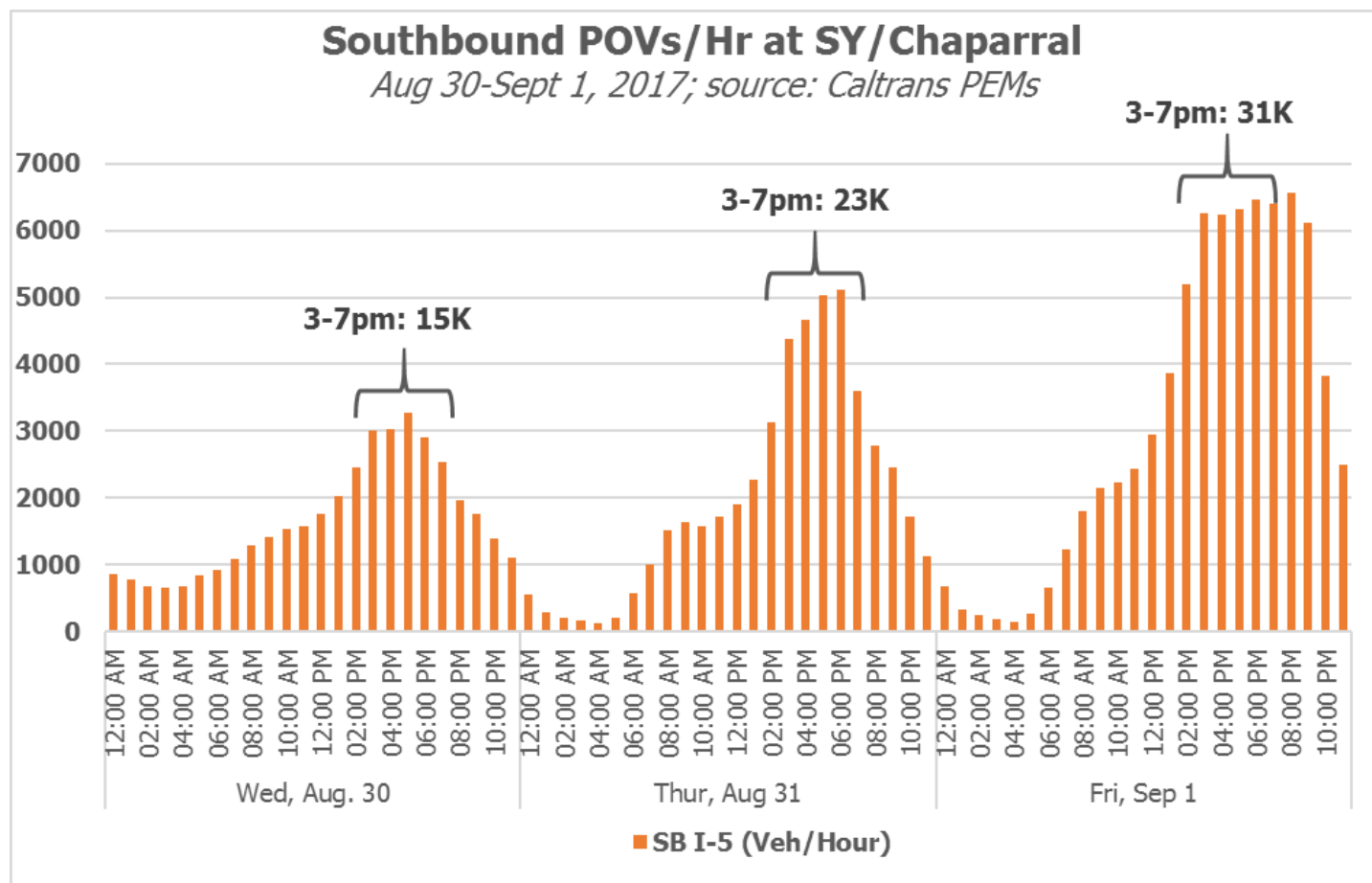
So...the Big Question

Question: Are delays improving? Getting better?

Honest Answer: No one "knows" for sure

- **Fact: There is no set of verified, accurate, multi-year data**

  - **CBP probably has best set of longitudinal data, but accuracy varies by POE & queue length**

- **Fact: Are some "snapshots" of data...seem to show some improvement (2014 v 2016) but not conclusive...**

Measured Border Crossing Times:
San Ysidro Northbound POV
Regular, ReadyLane, SENTRI
July 20, 2014

More Facts: Processing (Inspection) Times

	January, 2017		
	General	Ready	DCL
San Ysidro Throughput	48	65	101
Process Time (seconds)	71	51	31

- **Jan2017 CBP data** (above) shows average processing (inspection) times for SENTRI (31 sec.), ReadyLane (51 sec.) and Regular/General (71 sec.) cars…

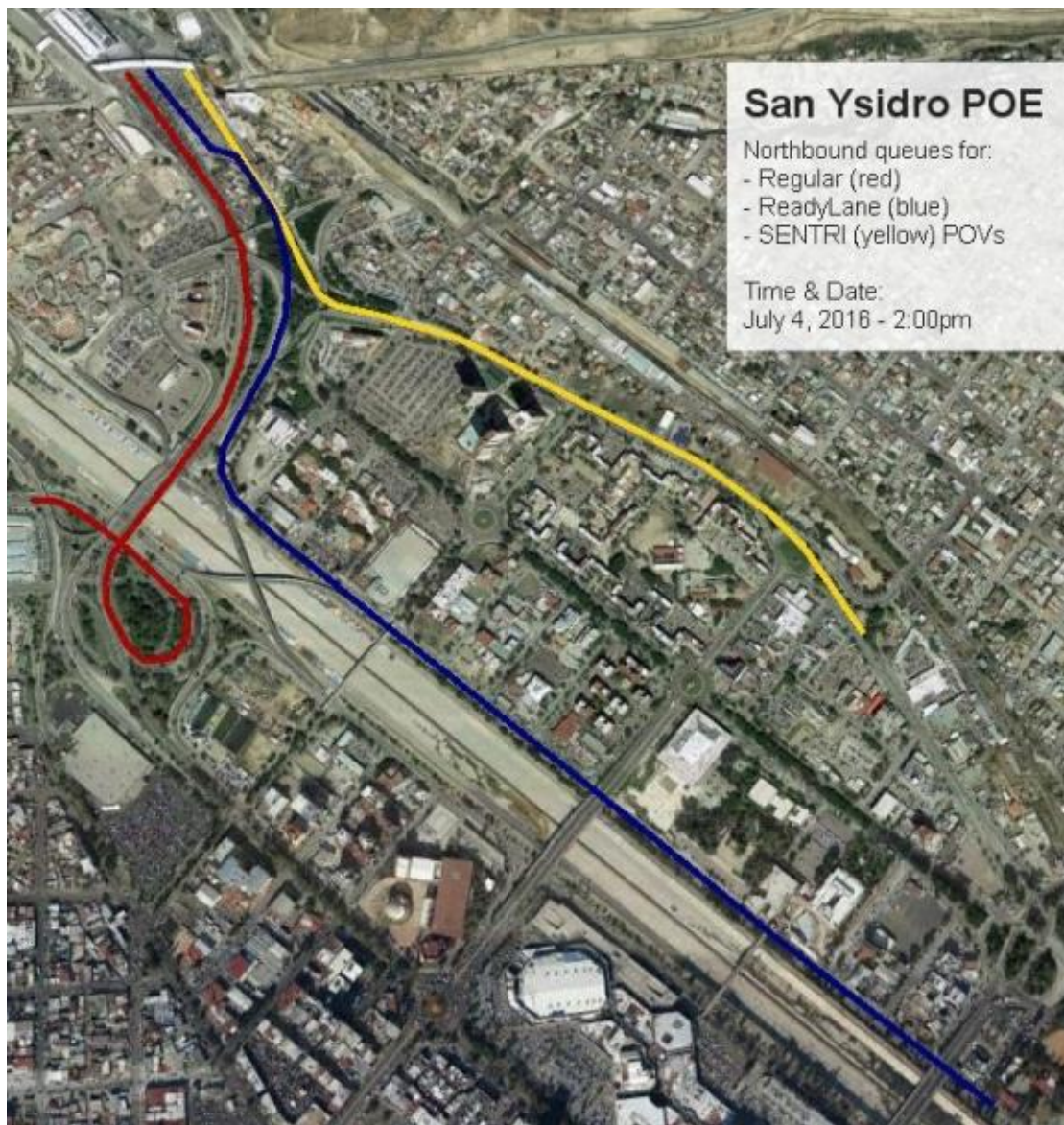- **This is consistent with hundreds of samples we've taken** during 2014-2016 at San Ysidro & Otay Mesa…

SENTRI 1	Sample 1 (Processing time for 1 Car)	0:00:05	0:00:10	0:00:15	0:00:27	0:00:18	0:01:00	0:00:15	0:00:25	0:00:12		**0:00:22**
		0:00:43	0:00:24	0:00:10	0:00:28	0:00:06	0:00:23	0:00:16	0:00:30	0:00:18	0:00:18	
		0:00:08	0:00:23	0:00:21	0:00:40	0:00:09	0:00:14	0:00:18	0:00:18	0:00:13	0:00:09	
		0:00:18	0:00:08	0:00:20	0:00:51	0:00:12	0:00:19	0:00:17	0:00:12	0:00:15	0:00:14	
SENTRI 2	Sample 2 (Processing time for 1 Car)	0:00:10	0:00:08	0:00:12	0:00:25	0:00:18	0:00:50	0:00:13	0:01:20	0:02:20		
		0:00:21	0:00:27	0:00:25	0:00:26	0:00:10	0:00:15	0:00:19	0:00:30	0:00:28	0:00:12	
		0:00:12	0:00:15	0:00:19	0:00:19	0:00:12	0:00:19	0:00:17	0:00:13	0:00:09	0:00:10	
		0:00:20	0:00:13	0:00:19	0:00:13	0:00:15	0:00:19	0:00:14	0:00:51	0:00:21	0:00:15	
Ready Lane	Ready Lane (Processing time for 1 Car)	0:01:18	0:00:42	0:01:23	0:01:23	0:01:31	0:01:37	0:00:40	0:04:40	0:02:35		**0:00:57**
		0:00:37	0:00:53	0:00:30	0:00:51	0:00:32	0:01:57	0:00:29	0:01:02	0:00:27	0:01:31	
		0:00:44	0:00:42	0:01:15	0:00:42	0:00:30	0:00:32	0:00:38	0:00:20	0:00:37	0:00:39	
		0:01:04	0:00:14	0:00:37	0:00:18	0:00:31	0:00:22	0:00:49	0:00:11	0:00:29	0:00:30	
Regular 1	Sample 1 (Processing time for 1 Car)	0:01:01	0:02:31	0:01:14	0:00:56	0:01:27	0:02:27	0:00:59	0:01:51	0:02:45	0:01:13	
		0:01:54	0:01:30	0:01:59	0:00:29	0:00:33	0:01:37	0:01:01	0:01:11	0:01:06	0:01:46	
		0:02:11	0:01:37	0:01:26	0:02:16	0:02:16	0:01:43	0:01:51	0:01:33	0:01:57	0:00:42	
		0:01:42	0:01:03	0:00:42	0:01:13	0:01:58	0:00:45	0:01:44	0:00:59	0:00:21	0:00:50	**0:01:32**
Regular 2	Sample 2 (Processing time for 1 Car)	0:02:00	0:00:52	0:01:55	0:01:45	0:01:20	0:01:38	0:03:10	0:01:38	0:01:34	0:02:37	
		0:01:20	0:01:33	0:01:13	0:01:23	0:01:04	0:01:02	0:03:07	0:01:15	0:00:38	0:01:07	
		0:02:46	0:03:23	0:00:41	0:01:56	0:00:47	0:01:07	0:02:51	0:01:31	0:00:47	0:00:44	
		0:01:20	0:00:59	0:01:00	0:02:06	0:01:25	0:00:42	0:01:06	0:01:07	0:00:51	0:01:30	

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ITS at the Border: What Kind Works?

- **It's complicated:** Have to address two sides of a border, sharing of data, many lane types, security of equipment, etc...

- **Peak queues can be very, VERY long...** (see example at right), for commercial, POVs and pedestrians

- **What tech to use?** No single tech solution covers all needs & field conditions

San Ysidro POE

Northbound queues for:
- Regular (red)
- ReadyLane (blue)
- SENTRI (yellow) POVs

Time & Date:
July 4, 2016 - 2:00pm

Manual recording of license plates for travel time data

- Data from two points: end of queue, end of delay…

- Very flexible, but labor intensive, costly & security issues, match rates 5-30%

License Plate
4BB3502 - 94.54%
California - 99%

Vehicle Color
white - 39.37%

Vehicle Make
ford - 15.82%

Total Processing Tir
3.618 s

LPRs – license plate readers

- Used extensively by CBP & Aduanas

- Excellent read rates (90%+)

- Limits: fixed collection points, queues may be beyond sites, lighting/imaging can be issue, can be costly (but decreasing)

Bluetooth & Wifi sensors

- Remote sensing of BT or Wifi signals becoming common; little public interaction, is anonymous

- Modest level of samples; Limits: has fixed collection points, poss. data delay between points
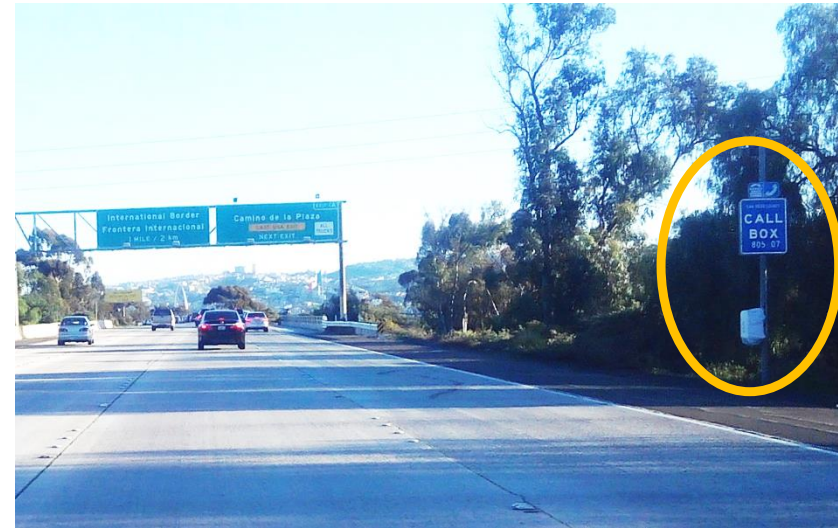
RFID

- Similar tech as SENTRI/WHTI, but used to measure delays at 7 cargo POEs along US-MX border; excellent read rates

- Limits: best for "small" pool of frequent crossers; Limits: fixed collection points, poss. data delay between points
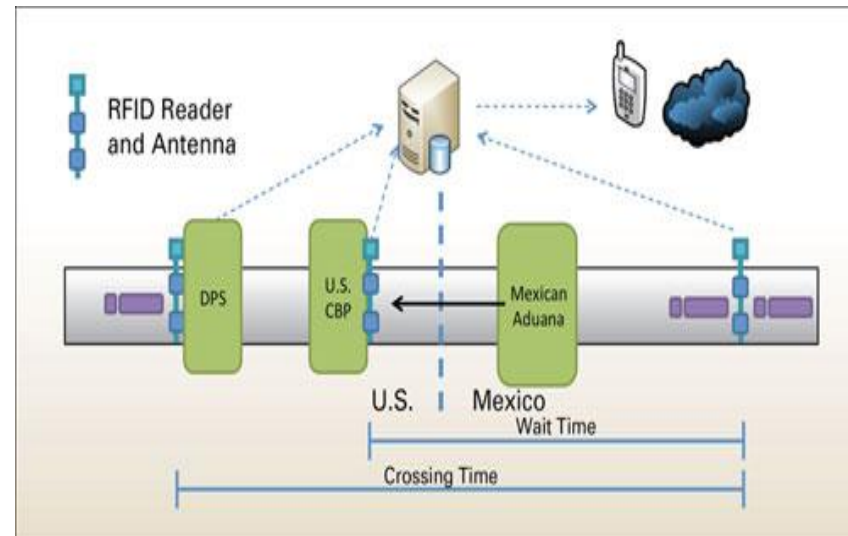
Courtesy of Texas Transportation Institute

GPS, apps or cell phone data

- Uses **probe vehicles** (equipment or app recruitment needed), or anon. GPS data from **cell phone providers**

- Highly accurate (can be real time); requires little infrastructure investment, positions not fixed; Limits: Recruitment can be tough & may be costly

Photo courtesy of San Diego Union Tribune

Facial recognition

- For car & pedestrians; has not yet been implemented for travel time measures – but increasing interest from airports

- Similar limitations as LPRs (fixed point, likely higher target for vandalism)
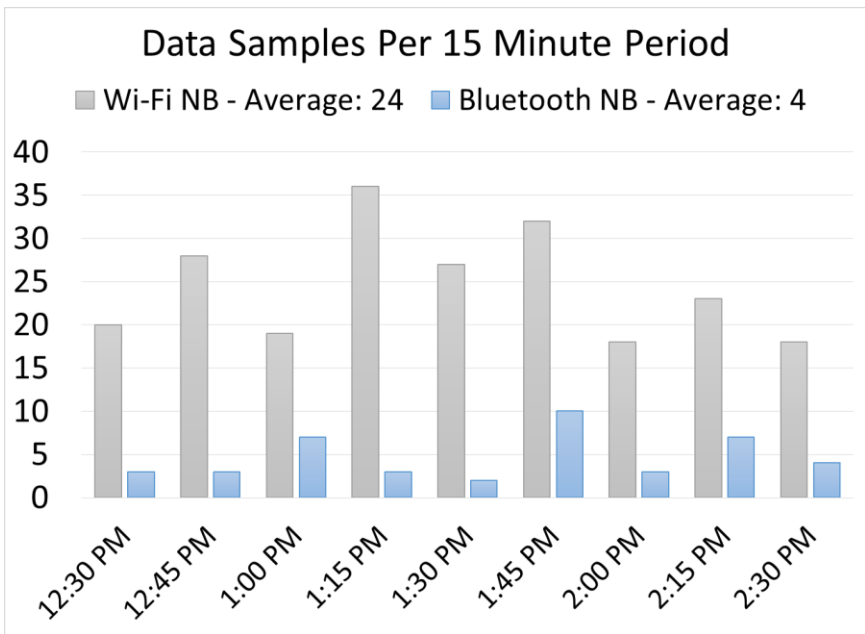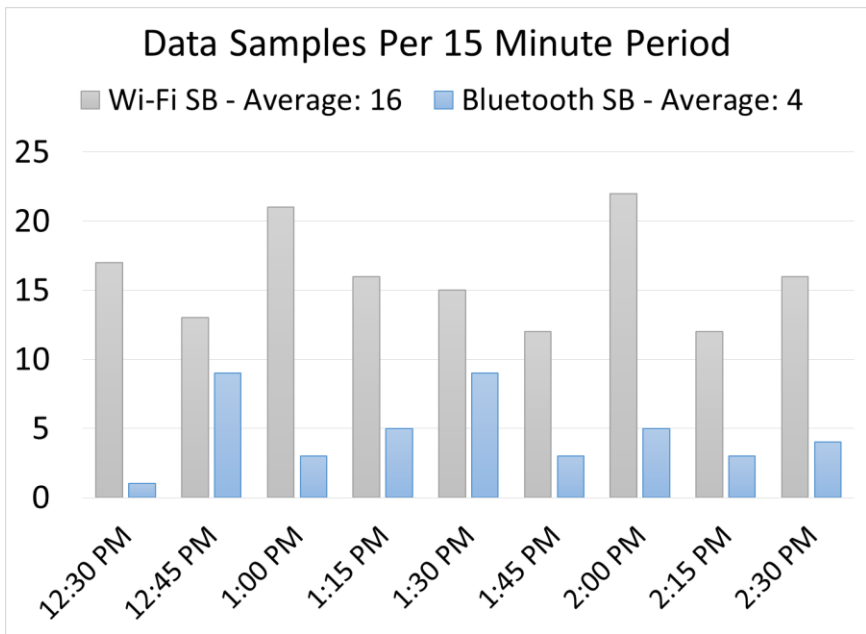
So, Which ITS To Use?

- **GPS-based apps might be ideal** – but recruitment is big barrier

- Non-intrusive sensing of **WiFi or BT is probably most likely** option – but which?

- **2015 ADOT Border Study:** Side-by-side sensors found WiFi signals much more prevalent than BT...
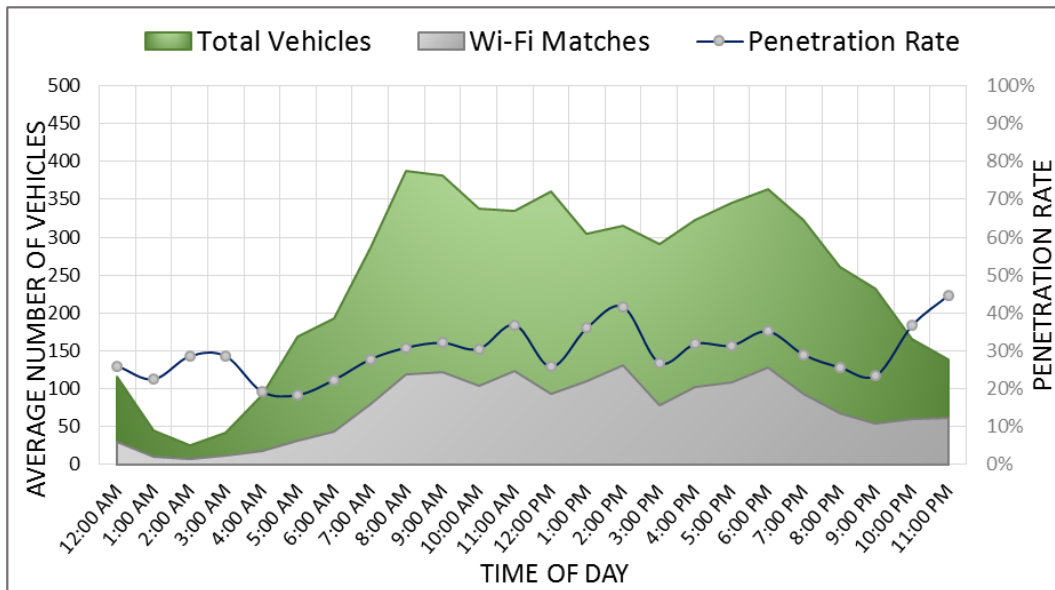
Northbound

Data Samples Per 15 Minute Period
■ Wi-Fi NB - Average: 24   ■ Bluetooth NB - Average: 4

Southbound

Data Samples Per 15 Minute Period
■ Wi-Fi SB - Average: 16   ■ Bluetooth SB - Average: 4

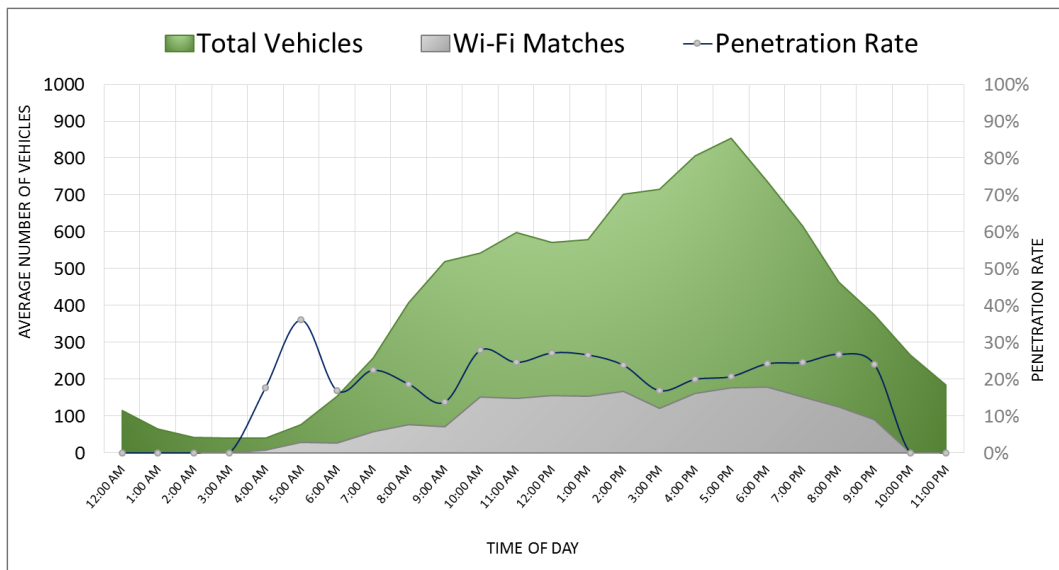# WiFi Penetration Rate Examples – ADOT (2015)

**DeConcini POE (Nogales)**
Northbound WiFi Penetration Rate: 30.6%

San Luis POE
Southbound WiFi Penetration Rate: 21.0%

San Ysidro POE & Wifi Detection

- **SANDAG & Caltrans have been leading much of effort to create ITS; esp. needed for Otay Mesa East**

- **Have implemented Wifi sensors for POV detection at SB San Ysidro (possible ADOT project influence?)**

- **Seems to be working...shows afternoon delays as expected...**
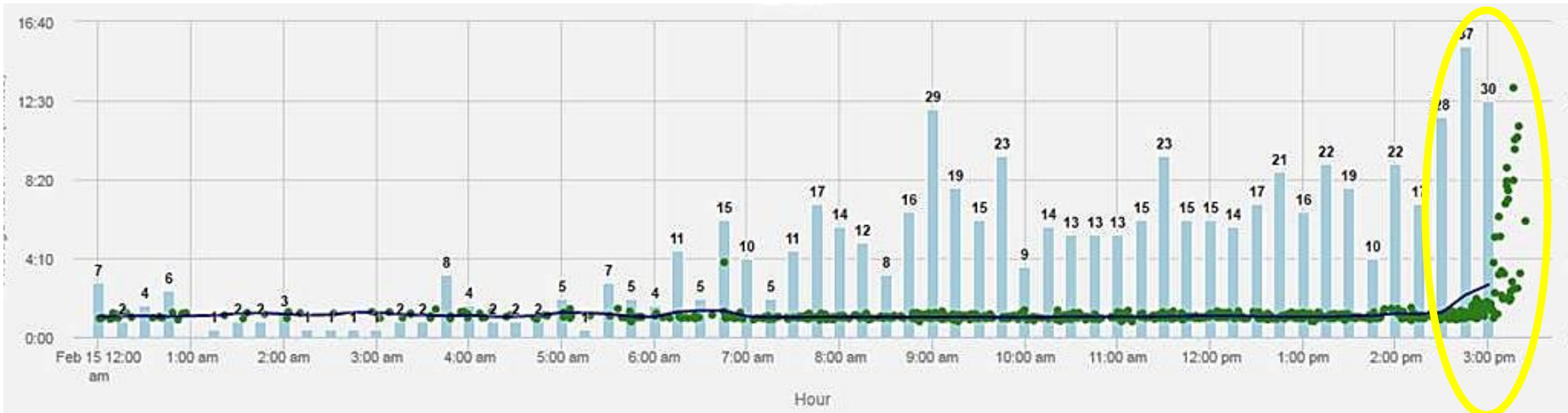
Sample of crossing time and detection data

- Have to accept **we can't look in past for historic BWT data**

- **Need to explore mechanisms to both invest in new ITS infrastructure at POEs** (NB & SB, large & small)

- **Need to improve sharing of what data exists** (similar to Cascade Gateway Border Data Warehouse by International Mobility & Trade Corridor Program/Whatcom County)

¡Gracias!

¿Preguntas?
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