WORK ZONE DATA

Work Zone ITS Peer Exchange

May 22, 2013

AGENDA

- Types of Data
- Data for Work Zone Management
- Data for Evaluation of System Performance
- Lessons Learned

Work Zone Data

- Transportation bill says we must collect it.
- Use it to improve traffic control safety and throughput.
- Also helps us allocate our limited resources more efficiently.

Why Me?

- Started Road-Tech 12 years ago to pursue work zone ITS business.
- Past chair ATSSA ITS Council.
- ITS California member.
- Co-lead of California SHSP Work Zone Challenge Area.
- Work Zone ITS blog.

Ground Rules

- This is not a lecture – it is a discussion.
- PLEASE disagree with me!

TYPES OF DATA

- Real-time data = work zone management.
- Collected data = system performance/ planning data.

TYPES OF DATA

- Primer contrasted project level measures with agency/program level measures.

- Our focus is on project level data.

- Don't focus just on systems operations measures in work zones.

- Choose measures that will work well both for work zone management and for later evaluation of system performance.

TYPES OF DATA

Work Zone Performance Measures:
- Speeds
- Counts
- Volumes
- Delay times
- Queue lengths

Types of Data

System Outputs:
- Email or text alerts
- Changes to message signs
- Website maps
- Low voltage warnings
- Ambient temperature

Types of Data

Security & System Overrides:
- Geo-fencing
- Manual message overrides

Maintenance:
- Voltage levels
- Charge levels

POSSIBLE METRICS FOR WORK ZONE MANAGEMENT

- Average speeds
- Number of incidents (speeds below XX MPH)
- Delay time
- Travel time

POSSIBLE METRICS FOR WORK ZONE MANAGEMENT

- Speed variance – need for additional law enforcement
- Queue length (incentives/disincentives)
- ???

POSSIBLE METRICS FOR EVALUATION OF SYSTEM PERFORMANCE

"Primer" says measures fall into three categories:

- Exposure measures (Pg 10)
  - Volume or level of service.
  - Reduction in volume through project limits.
  - Lane closure lengths or hours.
- Safety measures (Pg 12 & 13)
  - Number of fatal, injury, PDO crashes.
  - Worker injuries or time lost.
- Mobility measures (Pg 16)
  - Queue lengths.
  - Delay times.

Possible Metrics for Evaluation of System Performance

- Were the goals for the deployment achieved?
- Was the cost justified through improved safety and efficiency?
- What was benefit/cost ratio?
- Did it reduce delays? Frustration? Road rage?
- Did it reduce the expected number and severity of crashes? What should you use as a baseline?
- ???

IMPORTANCE OF RAW DATA

- Better "feel" for triggers and where to set them.
- Learn if trigger was one-time event or if slow traffic continues.
- Helps eliminate false alarms.
- Art versus science.
- Helps locate sensors where data is best indicator of flow.
- Check your data regularly!

Speeds Over Distance Versus Spot Speeds

- Hayward – San Rafael Bridge during Bay Bridge closure.
- Micro versus macro data.
- Data which most agencies have not had before.

IMPORTANCE OF MULTIPLE DATA POINTS

- Earlier notification.
  - Smaller problem.
  - Faster correction.
  - Fewer secondary collisions.
  - More accurate delay or travel times.
- Better identify location of incident.
  - Where to send EMS.
  - Where traffic control issues may need correction.

Gathering Data

- Always place sensors upstream of longest possible queue.
- Watch data and adjust sensors as needed:
  - Echoes off concrete barrier.
  - Slow moving equipment.
  - Some off ramps (especially truck scales).
  - Areas where geometry causes slowing – narrow lanes, lane shifts, etc.
- Sensors may be moved on the job. RTMS units, in particular, may need to be re-aimed.

GATHERING DATA

- Frequency of polling:
  - More often for queue warning.
  - Less often for delay times.
- Data format
  - What formats do your agencies require?
- Create a data policy once you've found practices that work for your agency.

Two Final Points

No such thing as too much data!

Best measures vary with:

- Agency
- Location
- Road classification
- Project goals
- Surprises on the job
- Type of construction

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