INRIX DATA: LESSONS LEARNED

North Carolina Model Users Group

October 30, 2012

URS

Agenda

- □ Choosing Appropriate Segments
- □ Varying Traffic Conditions
- □ Omitted Data
- □ Accuracy Threshold
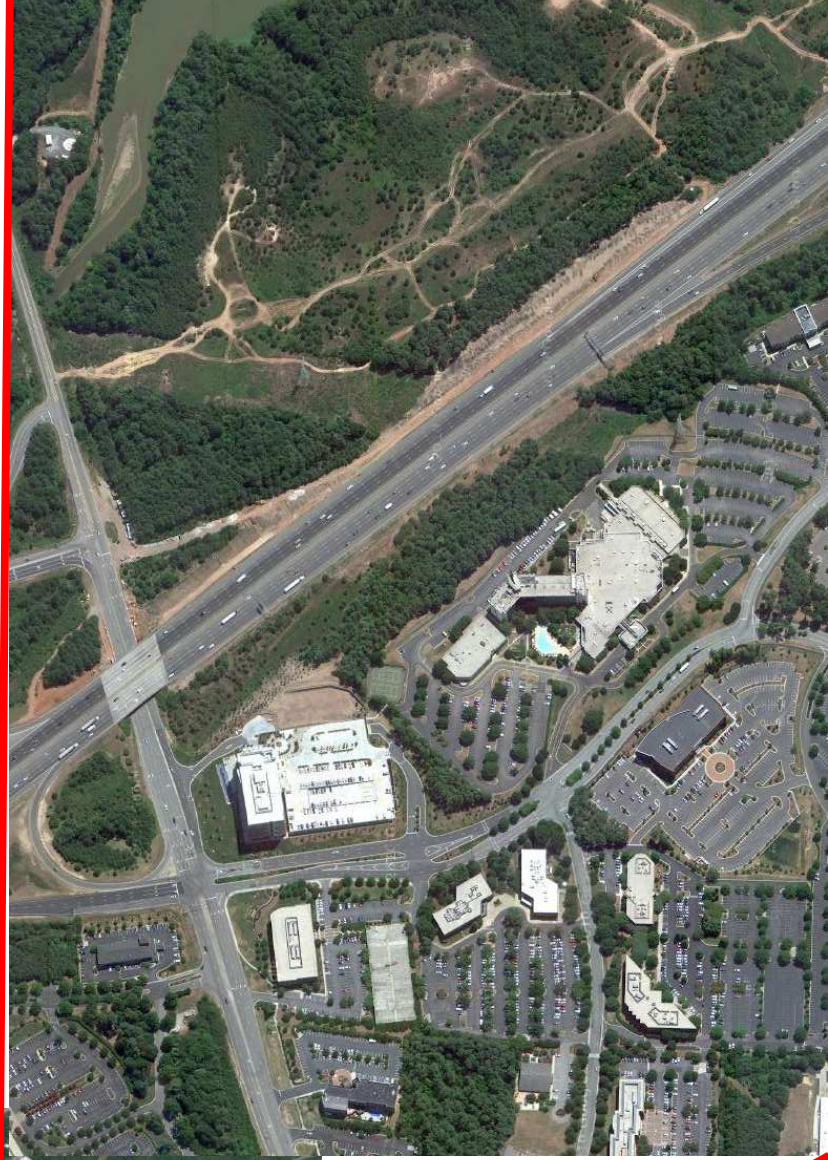- □ Conclusions

Speed vs. Time

- 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

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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

~4600'

Choosing Appropriate Segments

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

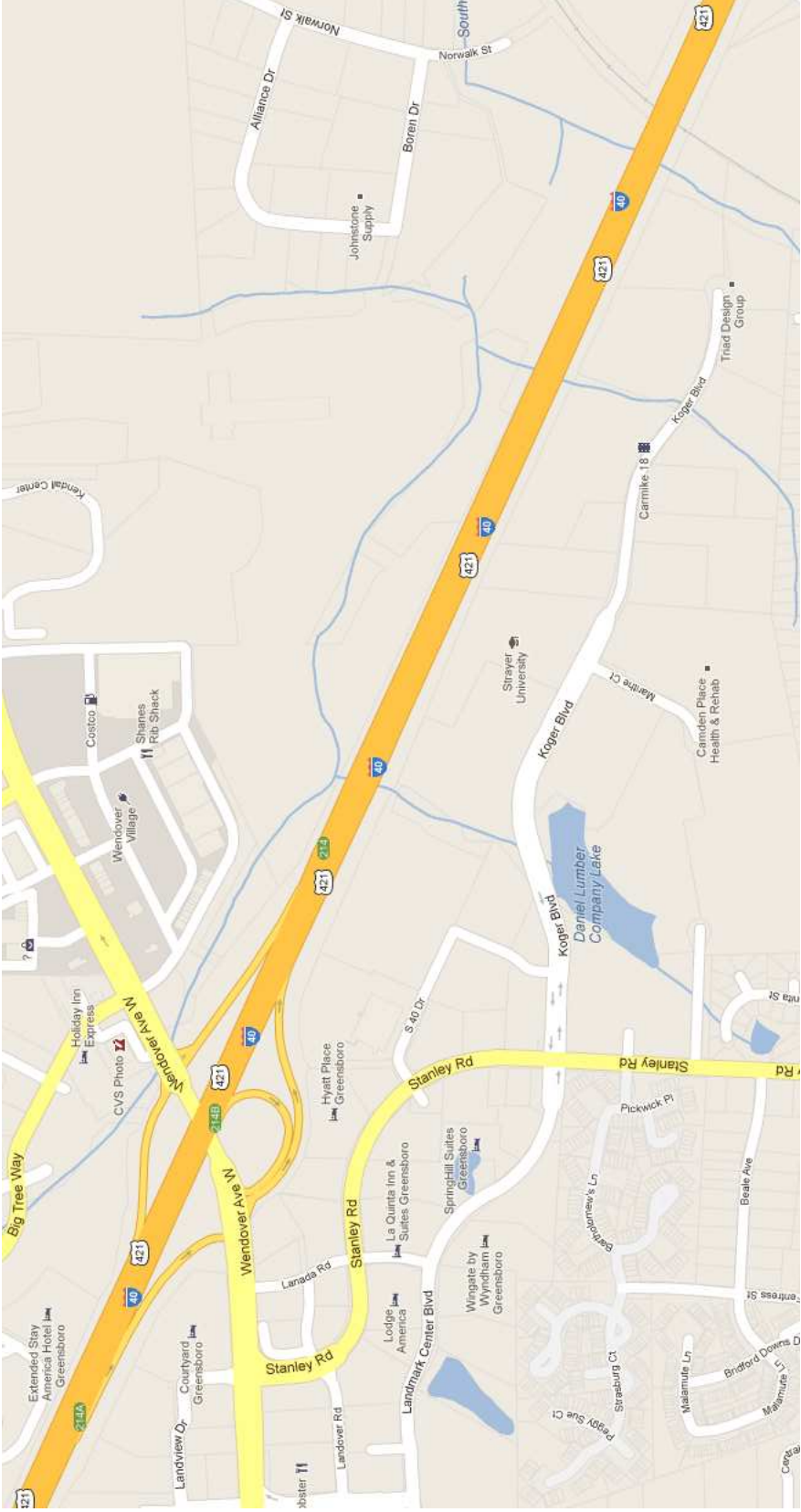# Omitted Data

- Potential issues:
- Speed may reflect only free flowing traffic
  - Spillback from a ramp may be neglected
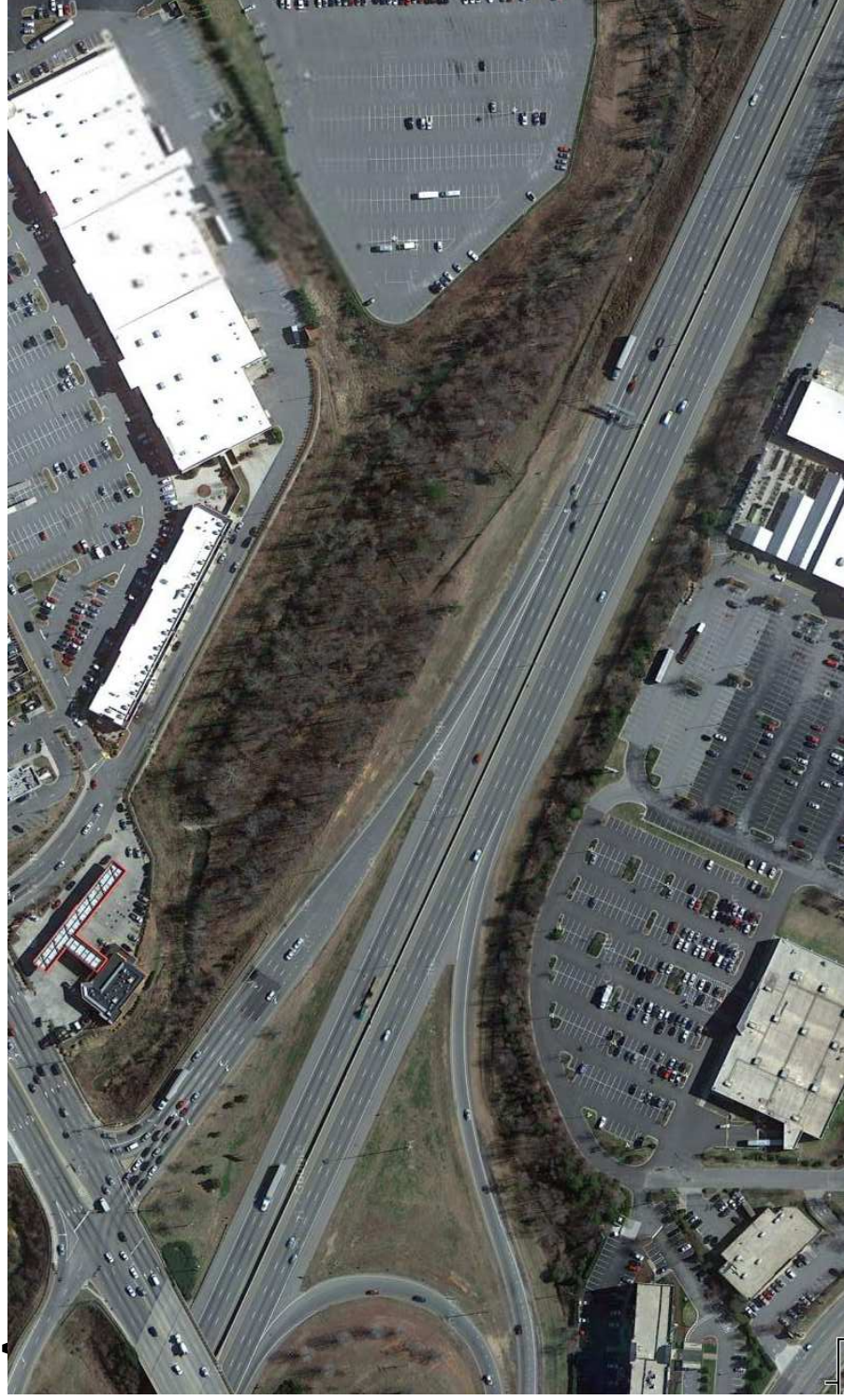 - Sample not reflective of total traffic

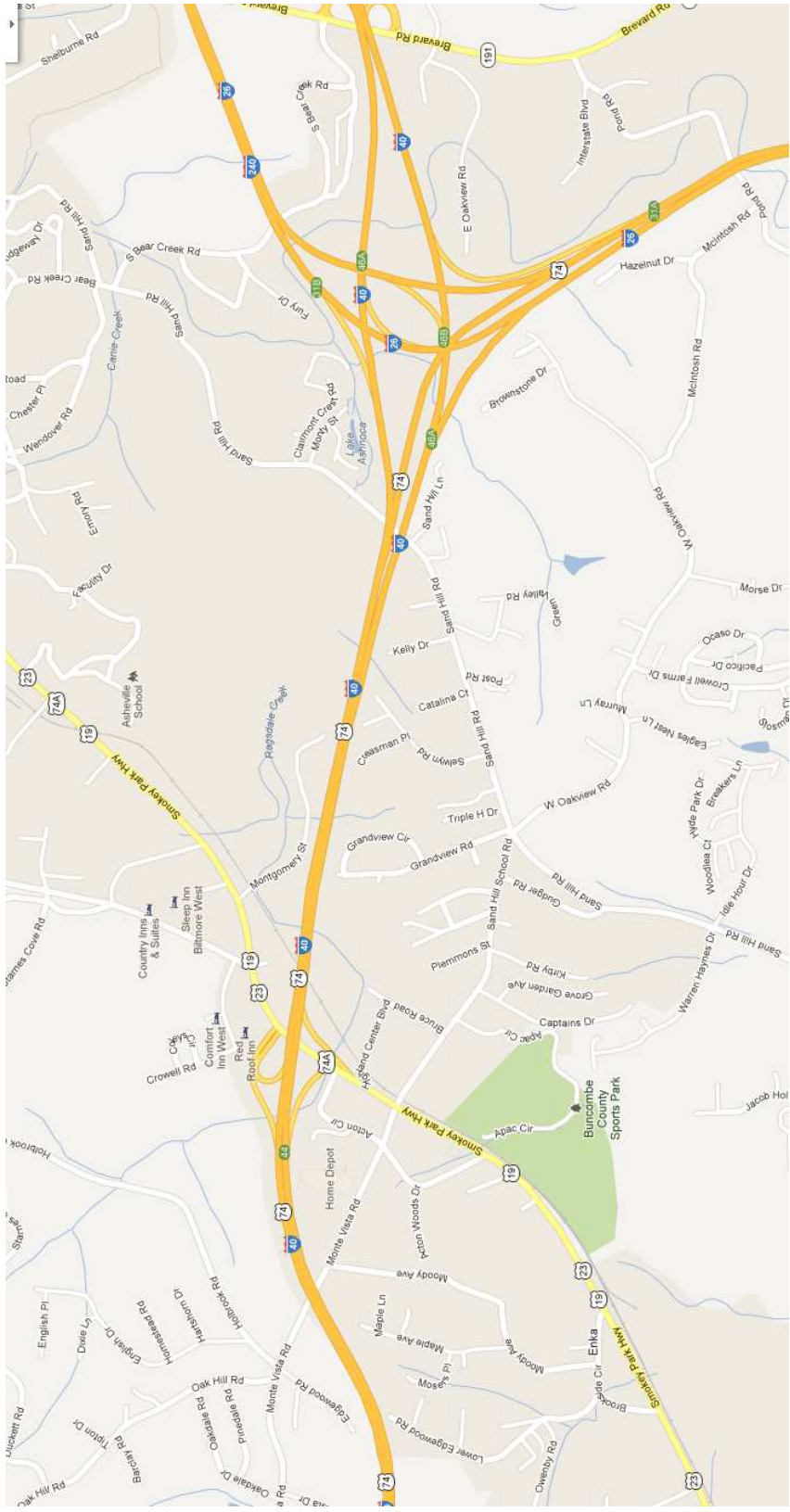# Omitted Data

- Problematic locations: I-40 WB at Wendover Ave

Omitted Data

□ Problematic locations: I-40 WB at Wendover

Omitted Data

- Problematic 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
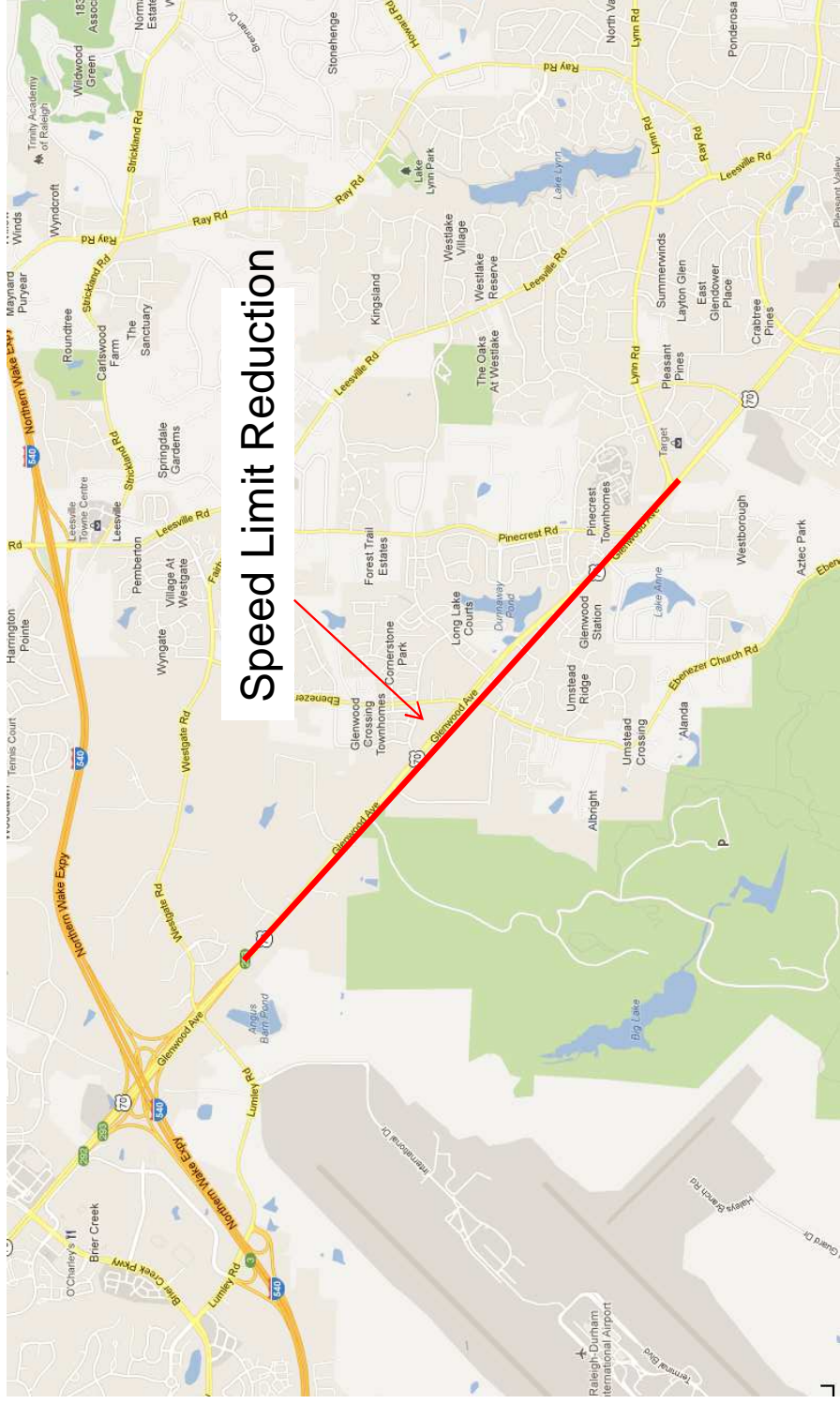- Where possible aggregate up to larger segments

Varying Conditions

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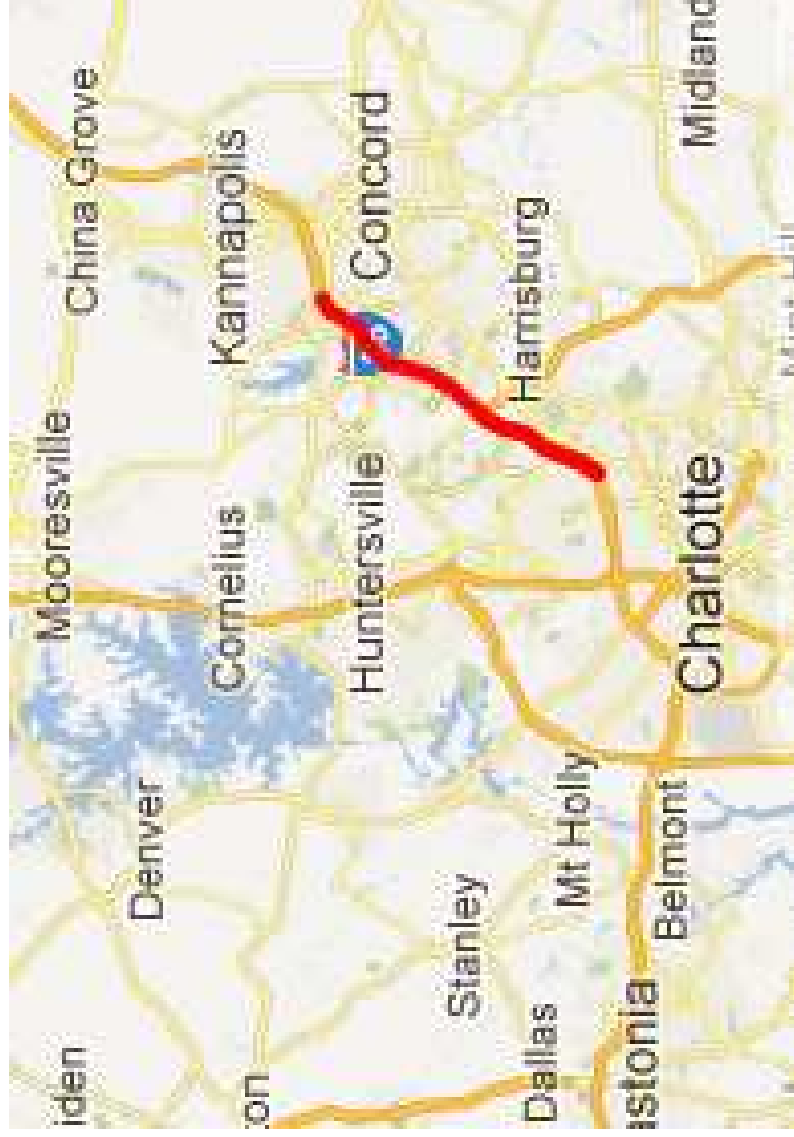- Important to select appropriate data
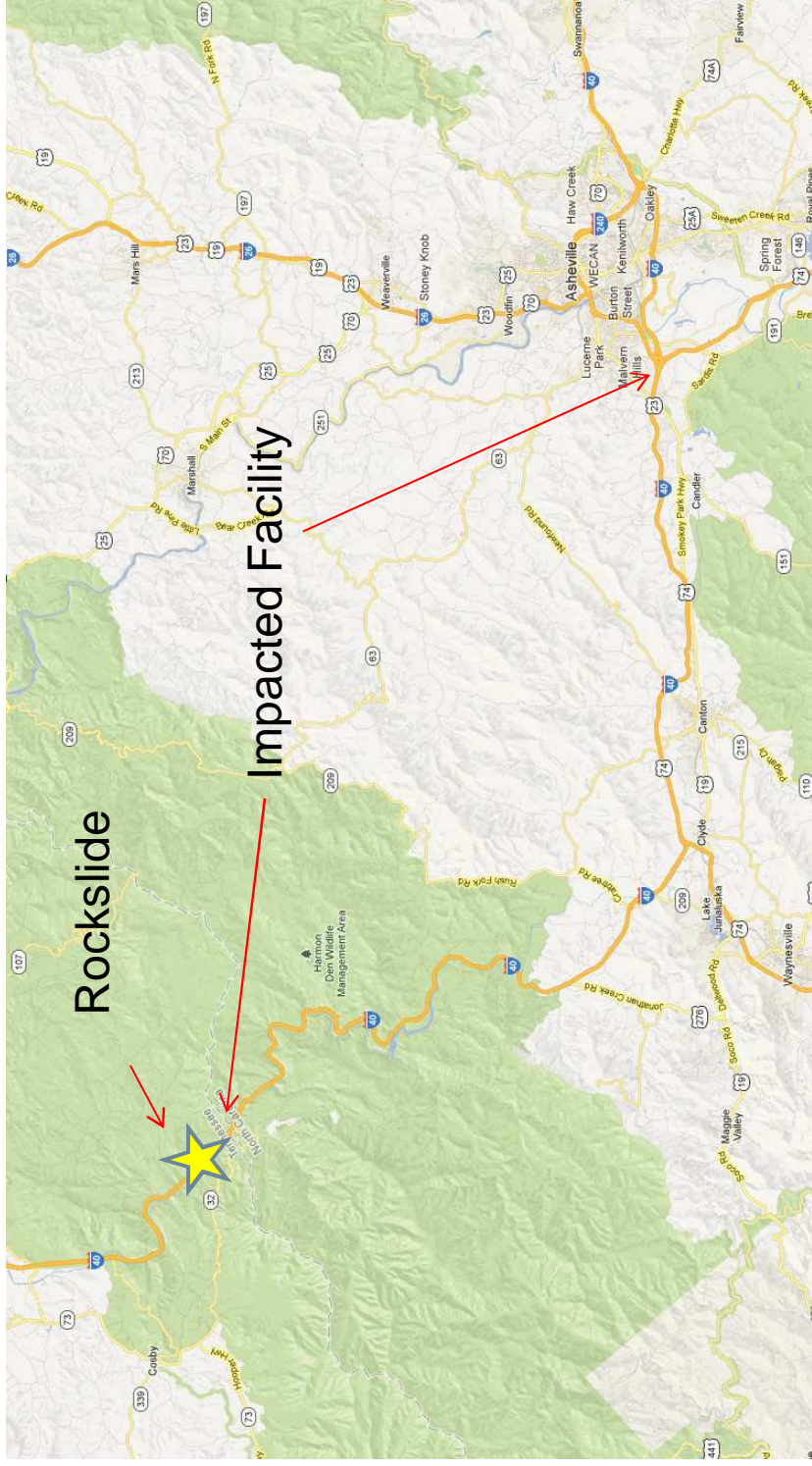
Varying Conditions

☐ 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