

Making Data Meaningful for Arterial Analysis

Presented by:
Mike Wallace
June 3, 2013

MTC Tech Transfer
Traffic Data Collection Technologies for Arterials



Topics

- **Purpose and Meaning**
- **Evaluating Options**
- **Adding Value**
- **Lessons Learned**

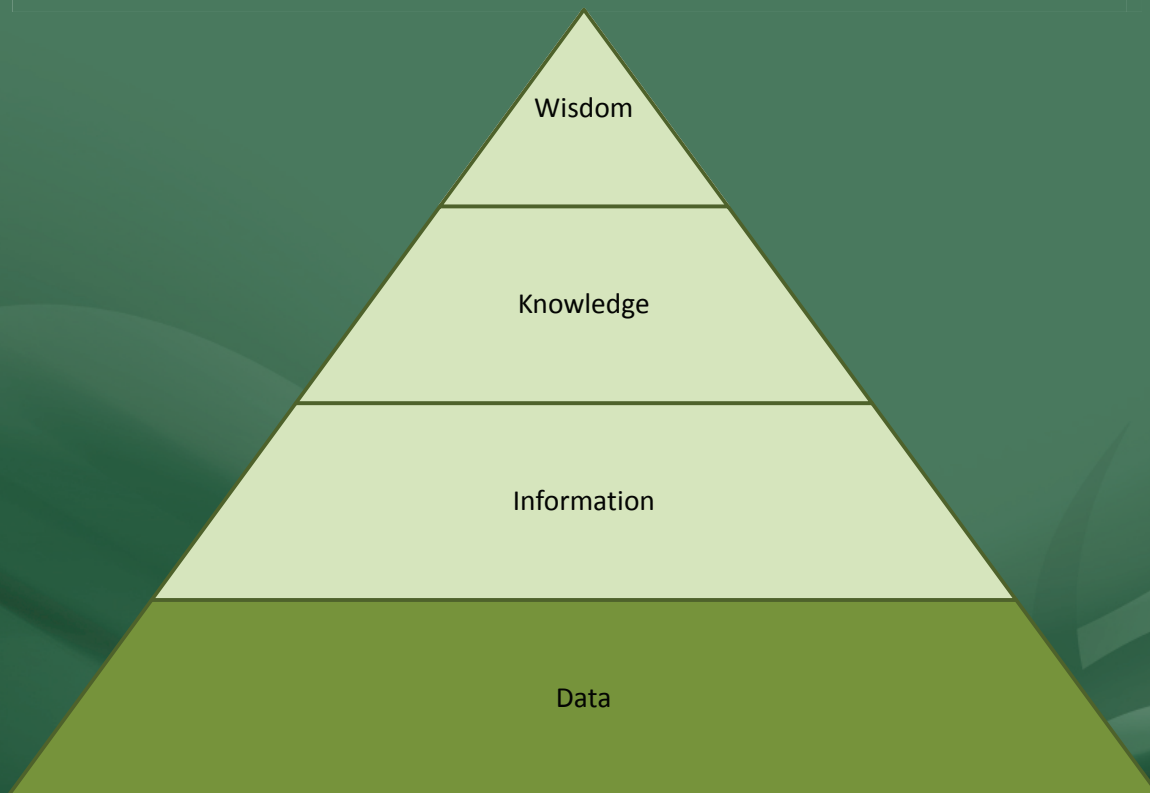


Typical Transportation Questions

- Travel time/congestion: intersection, corridor, region
- Who and why are the users of the system?
- Will this solution work in 10, 20, or 30 years?
- How much will it cost to implement and maintain?
- ***How can we better manage our system/program?***
- ***How confident are we in the recommendation?***



Approach to Making Data Meaningful





Speed Matters....



At **40 mph** the driver's focus is on the roadway in the distance.



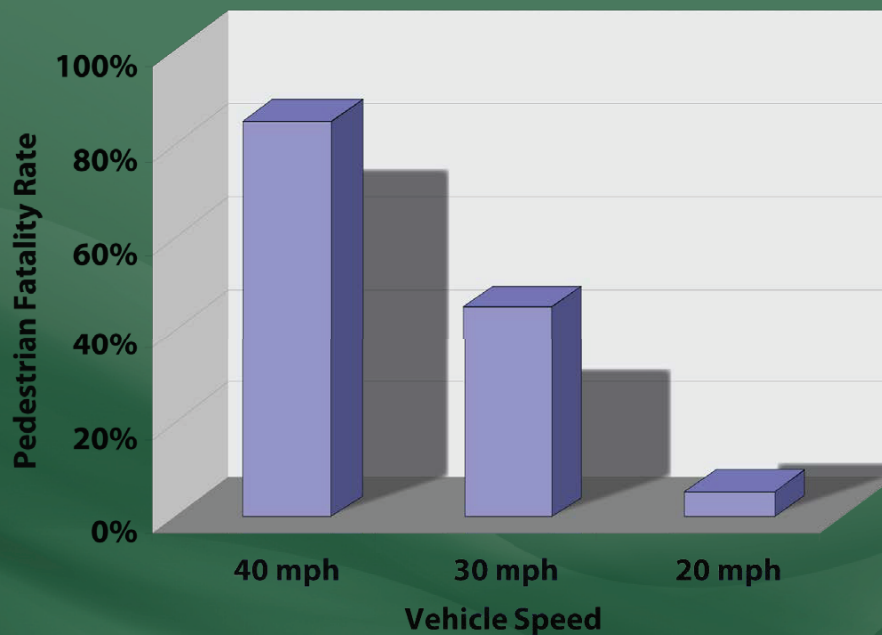
At **30 mph** the driver begins to see things at the road edges in the background.

Source: Smart Mobility Framework, Caltrans, 2009



Speed Matters....

Pedestrian Fatality Rates for Collisions at Different Speeds

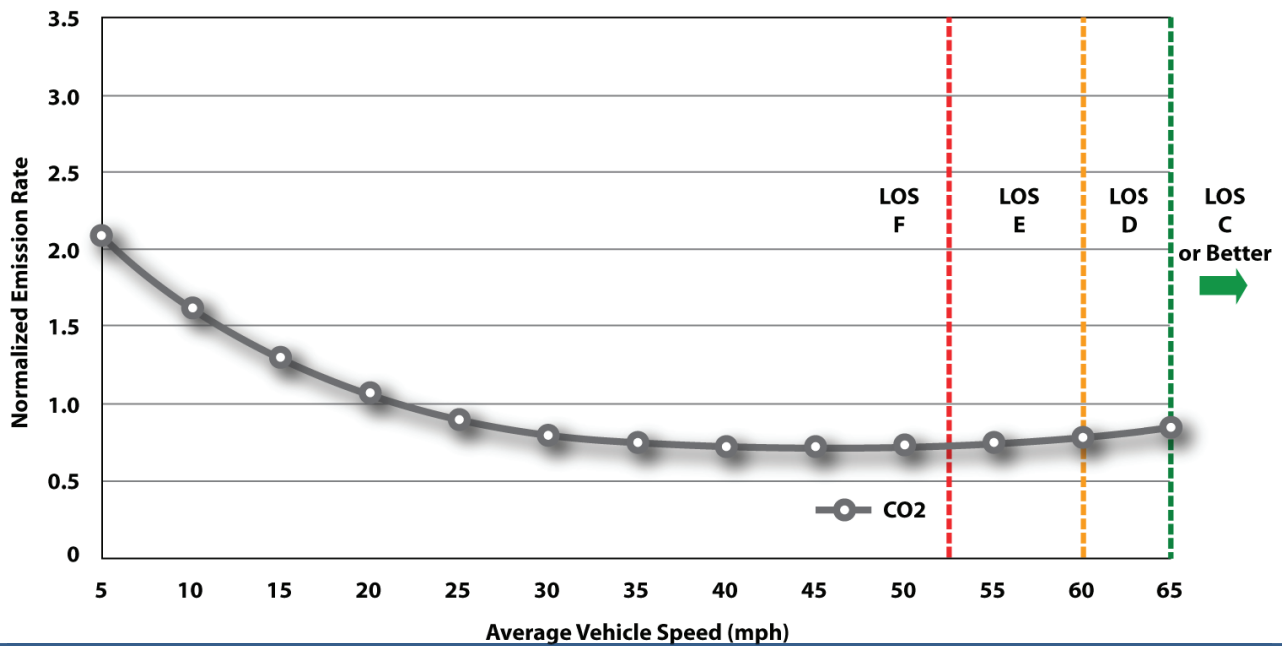


Source: The Built Environment and Traffic Safety - A Review of Empirical Evidence, Journal of Planning Literature, Volume 23 Number 4, May 2009
By Reid Ewing and Eric Dumbaugh



Speed Matters....

Relationship of Freeway LOS, Speed, and CO2 Emissions Factors

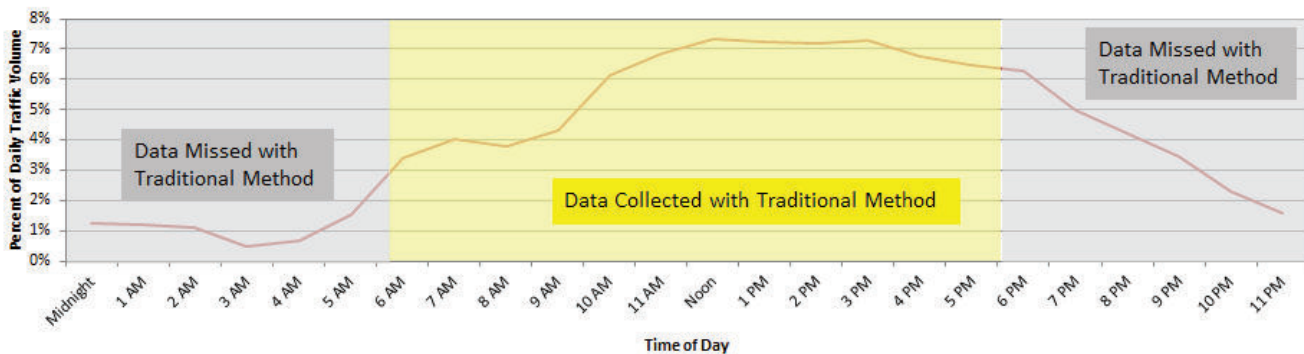


Evaluation of Facility User

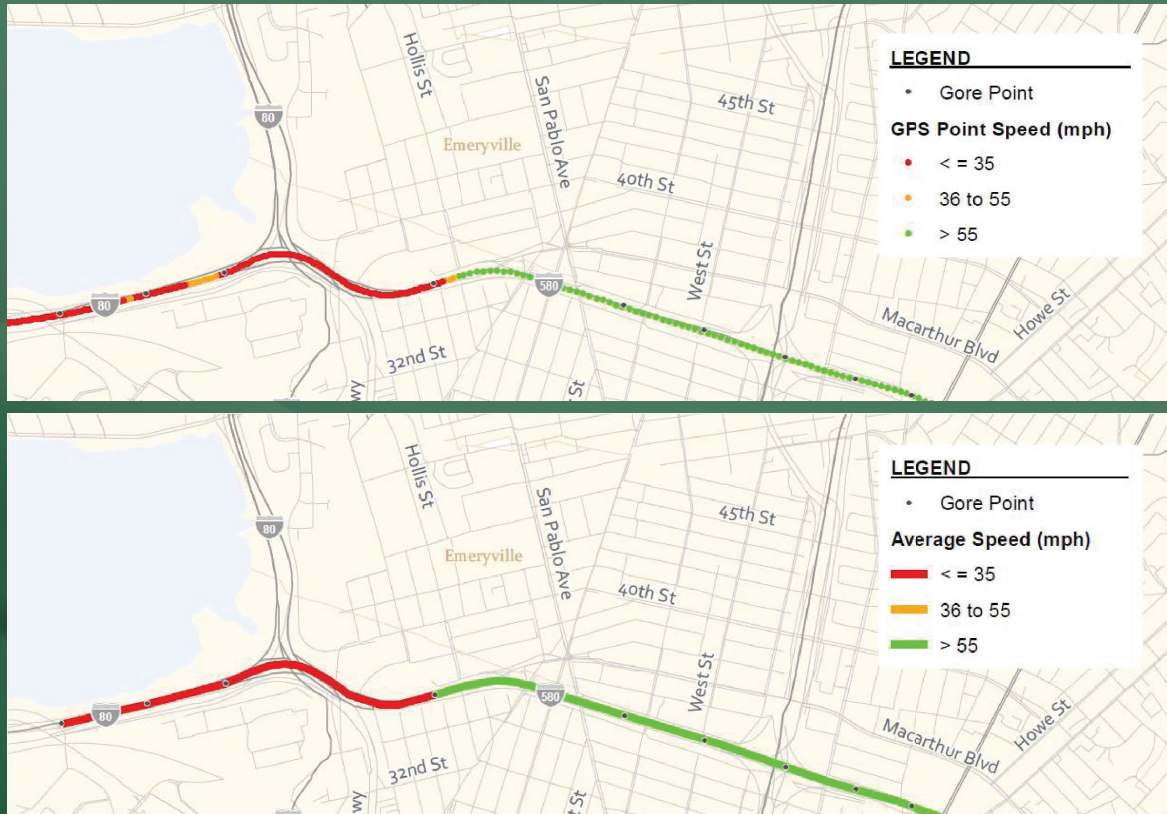


1. Motorcycles 2 axles, 2 or 3 tires	2. Passenger Cars 2 axles, can have 1- or 2- axle trailers	3. Pickups, Panels, Vans 2 axles, 4 tire single units Can have 1 or 2 axle trailers	4. Buses 2 or 3 axles, full length
5. Single Unit 2-Axle Trucks 2 axles, 4 tire (flat-top, single-unit)	6. Single Unit 3-Axle Trucks 3 axles, single unit	7. Single Unit 4 or More-Axle Trucks 4 or more axles, single unit	8. Single Trailer 3- or 4-Axle Trucks 3 or 4 axles, single trailer
9. Single Trailer 5-Axle Trucks 5 axles, single trailer	10. Single Trailer 6- or More-Axle Trucks 6 or more axles, single trailer	11. Multi-Trailer 5- or Less-Axle Trucks 5 or less axles, multiple trailers	12. Multi-Trailer 6-Axle Trucks 6 axles, multiple trailers
13. Multi-Trailer 7- or More-Axle Trucks 7 or more axles, multiple trailers			

Sample Traffic Count Location



Evaluation of Aggregation

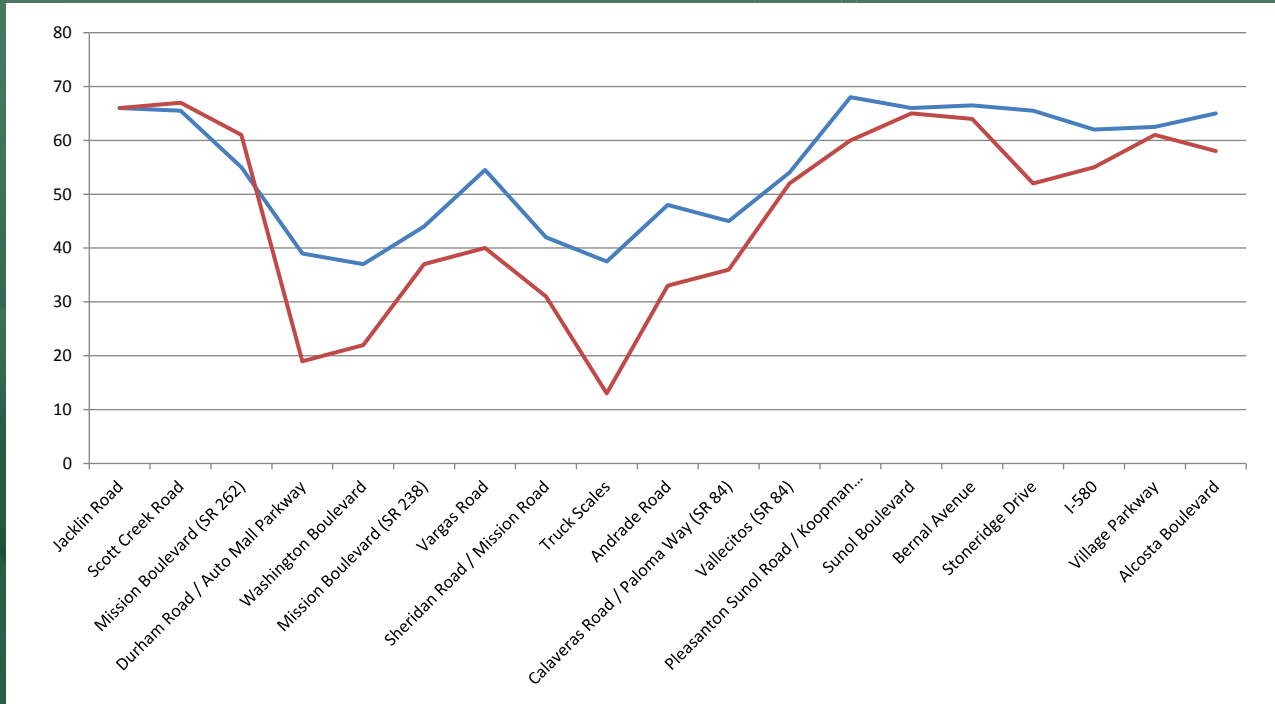


Evaluation of Multiple Options

Method	Pros	Cons
Telephone Survey (Considered and Rejected)	<ul style="list-style-type: none"> Provides detailed vehicle trip making information such as vehicle trip generation rates, trip purpose, occupancy and class of vehicle. 	<ul style="list-style-type: none"> Extreme potential for under reporting and survey bias due to reliance on survey taker for all vehicle trip information (including origin, destination, trip length, etc. which can be observed through the use of other methods). Development and implementation of survey of a sufficient size to be statistically valid can be costly. Does not isolate intra and interregional travel or target the travelers within the region. Labor intensive process to provide data in a format suitable for comparison and integration with travel demand models.
Roadside Interview (Considered and Rejected)	<ul style="list-style-type: none"> Provides information such as the number of vehicles that travel through the region, their entry and exit points, and their percent makeup of total traffic. 	<ul style="list-style-type: none"> Potential for under reporting and survey bias due to reliance on survey taker for most vehicle trip information (including origin or destination, trip length, etc. which can be observed through the use of other methods). Development and implementation of survey of a sufficient size to be statistically valid can be costly.



Evaluation of Data Source



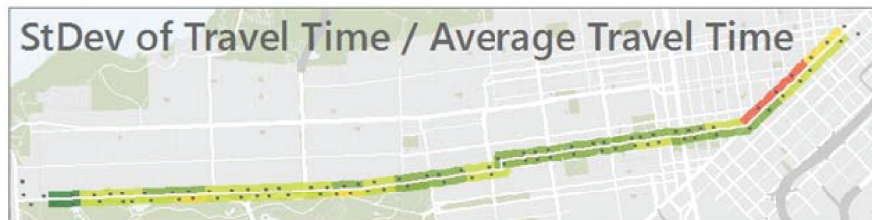
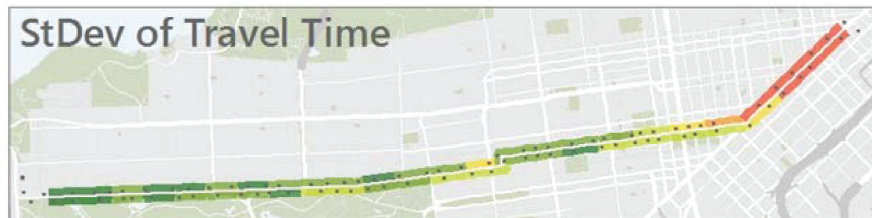
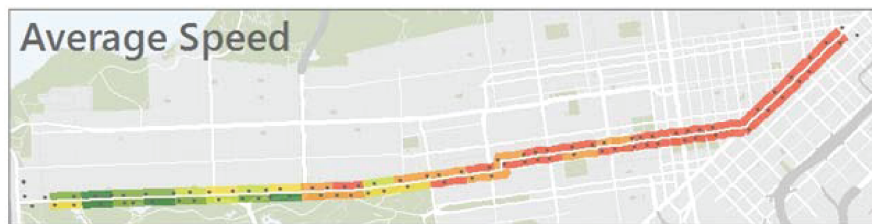
Adding Value by Describing Variation

5 Fulton Reliability

PM period (4 PM to 7 PM)

Source: SFMTA bus AVL data from May 2012. GIS analysis tool developed by Fehr & Peers

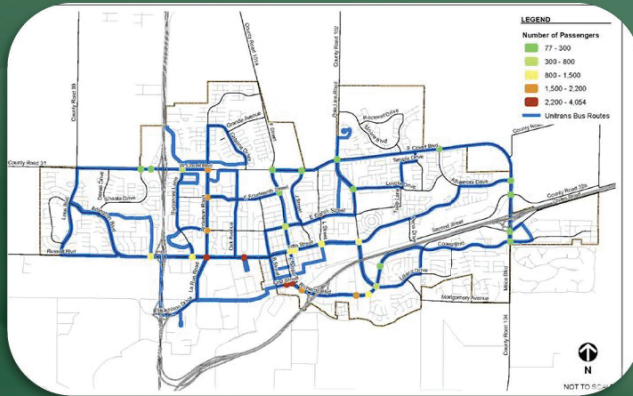
FEHR & PEERS



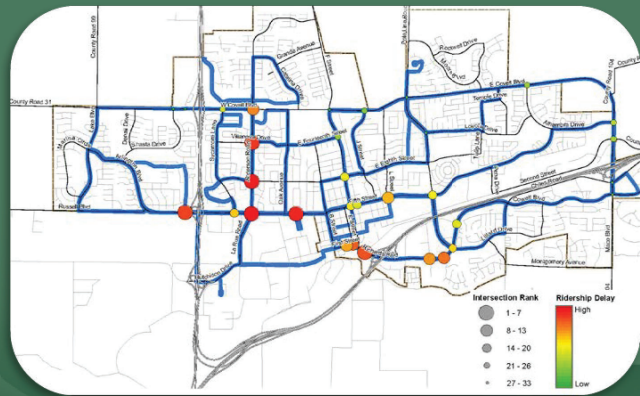


Adding Value by Combining Data

Passengers at Study Locations



Rank Improvement Locations



Lessons Learned

- Not All Data Are Created Equal
- Better (Data + Understanding) = Better Decisions
- Human and Technology Resources

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