Hybrid Data Implementation

Discover an integrated data fusion methodology for Daily Vehicle Hours of Delay (DVHD) that can be estimated in multiple ways with a flexible mix of data.

WHAT IS THE NEED?

California Department of Transportation (Caltrans) relies on over 40,000 individual vehicle detection zones to provide information on vehicle data such as volume, occupancy, and speed. This information is in turn used for various system operations and management activities. Gigabytes of data every day is collected and used to provide support for traffic management, real-time traveler information, and system performance monitoring. These functions are vital in supporting Caltrans mission, vision, and goals – Goal 1: Safety and Health, Goal 2: Stewardship and Efficiency, Goal 3: Sustainability, Livability and Economy, and Goal 4: System Performance.

Operating this vast detection system requires extensive resources in the form of engineering and maintenance support along with millions in capital funds to keep them running. Recently, Caltrans programmed over $150 million in State Highway Operation and Protection Program funds to address failed or failing detection stations across the state.

With the increased availability of third-party, probe-based data to provide some of the same data currently obtained through existing detection systems, there should be a renewed effort to look at how those data sources may be able to supplant or augment existing data collection methods. Most third-party data providers can now provide detailed travel time or speed data on any route. In addition, data samples will continue to grow as more cellular devices are used.

To properly integrate this data into the existing reporting platform and into deliverables such as the Mobility Performance Report (MPR), research is needed to determine how to incorporate the third-party data to provide both real-time and historical performance metrics. This will require evaluating and modifying algorithms.
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Image 1: A comparison of traffic data collection methods

Table 1 and 2: Comparative Summary of Traffic Data Provider

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