



Designing Innovating Transportation Solutions Starting with the Data

Data, Data, Data.....

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5/9/2017

Conventional Paradigm:

Collect the minimum data on a “Typical Day” at a
Single Location





Improving Signal Settings Plans

Traditional Approach

Field data collection of turning movement counts



Use an optimization model to develop timing plan(s)



Field implementation-fine tuning

Availability of HR Data

Assessment of existing operations – Identify problems

- *Progression (% arrival on green)*
- *Capacity (V/c ratio)*



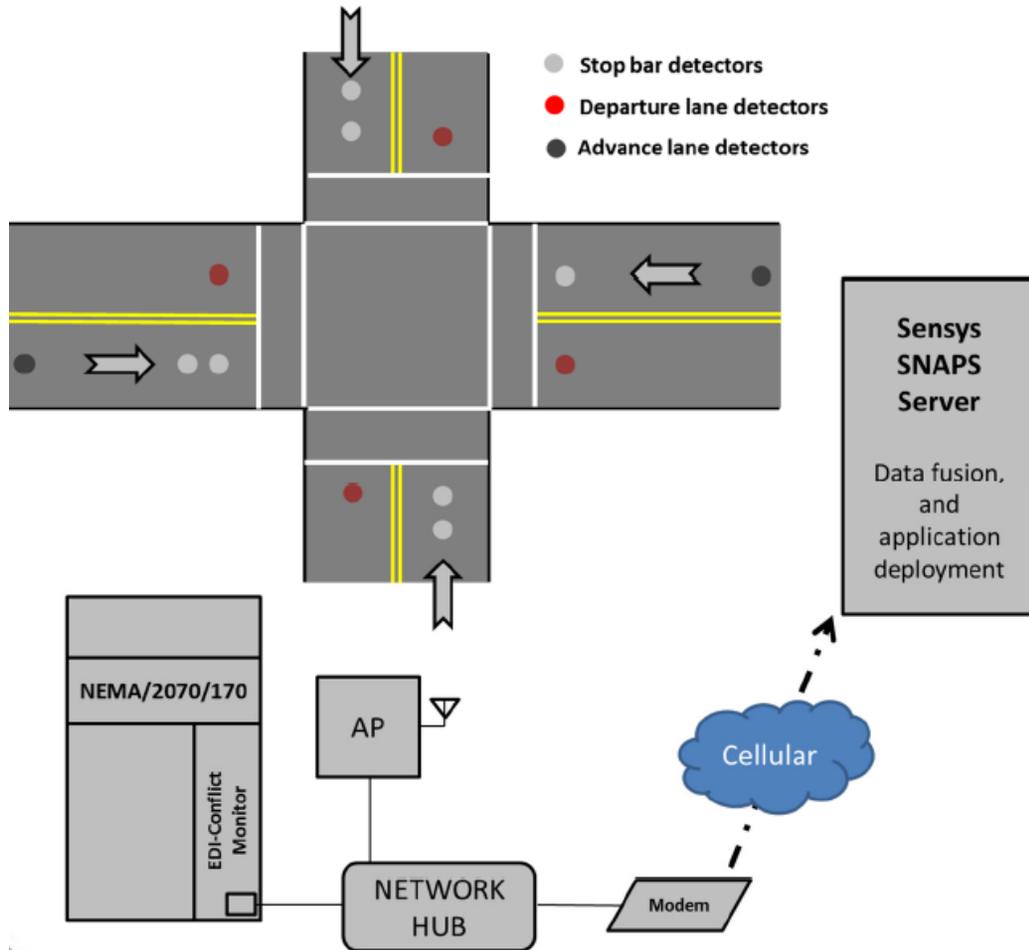
Determine and Implement Actions



Evaluate performance



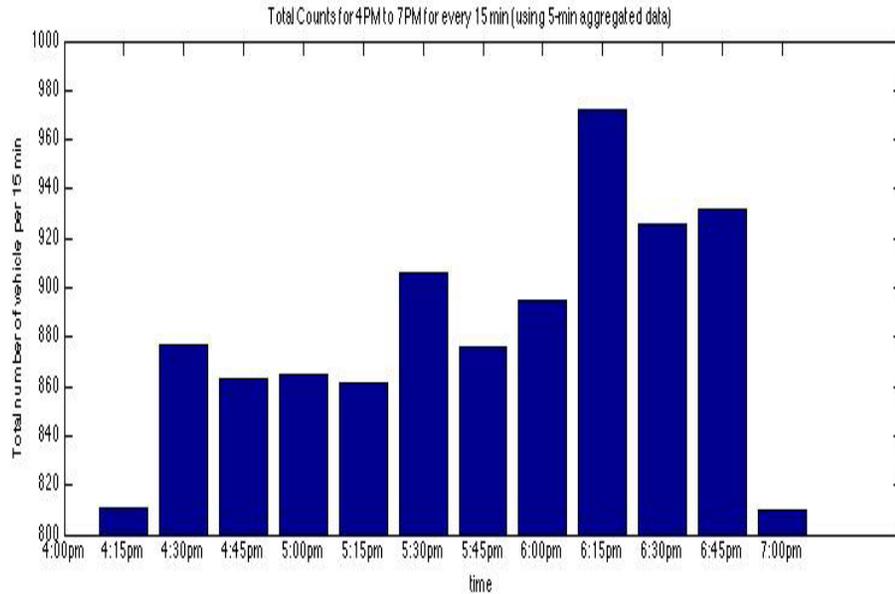
Example: Detector Data Collection Set-up



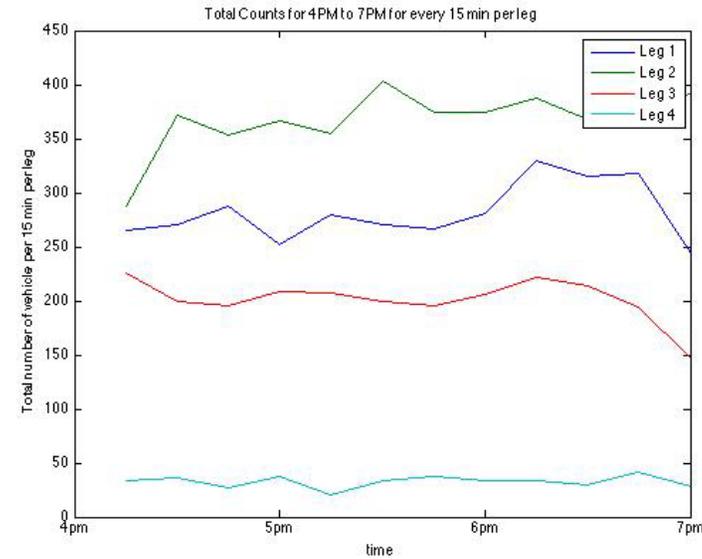
Danville Intersection



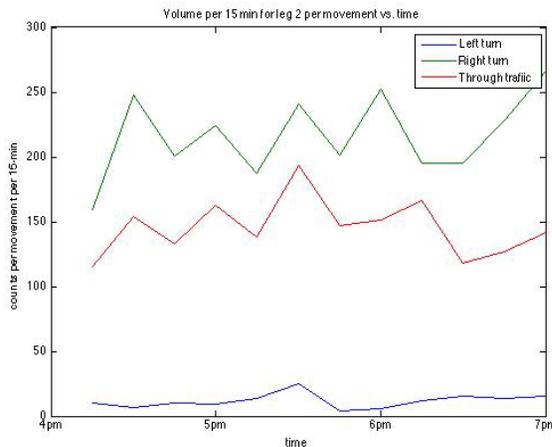
Peak Period 4-7 pm: Volumes/Timing



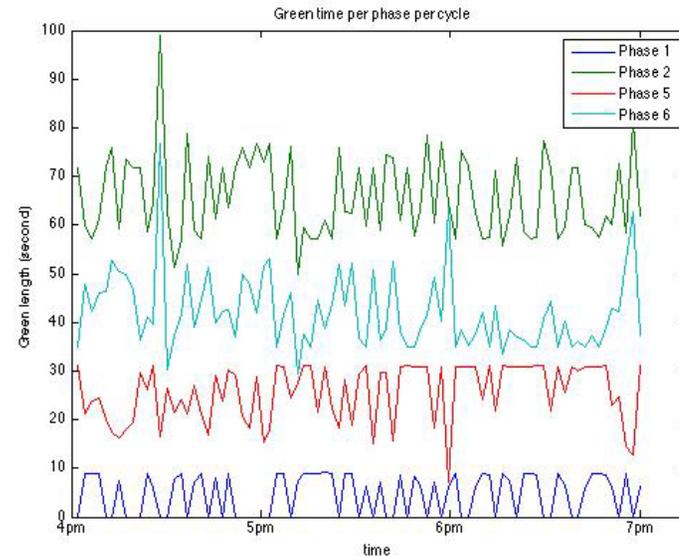
Total volume (veh/15 minutes)



Approach Volume (veh/15 min)



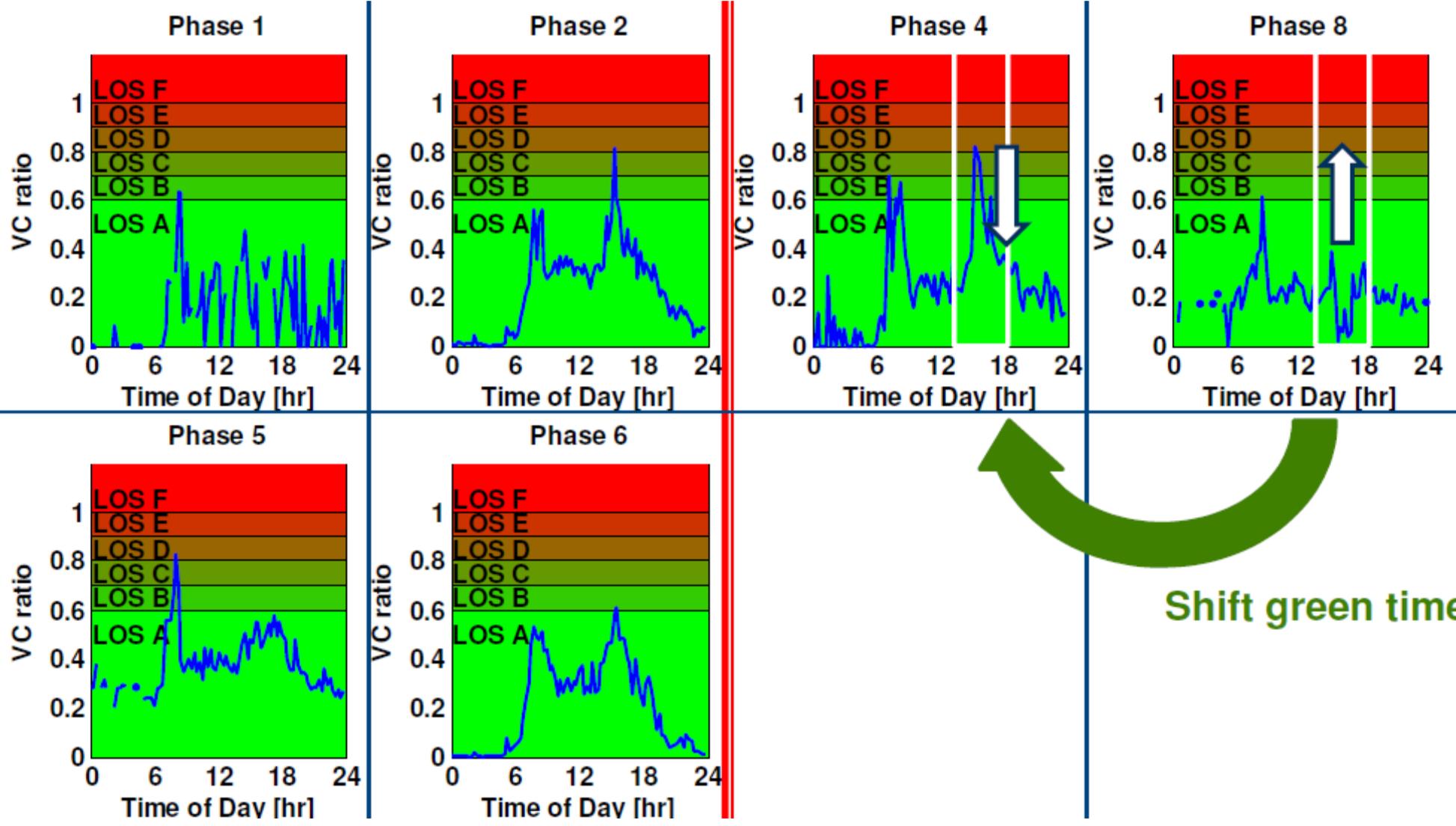
Turning movements--Leg 2 (veh/15 min)



MAIN STREET: Phases 1,2,5,6



Analysis: Trade-offs between Signal Phases based on V/C

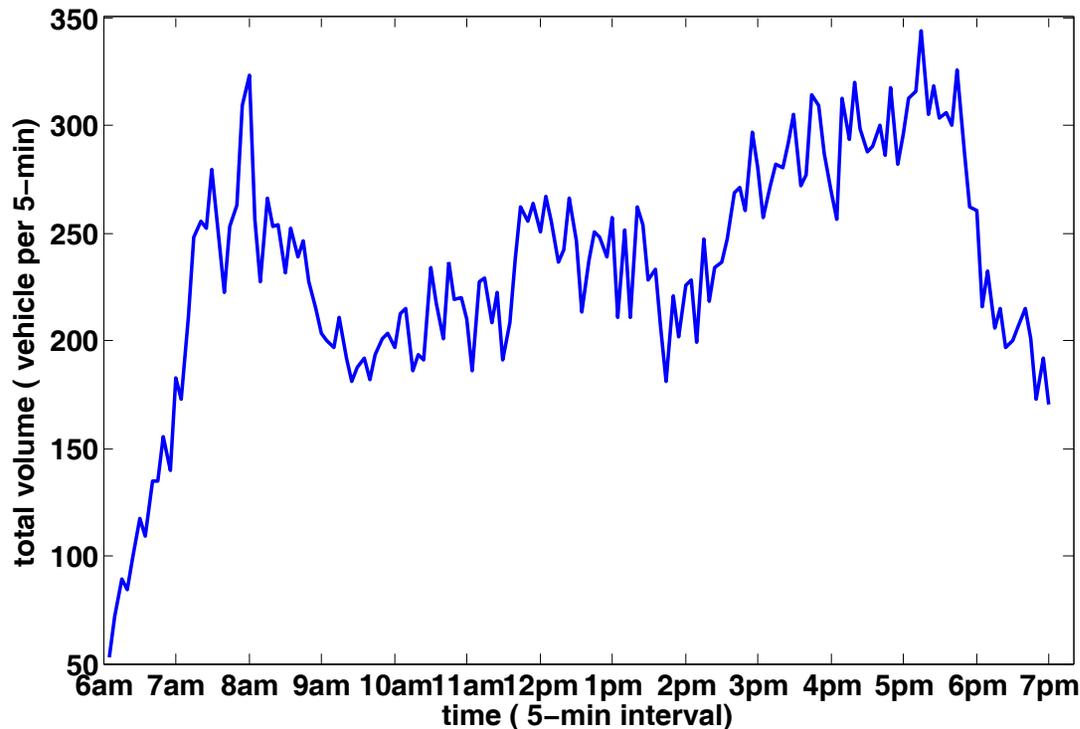


15 min V/C and LOS



Improving Signal Settings Plans

Application: Robust Timing Plans



Total volume at Test Intersection (#veh/min)

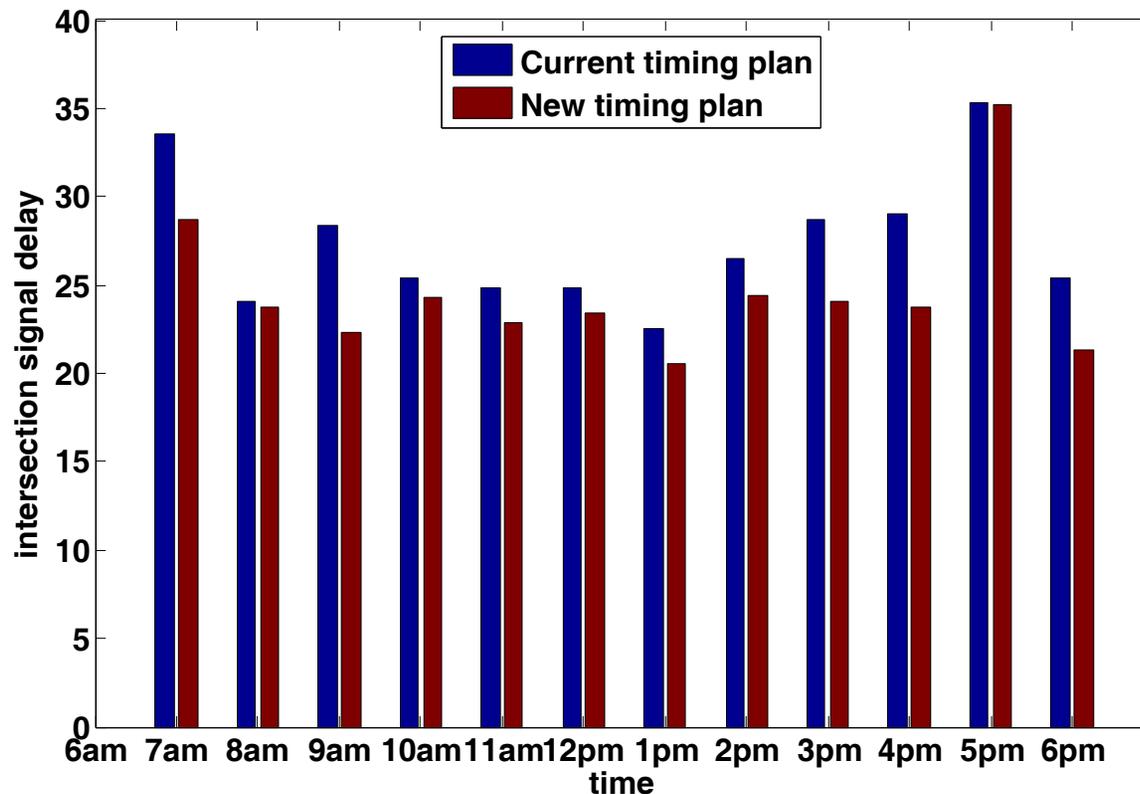
Which Volumes to use for the three timing plans over the day?

Data Clustering



New vs. Existing Signal Timing Plans

- **New timing plans reduces the intersection signal delay by 10% on average***



*Intersection signal delay estimated by Synchro