Agenda

- Choosing Appropriate Segments
- Varying Traffic Conditions
- Omitted Data
- Accuracy Threshold
- Conclusions
Data reported as speeds (MPH)
Actually collected as time data
Converted to speed data in post processing
Choosing Appropriate Segments

- Car positions based on cell tower triangulation
- Triangulation is imprecise form of measurement
- Reports indicate measurement can be off +/- 50M (160’)
- Problematic for short links
Imprecise Measurement: Case Study

- I-40 EB near NC-540
Imprecise Measurement: Case Study

- At 60 MPH 2050’ can be traversed in 23.3 seconds
- If we hold time constant then:
  - If length is off by 100’ then speed changes by 2.9 MPH
  - If length is off by 320’ then speed changes by 9.6 MPH
- Solution: Try to utilize longer segments
Imprecise Measurement: Case Study

- Miami Blvd to NC 540 is 4600’
- 100’ changes speed by 1.3 MPH
- 320’ Changes speed by 4.3 MPH
Choosing Appropriate Segments

- Inrix post processes data
- Slower speeds may be expunged
- Limitations unknown
Omitted Data

- Potential issues:
  - Speed may reflect only free flowing traffic
    - Spillback from a ramp may be neglected
    - Sample not reflective of total traffic
Problematic locations: I-40 WB at Wendover Ave
Omitted Data

- Problematic locations: I-40 WB at Wendover
Problemsatic locations: I-40 WB at US 19-23 in Asheville
Omitted Data

- Problematic locations: I-40 WB at US 19-23 in Asheville
Choosing Appropriate Segments

- Very important to choose the correct segments
- Short links can be off due to measurement error
- Links with ramp spillback can be off due to omitted data
- Where possible aggregate up to larger segments
Varying Conditions

- Historic data back to 2009
- Current travel patterns may differ from historic patterns
- Important to select appropriate data
Varying Conditions

Changing Speed Limits

Speed Limit Reduction
Varying Conditions

Work Zones
Varying Conditions

- Rock Slides

Rockslide → Impacted Facility
Varying Conditions

- Parse data accordingly
- Remove observations that don’t match conditions
- Examine similar conditions to match observations
Accuracy Threshold

- Not all vehicles captured
- Samples thus have a margin of error
- According to results from the I-95 Coalition Vehicle Probe Project:
  “In over 85% of the ground-truth comparisons, INRIX traffic data was within 5 miles per hour of the ground truth speeds.”
- Accuracy improves as more vehicles counted
Accuracy Threshold

- Beware accuracy thresholds
  - Don’t try to match too tightly
  - 5 mph = 7.7% of 65MPH
  - Keep calibration to +/-5MPH
Conclusions

- Overall the data is very good
- Use longer segments when possible
- Parse data as needed
- Verify data isn’t omitted
- Use good judgment