Crowdsourcing Applications in Signal Operations

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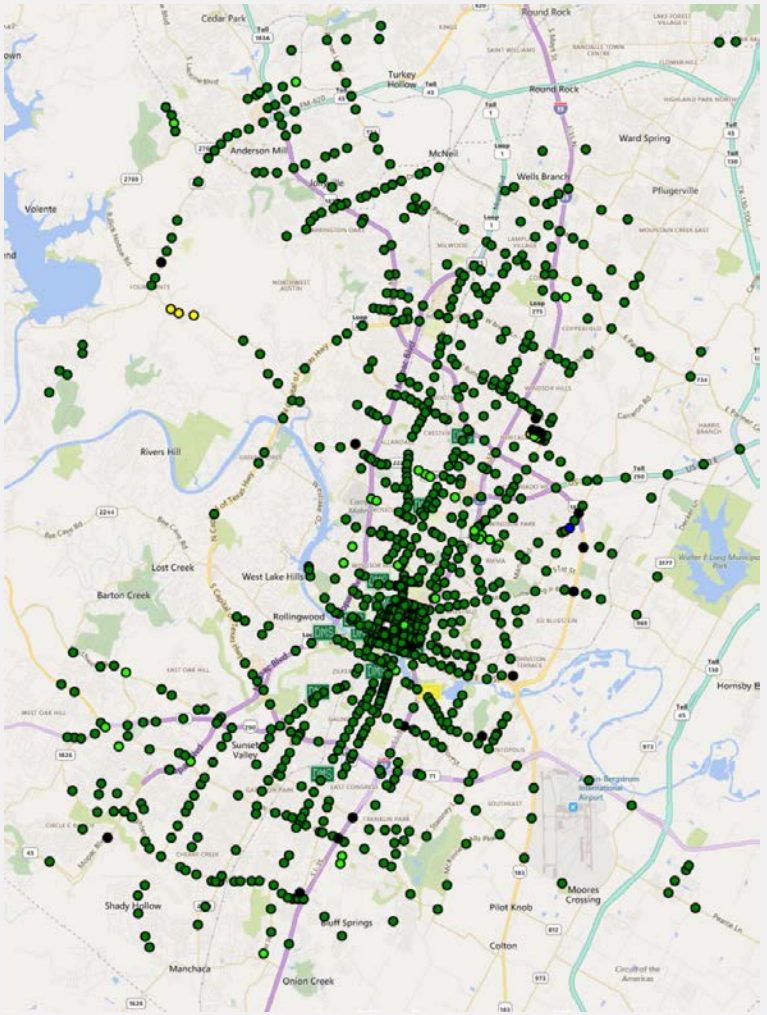
Traffic Signals in Austin

- COA maintains 1012 traffic signals and 81 PHBs
- Current CS data sources:
  - Traction (Google, Waze, Azure)
  - INRIX
- Both purchased annually



Current Applications of Crowdsourced Data

- Prioritization of corridors for annual retiming
  - City only has capacity to retime 1/3 of signals annually
- “Hotspot” identification and repair
  - CS data can automate what used to be field observations
- Evaluate benefits of retiming (MOE’s)
  - Compare before and after travel time data to compute performance metrics
- Traveler information
  - Real time travel time display via DMS Messages

Prioritization of retiming corridors

Current criteria: What systems had the greatest percentage of segments with travel time increases since last retiming?

City of Austin Traffic Signal Retiming Prioritization

Corridor Ranking Table

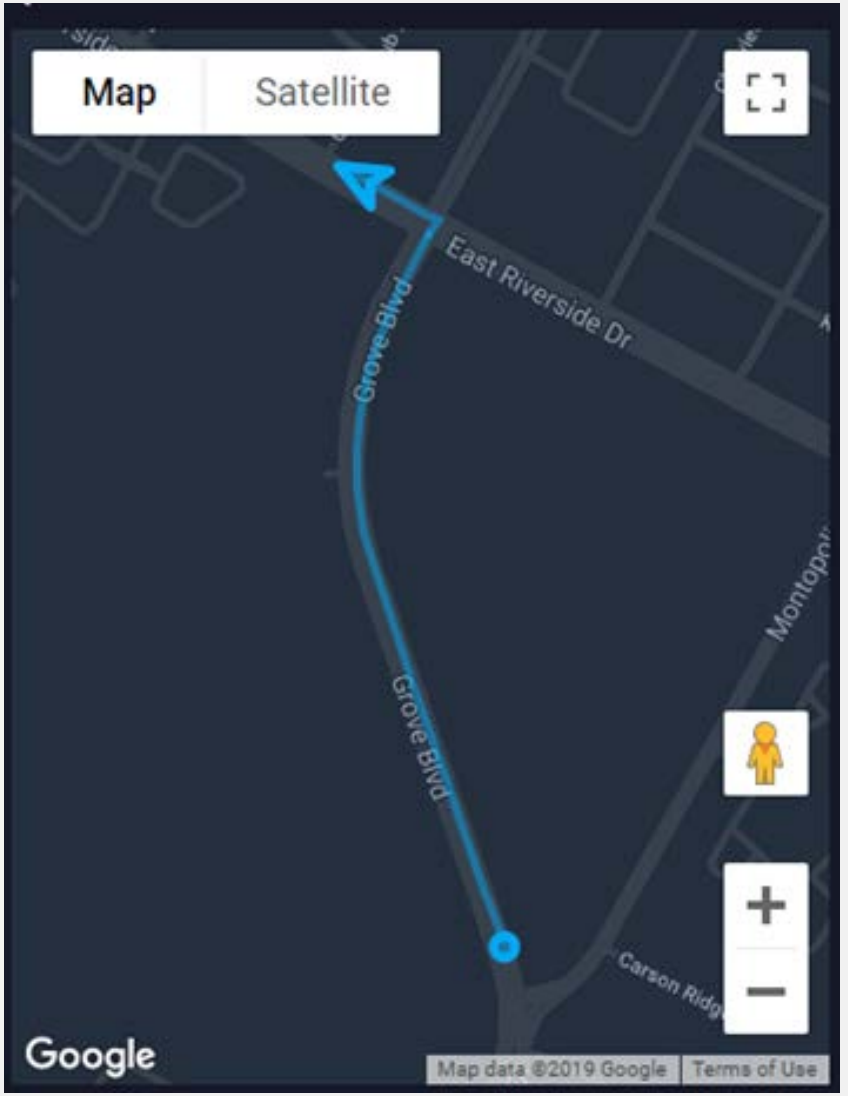
Show 10 entries

rank	corridor	perdecr_am	perdecr_mid	perdecr_pm	perdecr3_am
1	US 290 - East	95.93	85.36	96.85	21.3
2	US 183 - Central	86.29	100	86.14	48.51
3	US 183 - South	48.37	65.58	65.08	47.65
4	51st	70.75	69.59	94.57	24.87
5	Airport	63.07	74.65	80.88	14.66
6	MLK - East	60.12	85.1	89.35	19.54
7	Lamar - North	75.65	100	86.24	7.93
8	Enfield	56.49	76.61	100	8.28
9	Ben White - East	91.28	52.06	52.72	37.55
10	Manor	79.88	57.12	67.69	3.55

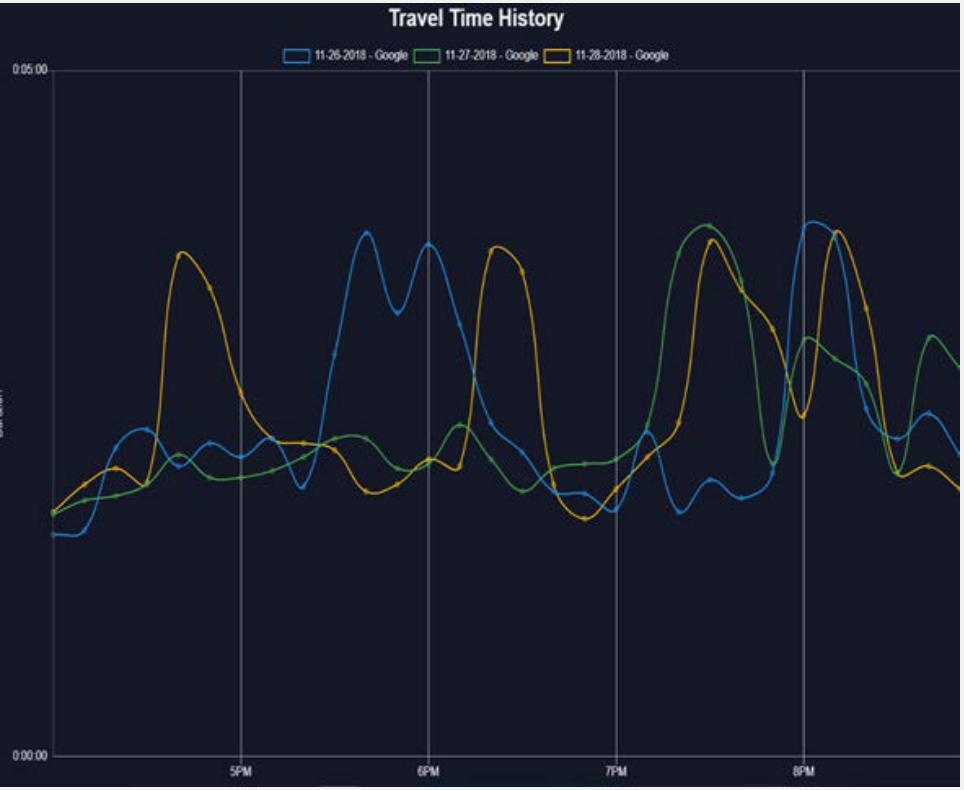
Showing 1 to 10 of 79 entries

“Hotspot” Identification

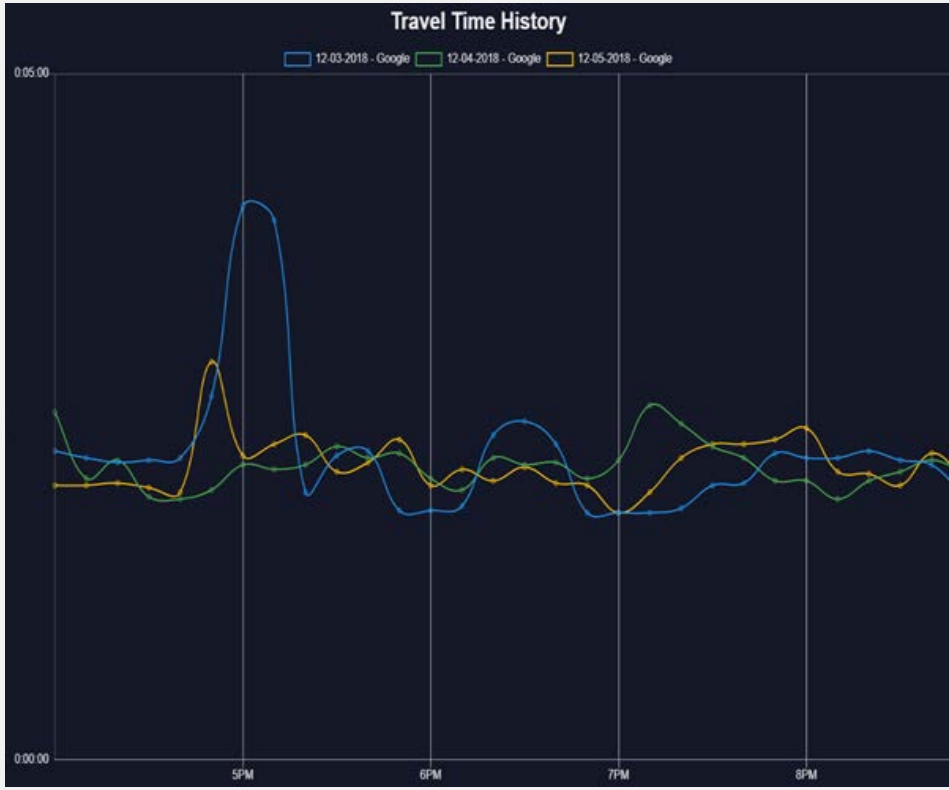
- Very specific locations that have been identified as problem areas
- Reports can come via 311, TMC observation, etc.



“Hotspot” Identification

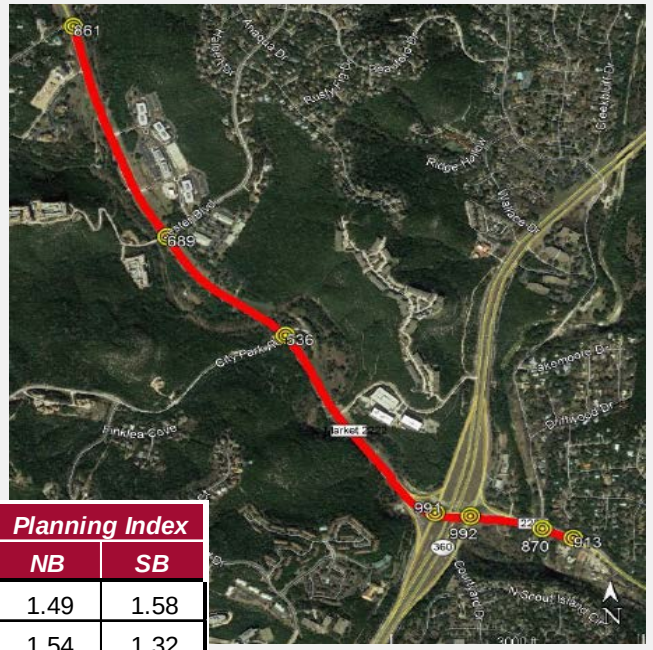


Mon-Wed – before retiming



Mon-Wed –after retiming

Evaluating benefits of retiming



Before and After data for RM 2222

Peak Period		Travel Time CI (s)		Speed CI (mph)		Travel Time Index CI		Buffer Time (s)		Planning Index	
		NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
AM (6:30 AM - 9:00 AM)	Before	99	106	17.35	18.93	0.56	0.64	59	60	1.49	1.58
	After	105	63	17.72	14.59	0.60	0.39	62	38	1.54	1.32
	Δ	+6	-43	0.38	-4.33	0.04	-0.25	+3	-21	0.05	-0.26

Peak Period		Travel Time CI (s)		Speed CI (mph)		Travel Time Index CI		Buffer Time (s)		Planning Index	
		NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Overall	Before	79	57	14.67	12.76	0.45	0.34	50	34	1.36	1.26
	After	73	47	13.82	11.57	0.41	0.29	46	28	1.34	1.21
	Δ	-6	-10	-0.85	-1.19	-0.03	-0.05	-4	-6	-0.02	-0.05
	Δ%	-8%	-18%	-6%	-9%	-7%	-16%	-8%	-17%	-2%	-4%

Overall	Before	79	57	14.67	12.76	0.45	0.34	50	34	1.36	1.26
	After	73	47	13.82	11.57	0.41	0.29	46	28	1.34	1.21
	Δ	-6	-10	-0.85	-1.19	-0.03	-0.05	-4	-6	-0.02	-0.05
	Δ%	-8%	-18%	-6%	-9%	-7%	-16%	-8%	-17%	-2%	-4%

source: Kimley-Horn using INRIX data

Traveler Information

- COA is currently piloting arterial travel times on DMS (began Feb 6)
  - Azure data (via Traction)
- Information provided:
  - Travel time
  - Alternate route information
- System operated through ATMS (KITS)

DMS Travel Times - Messages

- Update every 5 minutes
- Standard Messages:
  - Travel Time

  - Alternative Route Information