Traffic Signals

In a Different Light
#SignalGoals16

- Best Practices
- Tips/Tricks
- Cheap and Easy
Topics

- Signal Timing
- Clearance Intervals
- Low Volume Flash
- Adaptive Traffic Signals
Signal Timing
How New Timing Compares to Old Timing

- Travel Time, -17%
- Delay, -30%
- Stops, -30%
- Average Speed, +6%
How New Timing Compares to Old Timing

Total Crashes, -22%

Rear End Crashes, -44%
Vehicular Clearance

ITE Kinematic Formula

\[
CP = \left[ t + \frac{V}{2a + 2Gg} \right] + \frac{W + L}{V}
\]

or

\[
Change\ Period = \left[ \frac{Perception\ Reaction\ Time}{Perception\ Reaction\ Time} + \frac{Deceleration\ Time}{Deceleration\ Time} \right] + \frac{Intersection\ &\ Vehicle\ Clearance\ Time}{Intersection\ &\ Vehicle\ Clearance\ Time}
\]

or

\[
Change\ Period = \left[ Total\ Stopping\ Time \right] + Clearance\ Time
\]
Reductions When Using ITE Formula

- Red Light Running: 36-50%
- Total Crashes: 8-14%
- Injury Crashes: 12%
Low Volume Flash
Figure 1, Removal of Signal Flashing Mode During Late-Night/Early-Morning Operation (FHWA)
What do I really need?
TIME BASED
Adaptive Traffic Signals

- Improves Traffic Flow
- Responds to Traffic Conditions
Difficulty Maintaining Adaptive vs. Regular Signals

- 60% MoreDemanding
- 23% SameDemand
- 17%LessDemanding

Figure 6, NCHRP 403 - Adaptive Traffic Control Systems: Domestic and Foreign State of Practice


**EXAMPLE 1**

[Map of Ohio with Medina highlighted]
Ex. 1 - How Adaptive Compares to TBC

- Travel Time, -4%
- Average Speed, 4%
Ex. 2 - How Adaptive Compares to TBC

- Vehicle Delay: +24%
- Stopped Delay: +22%
- Travel Time: +5%
- Stops: -1%
- Average Speed: -4%

by Amanda Kuehnle • Government • Tags: adaptive signals, kurt ferguson, Newtown Bypass, newtown township

Ada County Highway District sues over malfunctioning ‘smart’ signals

Sometimes “Really Good” Time of Day Coordination Does Outperform Adaptive Control
The City of Roseville, California’s Experience

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