How Cost Effective Are Adaptive Signals?

February 3, 2020

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Sort of Depends on How You Look at It...

Background

- Stockton's Population >300,000
- CMAQ funded 3 Adaptive Systems
- Photo is of Wilson Way (ADT=23,000 to 28,000, 15% trucks/busses), deployed in 2015

Adaptive Isn't Cheap

- March Lane ($1.3M)
- Pershing Avenue ($1.3M)
- Wilson Way ($1.4M)

- Average Cost per Intersection~$75K

- Cost for responsive~$50K/intersection

- MPO's estimate to retime~$3,500/int.

Cost Benefit Analysis

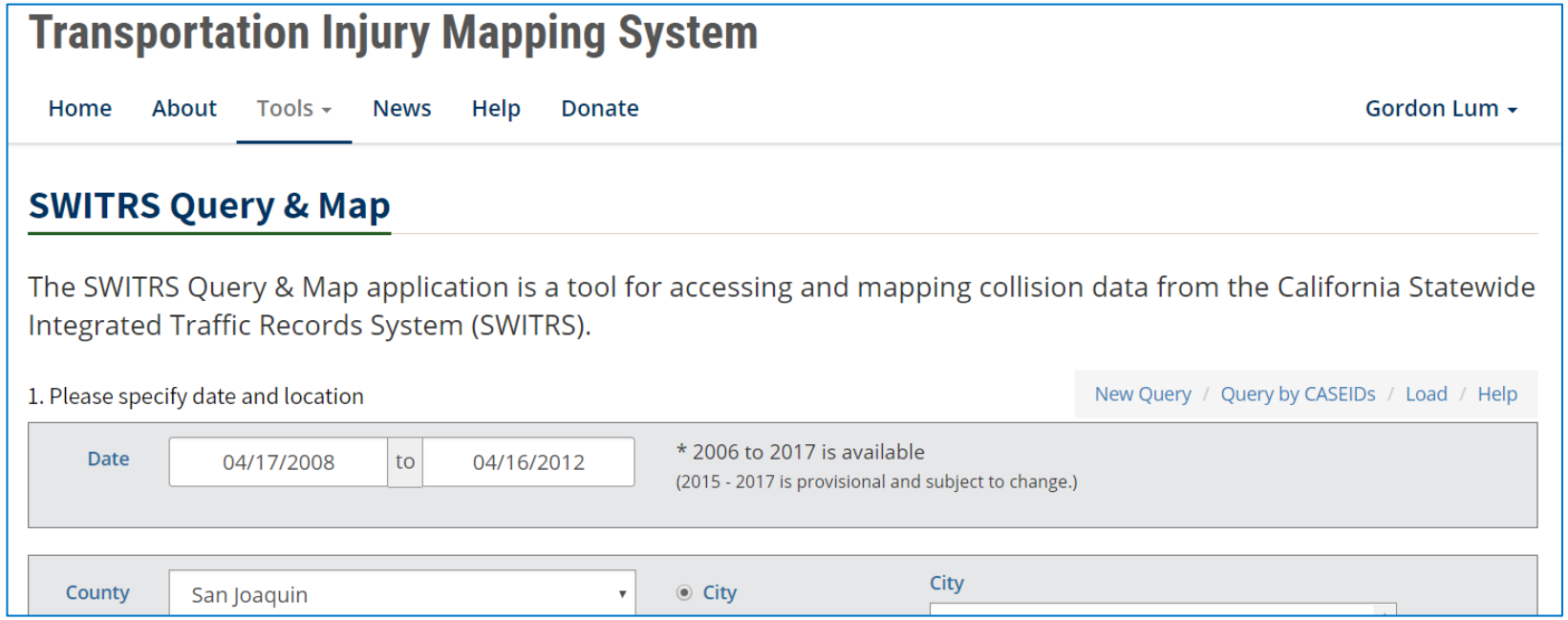
- Adaptive Signals for 10 intersections = $1.4M
- CMAQ assumes 10% increase in speed
- $1.4M so 2,000 vpd can go 2 mph faster for 10 years?!
- Old School Way: ~$110K to retime 10 signals three times over 10 years

Cost Benefit Analysis (Safety on Wilson Way)

- 3 years (1/1/12-12/31/14) Prior to Adaptive: Total 8 collisions at 9 intersections (per TIMS, so doesn't include PDO)

- 3 years (1/1/16-12/31/18) After Adaptive: Total 9 collisions

- Adaptive Signals probably did nothing to reduce collisions



Conclusions (Almost done!)

- CMAQ funds should not be used to increase vehicular speeds by 10%
- Better use would be for 10% reduction in commuter trips (e.g., TDM incentives)
- Improved signal coordination will probably not reduce injury collisions
- Before and after collision data should be considered for “Complete Street” and “Vision Zero” projects

TE's should focus on cost-effective counter measures!

- Vision Zero can't be achieved without "**Vision Ten**" (i.e., baby steps)
- Vision Ten is a 10% reduction in collisions over 10 years (or 1% a year)
- Per TIMS, Stockton has been averaging 1,600+ collisions per year, with ~9% (or ~150) involving peds
- Vision Ten goal for Stockton would be ~1,440 collisions (~135 peds) by 2030

What About Saving Lives with "ITS"?

Each year, **~10,000** people die not wearing their seat belt!

~8,000 of them may have survived if they wore their seat belt...

	Passenger Vehicle Occupants Killed						Passenger Vehicle Occupants Who Survived					
					Restraint Use Percent Based on Known Use						Restraint Use Percent Based on Known Use	
	2016	2017	Change	% Change	2016	2017	2016	2017	Change	% Change	2016	2017
Total	23,877	23,551	-326	-1.4%			40,832	39,822	-1,010	-2.5%		
Restraint Used	11,376	11,388	+12	+0.1%	52%	53%	31,971	31,639	-332	-1.0%	86%	87%
Restraint Not Used	10,514	10,076	-438	-4.2%	48%	47%	5,189	4,791	-398	-7.7%	14%	13%

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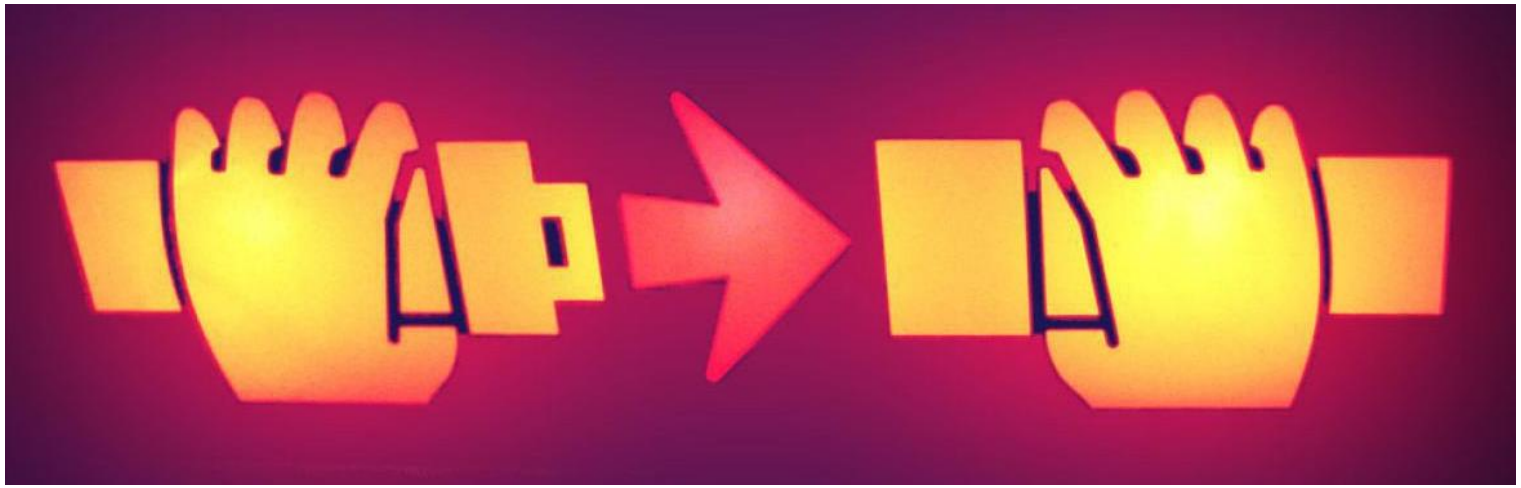
Let's end with a dream…

"Technology results in 40% fewer unbelted fatalities by 2030!"



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