2017 TRB Annual Meeting, Session #511

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Modeling Cooperative Cruise Control in Dynamic Traffic Assignment

Christopher L. Melson[1]
Michael W. Levin[2]
Britton E. Hammit[3]
Stephen D. Boyles[2]

[1]Turner-Fairbank Highway Research Center, [2]University of Texas at Austin, [3]University of Wyoming

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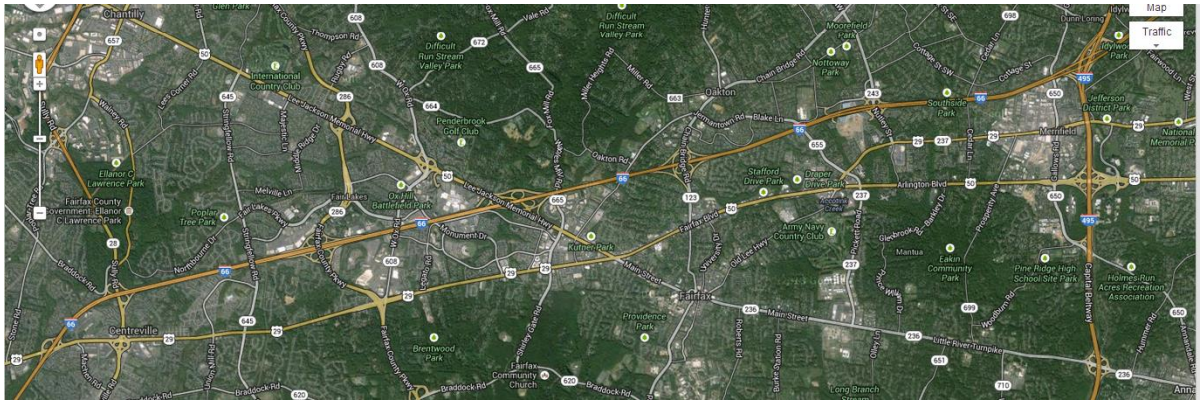
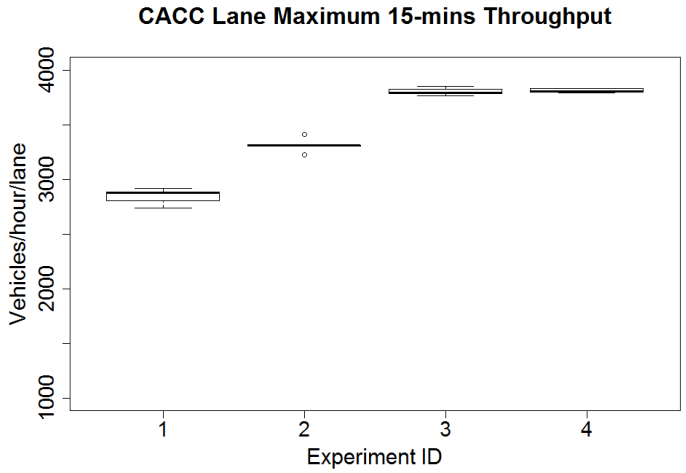
Previous Research Efforts

- Focused on microscopic-level analysis and corridor studies
- Limited research on traffic flow impacts and higher-level decisions and behavior

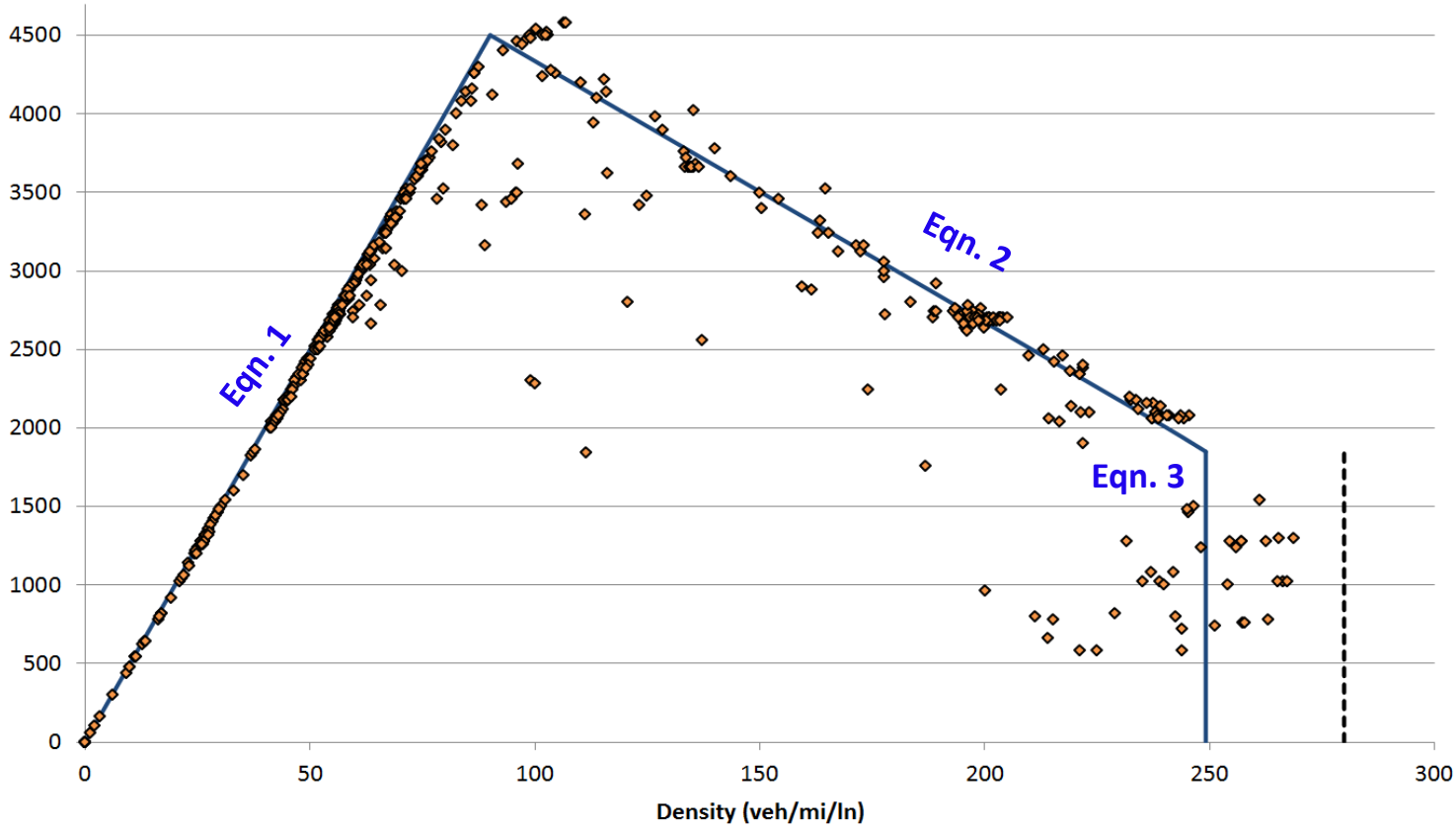




Methodology – Deriving Fundamental Diagram

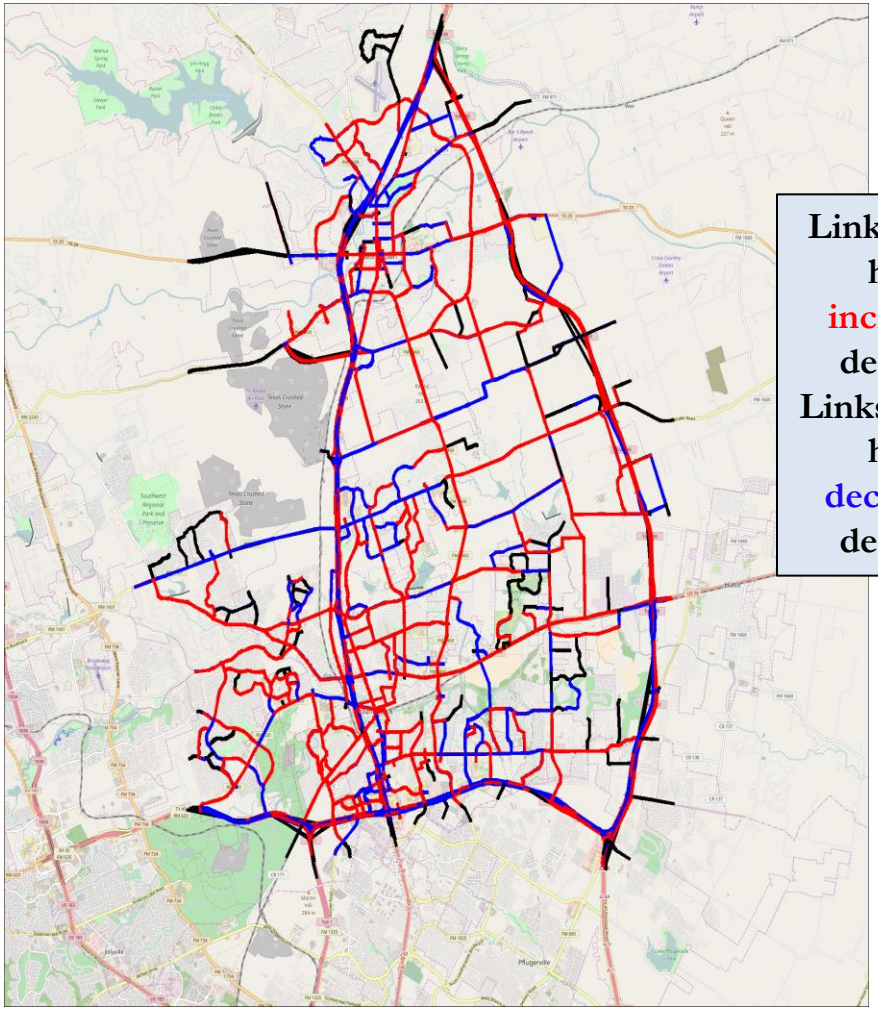
$$q = \min \begin{cases} (1) & vk & 0 \le k < k_c \\ (2) & \frac{l}{1+t_{\text{system}}k} & k_c \le k < k_{\text{jam}} \\ (3) & \frac{v}{s_{\min}+l} & k = k_{\text{jam}} \end{cases}$$

Fundamental Diagram for Validation Case Study with Plotted Points from Simulation



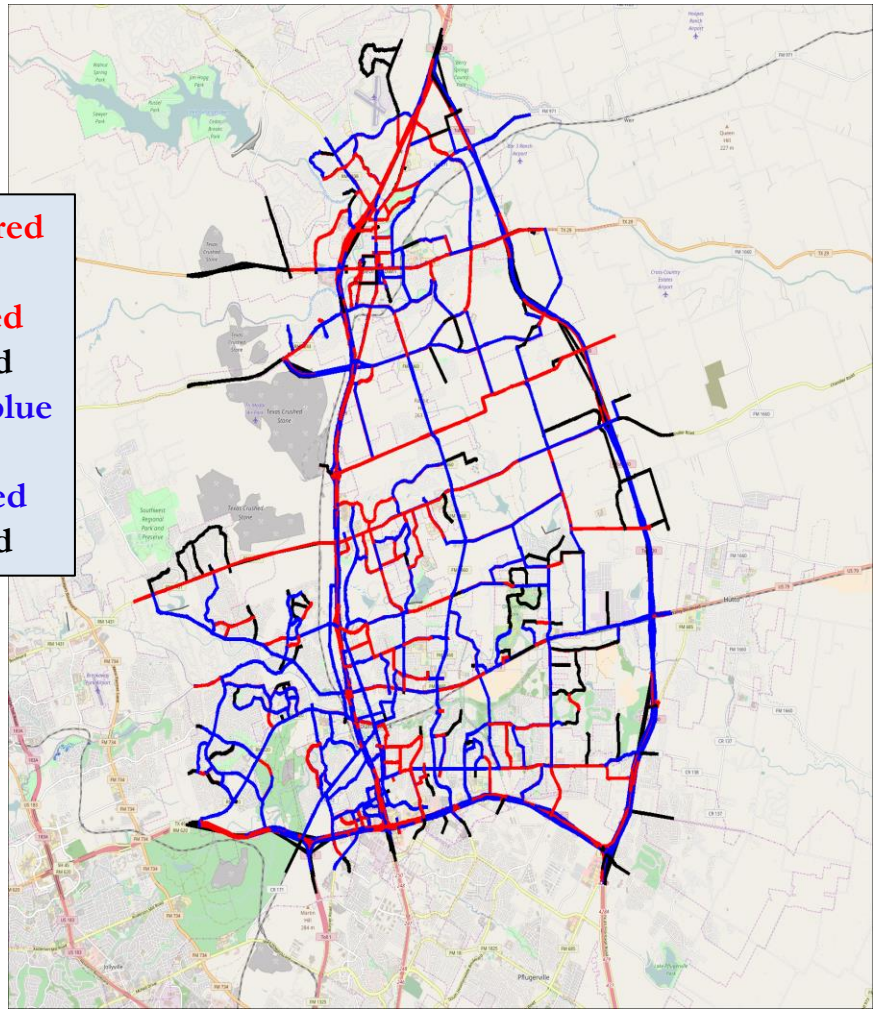
Case Study: Implementation of CACC Managed Lane

Non-CACC Vehicles



Links in red have increased demand
Links in blue have decreased demand

CACC Vehicles



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Christopher L. Melson (christopher.melson@dot.gov)
Michael W. Levin (michaellevin@utexas.edu)
Britton E. Hammit (britton.hammit.ctr@dot.gov)
Stephen D. Boyles (sboyles@mail.utexas.edu)

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