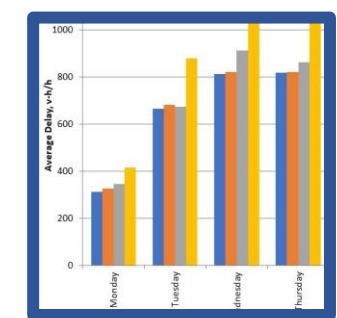
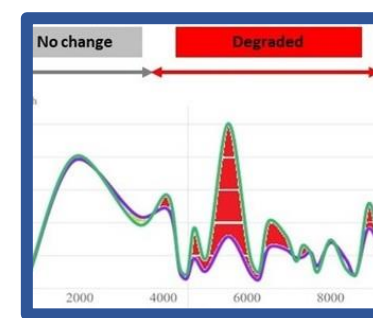
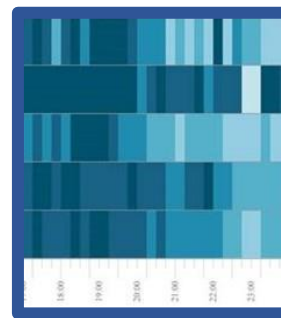
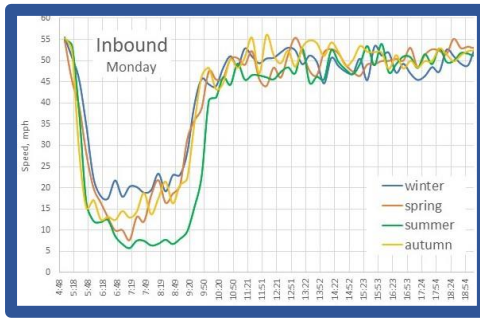


t:con

for Signal Timing Optimization

Interactive, Efficient, Provable



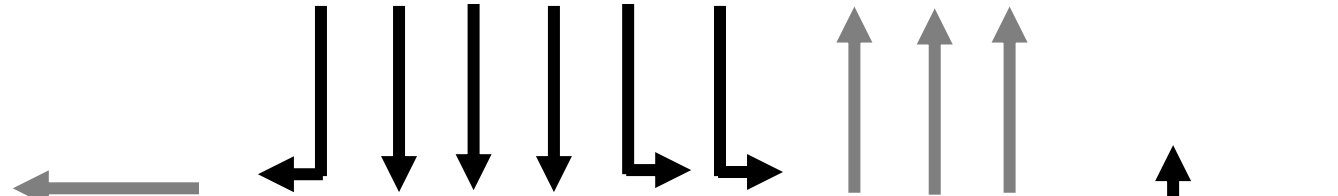
Ticon data flow for signal retiming

Graph #	Dataset	For
1	Turning movements	Signal timing development (HCS compatible)
2	Temporal changes in traffic patterns	Timing tables quantity and scheduling
3	Saturation degree for each approach and for intersection(s)	Calculation of potential capacity (for each approach and for intersections)
4	Speed/volume data for each approach	Timing tables design and optimization
5	Trajectories	Progression linearity tune-up
6	Delay graphs – street “cardiogram”	Road performance analysis & improvement’s iteration tool
7	Delay data by approach	Intersectional performance analysis

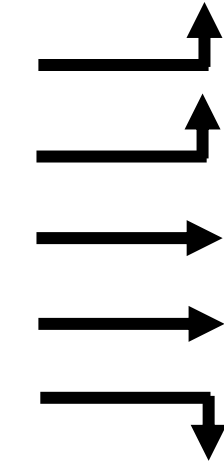
Turning movements

1

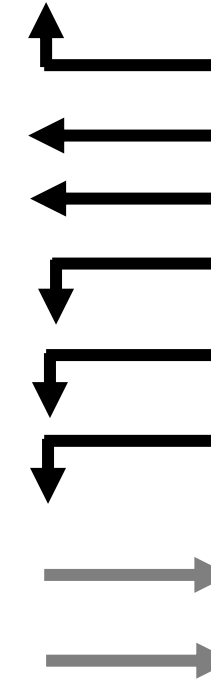
R	T	L	Northern Approach
2841	3849	7355	14045



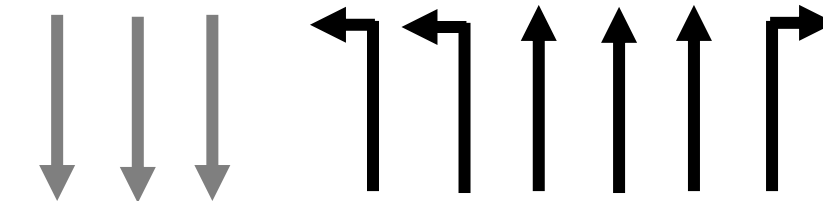
L	3177
T	2744
R	970
Western approach	6891



R	1000
T	3010
L	14658
Eastern approach	18668



L	T	R	Southern Approach
1229	7431	8000	16660



US50 – US395
Carson City, NV

Temporal changes in traffic patterns

Speed curves, available from Ticon reporting allow to distinguish temporal changes in traffic patterns. To ensure operating efficiency, these changes should be addressed by different timing tables. For this particular case the following changes has been proposed:

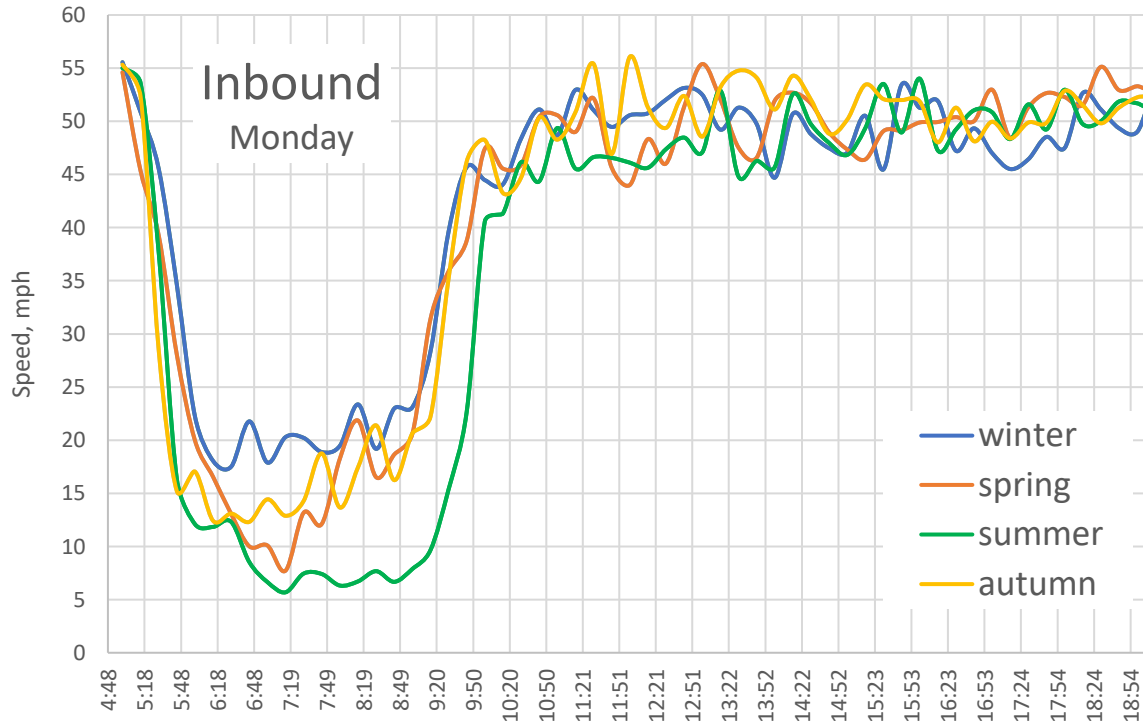
Current schedule for weekdays: 1 set of 3

3 timing tables a day: AM peak, Day, PM Peak

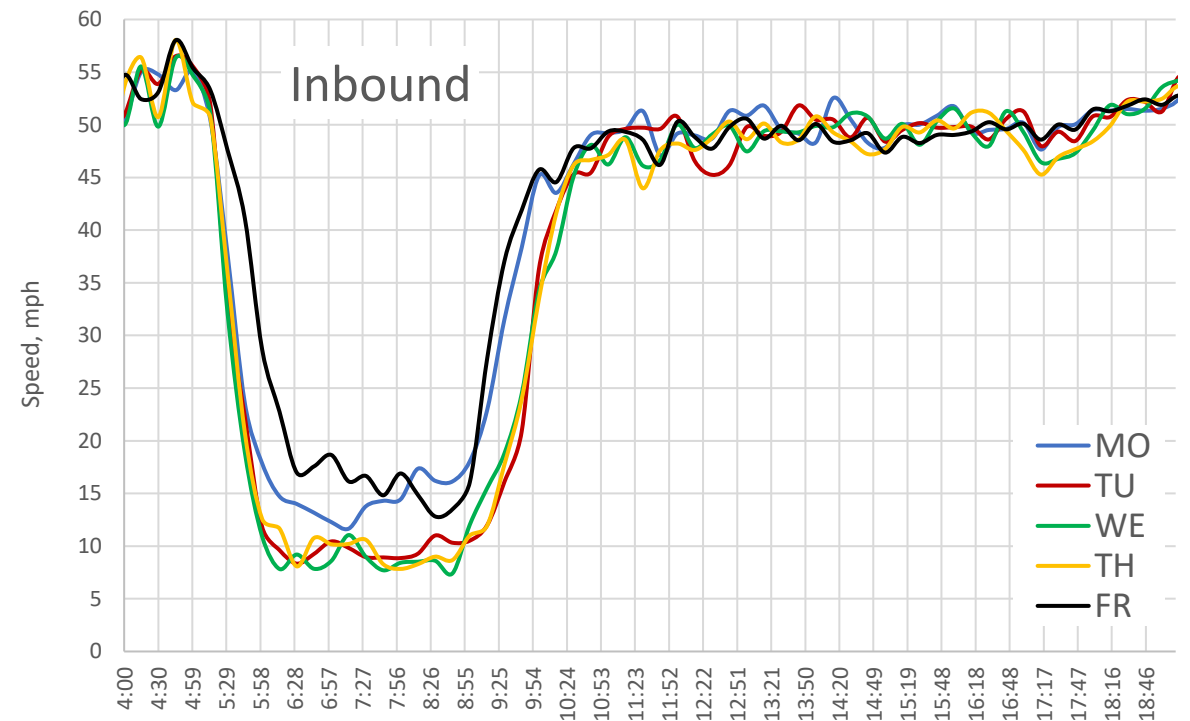
Proposed schedule for weekdays: 4 seasonal sets of 9 (36 timing tables in total)

Same timing tables for All Weekdays: Morning, Day, Evening
 Different timing tables (3 sets) for Monday, Tuesday – Thursday, Friday: AM peak, PM Peak
 Four seasonal changes a year: Winter, Spring, Summer, Fall

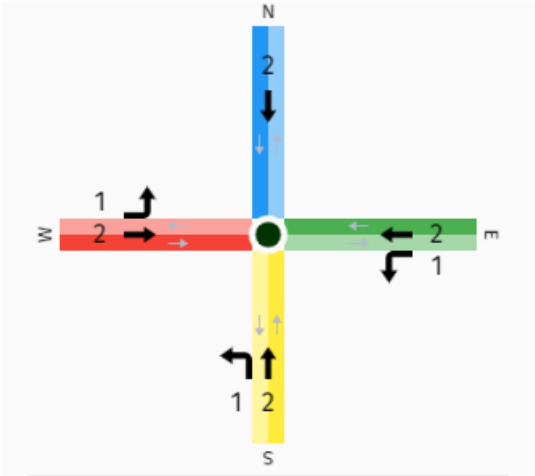
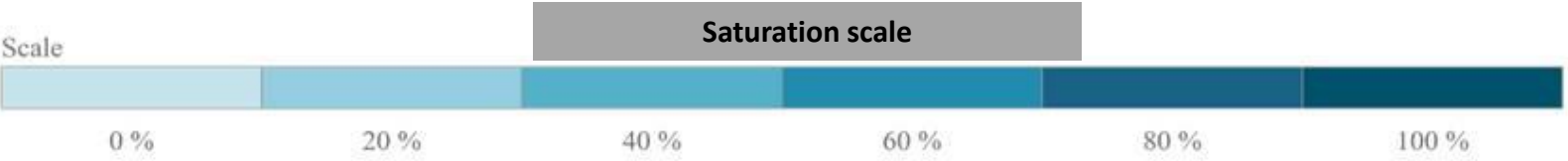
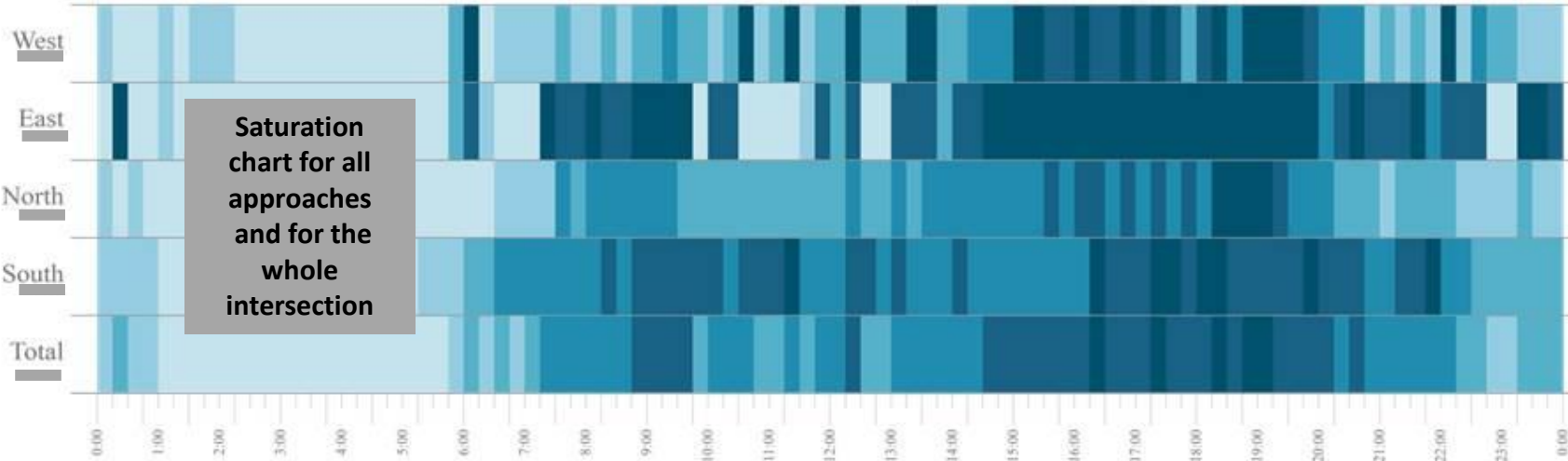
Seasonal changes



Weekly changes



Saturation and Speed/Volume data



SPEED / VOLUME graphs by approach # 3



Saturation degree for approaches sometimes exceed 100% .
 At the same time, same for the whole intersection is between 40% & 80% .
 This points on high improvement potential of signal timing optimization

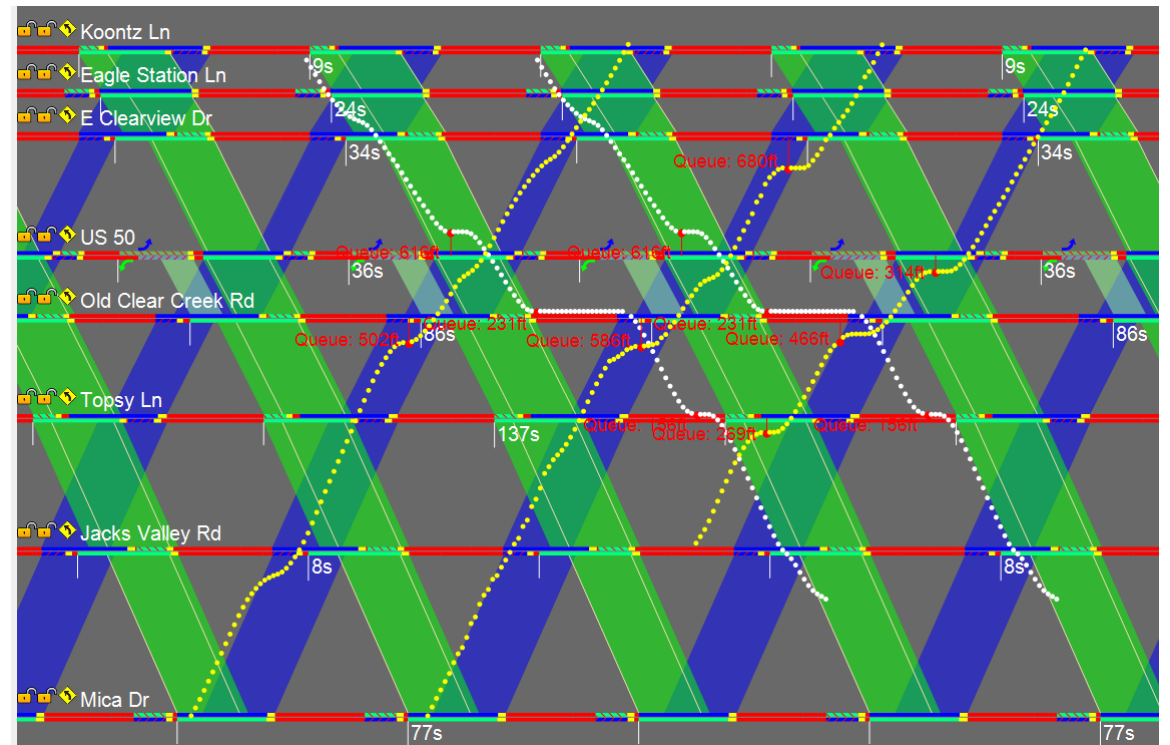
Trajectories and progression

Trajectories from Ticon KCV app can be successfully applied inside signal timing optimization software, like TranSync. Such trajectories include detailed stop times, location of stop, and speed information, which make an excellent base for progression tune-up, as well as for signal timing quality evaluation.

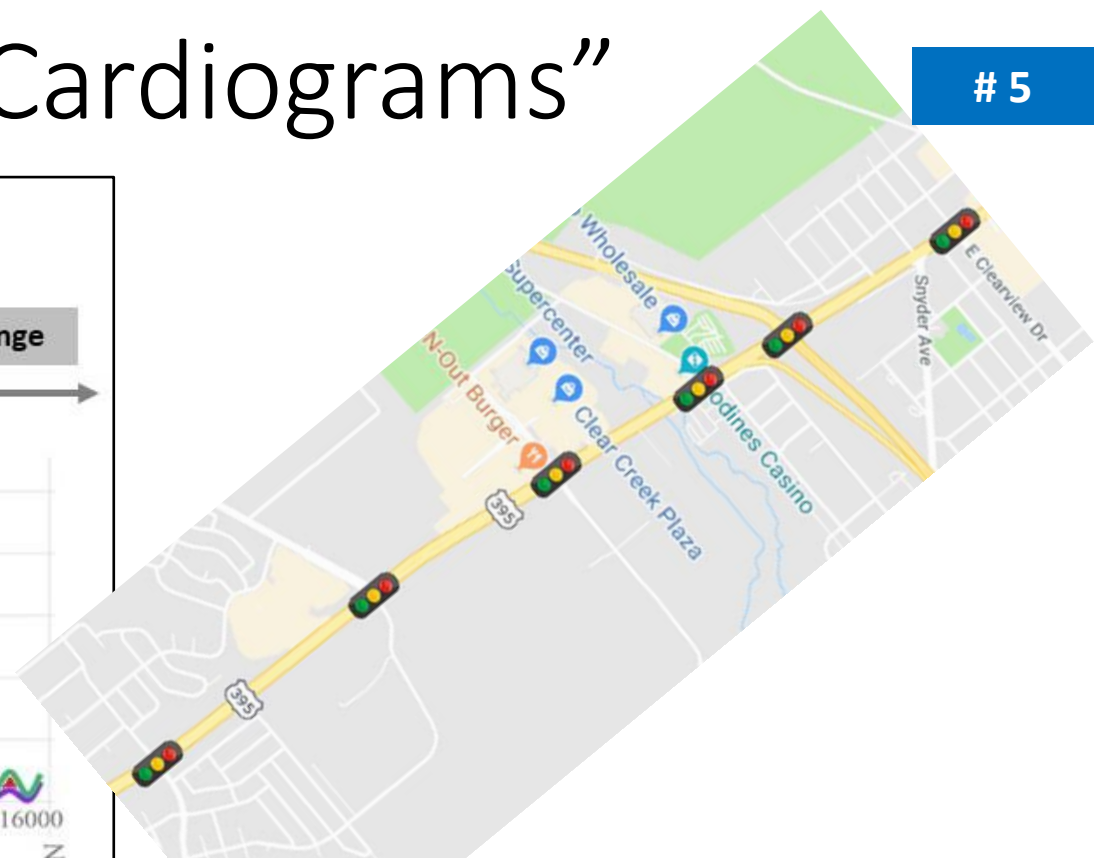
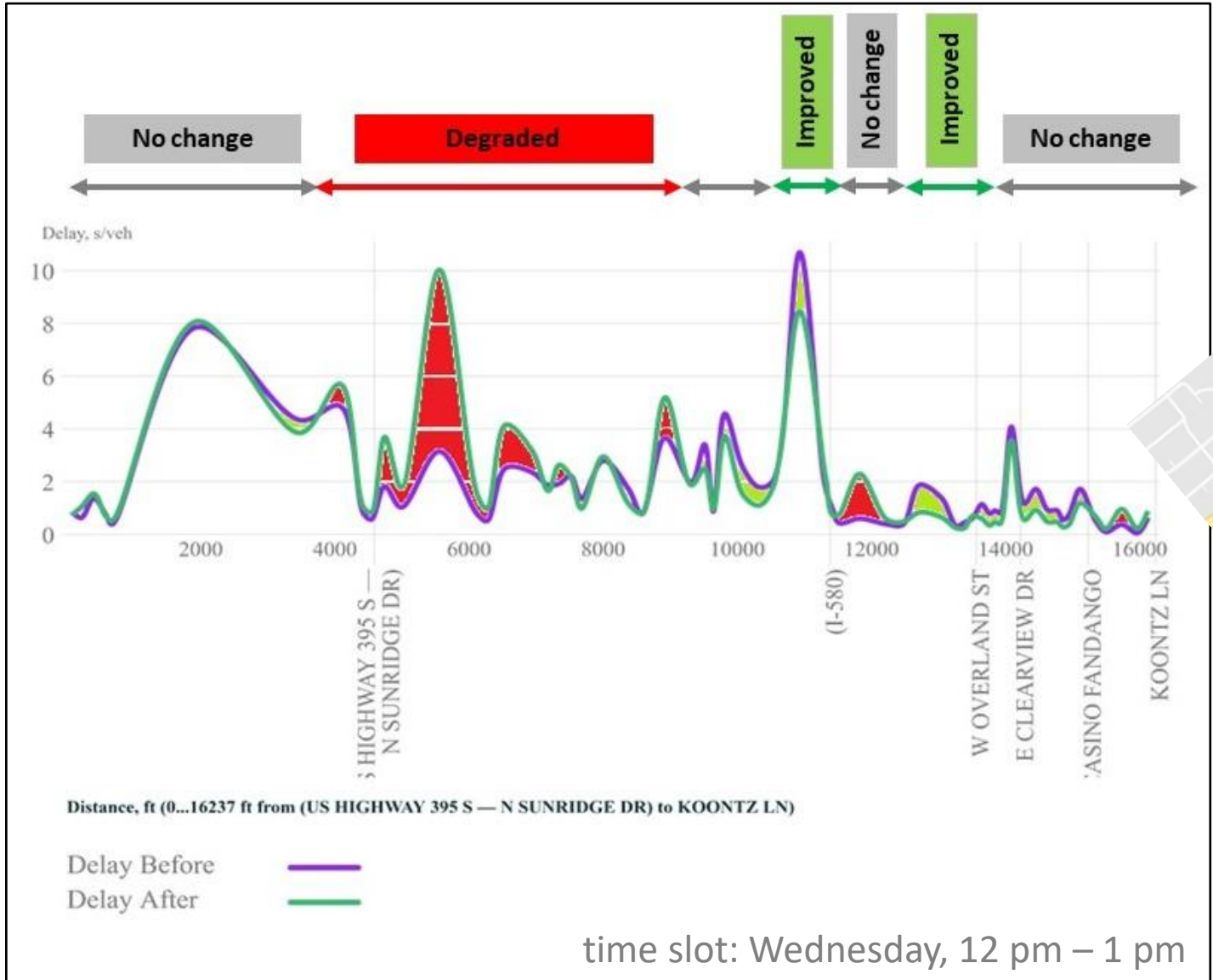
Trajectories data



Progression data in TranSync environment



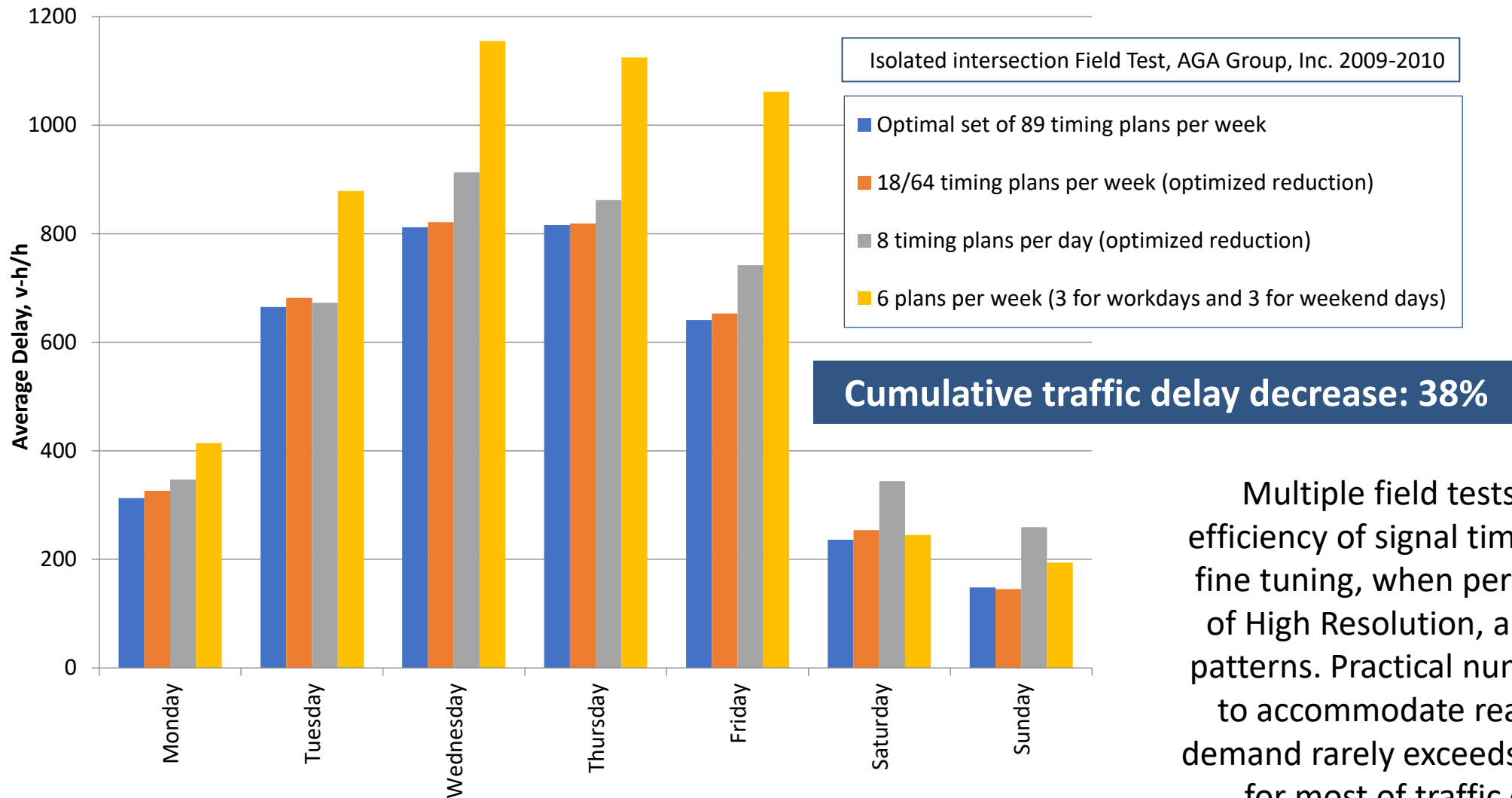
Delay graphs – aka Street “Cardiograms”



Travel delay values for each segment are automatically converted into “along the street” graph, both for “before” and “after” periods. 24/7 coverage guaranteed. Such graphs provide at a glance understanding of road performance, as well as detailed analysis of and the quality of improvement performed. LOS is also reported.

Benefits from optimized timing plan utilization: field test

6



Multiple field tests had proven high efficiency of signal timing optimization and fine tuning, when performed with the use of High Resolution, ample data on traffic patterns. Practical number of timing tables to accommodate real changes in traffic demand rarely exceeds 18, which is suitable for most of traffic controllers in use



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