WE UNDERSTAND TRAFFIC.

National Data & Surveying Services
Not all data collection firms are the same.
NDS DATA COLLECTION METHODOLOGIES AND TECHNOLOGIES

A comprehensive introduction into the data collection world from a nationwide firm.
VIDEO DATA COLLECTION
VOLUME/CLASSIFICATION

CAPABILITIES
- Vehicle, pedestrian and bicycle volumes
- Detailed vehicle, pedestrian and bicycle classification
- Multi-Modal Studies
- Origin/Destination studies
- License Plate studies
- Pedestrian speed studies
- Screenline counts

LIMITATIONS
- Intersection Shape
- Intersection Size
- Camera Angle
- Visible Viewing Distance
- Lux Rating (Night Vision)
- Poor Manual Counting
- Algorithmic Video Review

Not all data collection firms are the same
MULTI-MODAL DATA COLLECTION

Pedestrians, Bicycles and Buses
MULTI-MODAL PEDESTRIAN & BICYCLE DATA COLLECTION V1

- Record pedestrian turning movement counts within each corner at the intersection
  - Pedestrians are not tracked around the intersection
- Record bicycle turning movement counts within the intersection

Not all data collection firms are the same
Record pedestrian turning movement counts throughout the intersection by identifying the unique origin and destination point of each pedestrian

- Pedestrians are tracked around the intersection

- Record bicycle turning movement counts within the intersection

Not all data collection firms are the same
MULTI-MODAL BICYCLE DATA COLLECTION V3
FLOW VS CONTRAFLow

- Record the entry and exit point for each bicycle as well as if the bicycle was riding with or against traffic.
MULTI-MODAL BICYCLE DATA COLLECTION V3
FLOW VS CONTRAFLOW

➢ Bicycle summary sheet from SANDAG

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MULTI-MODAL PEDESTRIAN DATA COLLECTION V3

- Record the entry and exit point for each pedestrian
- This method is a more cost effective way to avoid pedestrian counting duplication but provides less route specific detail than V2

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MULTI-MODAL PEDESTRIAN DATA COLLECTION V3

- Pedestrian summary sheet from SANDAG

Not all data collection firms are the same
MULTI-MODAL BUS DATA COLLECTION

- Record the number of buses at each bus stop
- Record the number of boarding and alighting passengers
- Optional: Record the number of bikes on the front of the bus

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COMMON TECHNOLOGY DETECTION TYPES

- Pneumatic
- Magnetic
- Radar (Freeway dedicated vs. Street Segment dedicated)
- Video
- Bluetooth/Wifi Detection
- Drone

Not all data collection firms are the same
### TECHNOLOGY CAPABILITIES COMPARISON

Not all data collection firms are the same

<table>
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<tr>
<th>Capabilities</th>
<th>Pneumatic (Freeway)</th>
<th>Radar (Street)</th>
<th>Magnetic</th>
<th>Video</th>
<th>Drone</th>
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## TECHNOLOGY LIMITATIONS COMPARISON

Not all data collection firms are the same.

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**PNEUMATIC DATA COLLECTION**

**VOLUME/CLASSIFICATION/SPEED**

**BENEFITS**
- Cost effective
- Good for long term and short term data collection

**LIMITATIONS**
- Driveways
- Short street segments
- 3+ lanes per direction classification & speed
- Congestion/speeds lower than 7mph
- Poor road conditions
- Poor weather conditions

**RECOMMENDED APPLICATION**
- Free flowing street segments

Not all data collection firms are the same.
MAGNETIC DATA COLLECTION
VOLUME/CLASSIFICATION/SPEED

**BENEFITS**
- Higher speed accuracy than pneumatic data collection
- Individual lane volume, speed & class

**LIMITATIONS**
- Driveways
- Residential Streets
- Congestion/Speeds lower than 7mph
- Vehicles not driving in the center of the lane
- Classification by length, not FHWA

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RADAR DATA COLLECTION
VOLUME/CLASSIFICATION/SPEED

FREEWAY LIMITATIONS (Radar)
- Installation height
- Freeway divider height
- Bi-Directional lane detection
- Classification by length, not FHWA

FREEWAY BENEFITS (Radar)
- Lane separated class/speed/volume
- Accurate heavy volume and high speed detection

ROADWAY LIMITATIONS (Radar)
- Driveways
- Residential streets
- Congestion/speeds lower than 7mph
- 3 or more lanes
- Classification by length, not FHWA

ROADWAY BENEFITS (Radar)
- Alternative to pneumatic detection
- Less likely to encounter a problem than pneumatic detection
- Higher accuracy with speed detection

Not all data collection firms are the same
BLUETOOTH/WIFI DATA COLLECTION
TRAVEL TIME, ORIGIN DESTINATION & DELAY TIME

Not all data collection firms are the same

BENEFITS
- Automated sampling detection to replace traditional collection methodologies
- Capture vehicle time spent in queue or pedestrian time spent in facility

LIMITATIONS
- Relatively low sample rate (5% – 25%)
- Results from extended collection efforts could be biased towards the local commuter base
- Wide range of detection makes detailed origin destination efforts in close proximity impossible
DRONE DATA COLLECTION
THE ONLY LIMIT IS YOUR IMAGINATION

BENEFITS

- 4k aerial photography and videography
- Create a flight path to capture the same imagery over time
- At 400ft high, visibility is 1,400ft wide and at least 1,700ft long
- Cost effective surface parking occupancy and duration studies

LIMITATIONS

- FAA Regulations
  - The drone must be kept within line of sight
  - Airport control towers must be notified if flying within 5 miles of an airport
  - The drone cannot be flown over moving traffic or heavy pedestrian used areas
  - Can only fly in Class G airspace
- 20 – 25 minute battery life
- Cannot fly in inclement weather
THANK YOU

Any additional questions or comments should be emailed to kevd@ndsdata.com.

I can also be reached via phone at 323-782-0090.
## MULTI-MODAL BICYCLE DATA COLLECTION V3

### FLOW VS CONTRAFLOW

Bicycle Sample Data Set

Not all data collection firms are the same
### MULTI-MODAL PEDESTRIAN DATA COLLECTION V3

- Pedestrian Sample Data Set

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