# THE BASICS OF TRAFFIC COUNTS

**SEPTEMBER 17, 2024:** Hailey Savola – Senior Project Engineer



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# Housekeeping

- Recording
- Questions
- Certificate of Attendance
- Closed Captioning
- Future Topics

# Meet Your Presenter

## Hailey Savola – Senior Project Engineer

- Graduated from MTU in 2012 with BS in Civil Engineering
- With ROWE since June 2021
- Work on a variety of transportation and traffic related projects for MDOT, road commissions, municipalities and private agencies all over the state of Michigan

# Traffic Count Basics - Terminology


## ADT

- Average Daily Traffic
  - Average number of vehicles that travel through a specific point of a road over a short duration of time

## AADT

- Annual Average Daily Traffic
  - Total volume of vehicle traffic on a roadway for a year divided by 365 days

## ATR

- Automatic Traffic Recorder
  - Permanently installed traffic devices that continuously collects data 24 hours a day, 7 days a week for all days of the year

## TMC

- Turning Movement Count
  - Amount of traffic entering and exiting intersection during a period of time by direction and movement

# What is a “Traffic Count?”

**Data collected on the volume and type of vehicles on a given roadway.**

This is split into vehicle traffic count and classification data.


Photo Credit: Youtbe.com

# Traffic Count Equipment


Photo Credit: yargerengineering.com)

Photo Credit: Miovision


Photo Credit: yargerengineering.com)


Photo Credit: JAMAR

# When do I need a Traffic Count?

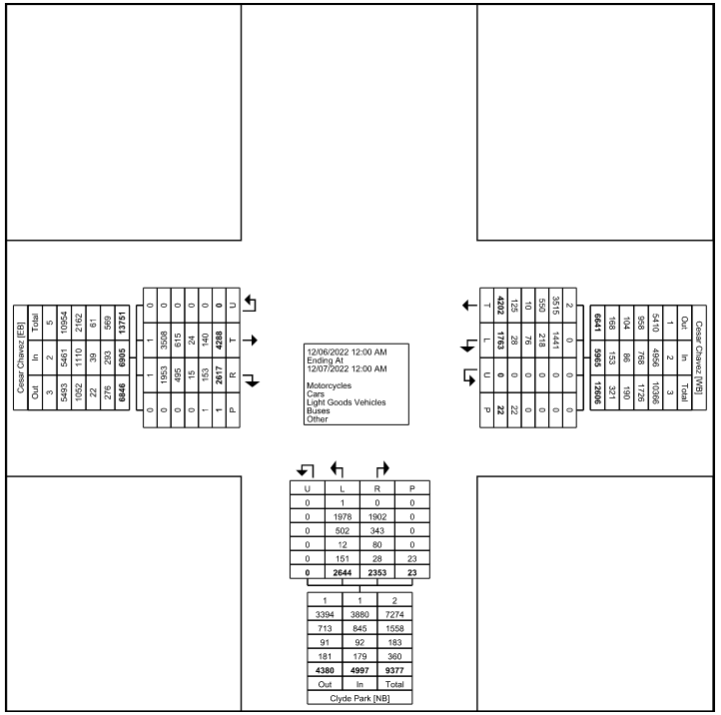
- Anytime you need data about what's going on with users of your roadway
  - For Example:
    - Concerns with signal timing
    - Concerns with congestion
    - Pavement Design
    - Development in area
    - Federal Requirements
    - Safety Analyses

# What can a Traffic Count tell me?

# Example Traffic Count Data

## Turning Movement Data

| Start Time | Cesar Chavez Westbound | | | | | Clyde Park Northbound | | | | | Cesar Chavez Eastbound | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | U-Turn | Peds | App. Total | Left | Right | U-Turn | Peds | App. Total | Thru | Right | U-Turn | Peds | App. Total | |
| 12:00 AM | 2 | 11 | 0 | 0 | 13 | 5 | 2 | 0 | 0 | 7 | 6 | 5 | 0 | 0 | 11 | 31 |
| 12:15 AM | 2 | 10 | 0 | 0 | 12 | 2 | 9 | 0 | 0 | 11 | 6 | 6 | 0 | 0 | 12 | 35 |
| 12:30 AM | 5 | 9 | 0 | 0 | 14 | 1 | 2 | 0 | 0 | 3 | 8 | 5 | 0 | 0 | 13 | 30 |
| 12:45 AM | 2 | 6 | 0 | 0 | 8 | 1 | 5 | 0 | 0 | 6 | 6 | 3 | 0 | 0 | 9 | 23 |
| Hourly Total | 11 | 36 | 0 | 0 | 47 | 9 | 18 | 0 | 0 | 27 | 26 | 19 | 0 | 0 | 45 | 119 |
| 1:00 AM | 2 | 5 | 0 | 0 | 7 | 1 | 4 | 0 | 0 | 5 | 8 | 6 | 0 | 0 | 14 | 26 |
| 1:15 AM | 5 | 4 | 0 | 0 | 9 | 1 | 2 | 0 | 0 | 3 | 2 | 5 | 0 | 0 | 7 | 19 |
| 1:30 AM | 2 | 3 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 1 | 8 | 1 | 0 | 0 | 9 | 15 |
| 1:45 AM | 0 | 7 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 4 | 13 |
| Hourly Total | 9 | 19 | 0 | 0 | 28 | 3 | 8 | 0 | 0 | 11 | 20 | 14 | 0 | 0 | 34 | 73 |
| 2:00 AM | 2 | 8 | 0 | 0 | 10 | 0 | 2 | 0 | 0 | 2 | 6 | 6 | 0 | 0 | 12 | 24 |
| 2:15 AM | 0 | 10 | 0 | 0 | 10 | 4 | 0 | 0 | 0 | 4 | 3 | 2 | 0 | 0 | 5 | 19 |
| 2:30 AM | 0 | 8 | 0 | 0 | 8 | 9 | 1 | 0 | 0 | 10 | 2 | 0 | 0 | 0 | 2 | 20 |
| 2:45 AM | 2 | 6 | 0 | 0 | 8 | 2 | 3 | 0 | 0 | 5 | 1 | 1 | 0 | 0 | 2 | 15 |
| Hourly Total | 4 | 32 | 0 | 0 | 36 | 15 | 6 | 0 | 0 | 21 | 12 | 9 | 0 | 0 | 21 | 78 |
| 3:00 AM | 2 | 2 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 6 | 12 |
| 3:15 AM | 0 | 5 | 0 | 0 | 5 | 6 | 1 | 0 | 0 | 7 | 5 | 4 | 0 | 0 | 9 | 21 |
| 3:30 AM | 1 | 9 | 0 | 0 | 10 | 7 | 1 | 0 | 1 | 8 | 3 | 4 | 0 | 0 | 7 | 25 |
| 3:45 AM | 2 | 6 | 0 | 0 | 8 | 2 | 2 | 0 | 1 | 4 | 6 | 1 | 0 | 0 | 7 | 19 |
| Hourly Total | 5 | 22 | 0 | 0 | 27 | 17 | 4 | 0 | 2 | 21 | 17 | 12 | 0 | 0 | 29 | 77 |
| 4:00 AM | 1 | 7 | 0 | 0 | 8 | 1 | 3 | 0 | 0 | 4 | 6 | 4 | 0 | 0 | 10 | 22 |
| 4:15 AM | 3 | 11 | 0 | 0 | 14 | 5 | 6 | 0 | 0 | 11 | 8 | 3 | 0 | 0 | 11 | 36 |
| 4:30 AM | 2 | 11 | 0 | 0 | 13 | 14 | 10 | 0 | 0 | 24 | 17 | 8 | 0 | 0 | 25 | 62 |
| 4:45 AM | 2 | 22 | 0 | 0 | 24 | 21 | 7 | 0 | 0 | 28 | 21 | 13 | 0 | 0 | 34 | 86 |
| Hourly Total | 8 | 51 | 0 | 0 | 59 | 41 | 26 | 0 | 0 | 67 | 52 | 28 | 0 | 0 | 80 | 206 |
| 5:00 AM | 8 | 32 | 0 | 0 | 40 | 12 | 7 | 0 | 0 | 19 | 12 | 9 | 0 | 0 | 21 | 80 |
| 5:15 AM | 7 | 29 | 0 | 0 | 36 | 21 | 16 | 0 | 0 | 37 | 27 | 13 | 0 | 0 | 40 | 113 |
| 5:30 AM | 12 | 50 | 0 | 0 | 62 | 24 | 13 | 0 | 0 | 37 | 40 | 17 | 0 | 0 | 57 | 156 |
| 5:45 AM | 9 | 44 | 0 | 0 | 53 | 37 | 9 | 0 | 0 | 46 | 28 | 20 | 0 | 0 | 48 | 147 |
| Hourly Total | 36 | 155 | 0 | 0 | 191 | 94 | 45 | 0 | 0 | 139 | 107 | 59 | 0 | 0 | 166 | 496 |
| 6:00 AM | 10 | 37 | 0 | 0 | 47 | 15 | 14 | 0 | 0 | 29 | 29 | 21 | 0 | 0 | 50 | 126 |
| 6:15 AM | 13 | 41 | 0 | 0 | 54 | 26 | 7 | 0 | 0 | 33 | 53 | 15 | 0 | 0 | 68 | 155 |
| 6:30 AM | 13 | 48 | 0 | 0 | 61 | 37 | 24 | 0 | 0 | 61 | 39 | 24 | 0 | 0 | 63 | 185 |
| 6:45 AM | 12 | 57 | 0 | 0 | 69 | 42 | 14 | 0 | 0 | 56 | 61 | 26 | 0 | 0 | 87 | 212 |
| Hourly Total | 48 | 183 | 0 | 0 | 231 | 120 | 59 | 0 | 0 | 179 | 182 | 86 | 0 | 0 | 268 | 678 |
| 7:00 AM | 13 | 64 | 0 | 0 | 77 | 35 | 14 | 0 | 0 | 49 | 54 | 49 | 0 | 0 | 103 | 229 |






Michigan's Local Technical Assistance Program

Center for Technology & Training

# Example Traffic Count Data

**Analysis Time Period**

| Start | End |
|---|---|
| 2/15/2022 12:00 AM | 2/15/2022 11:59 PM |

**Vehicles Analyzed**

4,868

**Motorcycles**

Motorcycles
Volume: 65
Pct of Total: 1.3%
Average Speed: 27 MPH
Average Length: 1' 9"

**Passenger Cars**

Passenger Cars
Volume: 1,568
Pct of Total: 32.2%
Average Speed: 30 MPH
Average Length: 13' 4"

**Light Trucks and Vans**

Light Trucks and Vans
Volume: 1,748
Pct of Total: 35.9%
Average Speed: 29 MPH
Average Length: 17' 3"

**Single Unit Trucks**

Single Unit Trucks
Volume: 1,322
Pct of Total: 27.2%
Average Speed: 28 MPH
Average Length: 24' 0"

**Buses**

Buses
Volume: 83
Pct of Total: 1.7%
Average Speed: 26 MPH
Average Length: 38' 5"

**Multi Unit Trucks**

Multi Unit Trucks
Volume: 82
Pct of Total: 1.7%
Average Speed: 23 MPH
Average Length: 66' 3"

Robinson Road: Between Woodmere & Gladstone

| 2/15/2022 Time | Westbound | Eastbound | Total |
|---|---|---|---|
| 12:00 AM | 3 | 1 | 4 |
| 12:15 | 7 | 3 | 10 |
| 12:30 | 7 | 1 | 8 |
| 12:45 | 0 | 1 | 1 |
| 1:00 | 2 | 1 | 3 |
| 1:15 | 4 | 1 | 5 |
| 1:30 | 2 | 2 | 4 |
| 1:45 | 1 | 0 | 1 |
| 2:00 | 3 | 1 | 4 |
| 2:15 | 2 | 3 | 5 |
| 2:30 | 0 | 1 | 1 |
| 2:45 | 1 | 1 | 2 |
| 3:00 | 0 | 0 | 0 |
| 3:15 | 3 | 2 | 5 |
| 3:30 | 0 | 3 | 3 |
| 3:45 | 0 | 0 | 0 |
| 4:00 | 3 | 2 | 5 |
| 4:15 | 1 | 1 | 2 |
| 4:30 | 2 | 1 | 3 |
| 4:45 | 1 | 7 | 8 |
| 5:00 | 2 | 10 | 12 |
| 5:15 | 5 | 2 | 7 |
| 5:30 | 1 | 13 | 14 |
| 5:45 | 5 | 6 | 11 |
| 6:00 | 2 | 21 | 23 |
| 6:15 | 7 | 15 | 22 |
| 6:30 | 10 | 45 | 55 |
| 6:45 | 12 | 40 | 52 |
| 7:00 | 28 | 36 | 64 |
| 7:15 | 29 | 39 | 68 |
| 7:30 | 38 | 62 | 100 |
| 7:45 | 71 | 70 | 141 |
| 8:00 | 39 | 54 | 93 |
| 8:15 | 33 | 45 | 78 |
| 8:30 | 34 | 51 | 85 |
| 8:45 | 32 | 52 | 84 |
| 9:00 | 18 | 33 | 51 |
| 9:15 | 35 | 39 | 74 |
| 9:30 | 25 | 35 | 60 |
| 9:45 | 28 | 29 | 57 |
| 10:00 | 26 | 32 | 58 |

# Traffic Count Data Benefits

## Can help with:

- Transportation Planning
- Traffic Signal Optimization
- Road Capacity Analysis and Review
- Congestion Management
- Pedestrian and Bicyclist Information
- Planning for Improvements
- Road Safety Audit
- Road Safety Improvements

# I NEED A TRAFFIC COUNT!

# Traffic Count Practices

## Before you Count

- **Plan Ahead**
  - Are schools in session?
    - Can make an impact on traffic and non-motorized data
    - Avoid holidays/Special Events
    - Avoid Mondays and Fridays
  - Any weather concerns?
    - Rain/snow and ice can skew data
    - Equipment may not work and collect with accuracy
- **Verify Set-ups**
  - Review site for set-up of equipment to make sure there is a location to place equipment and make it so it can't be tampered with
  - Notify local agencies of traffic count being taken
    - Helps reduce confusion as to "why is that person out there" or what is that camera recording?"

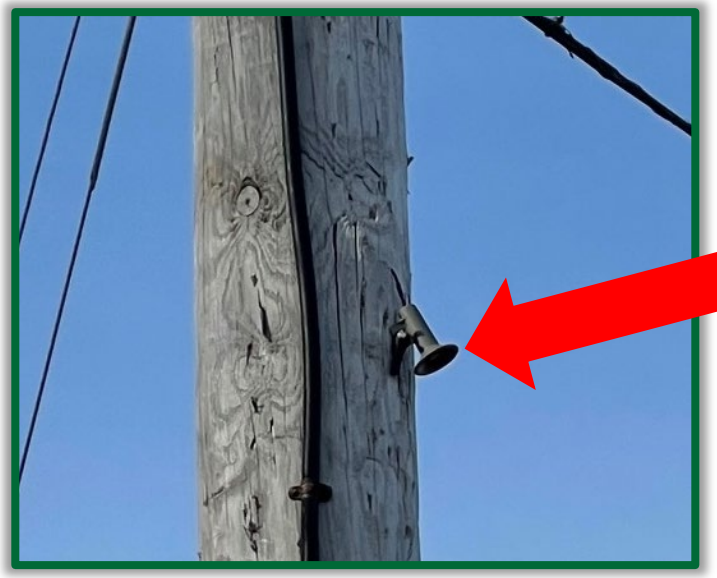
## After Your Count

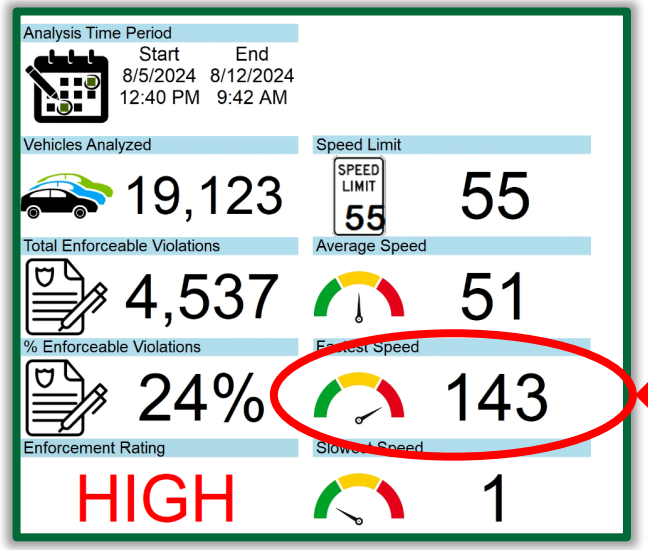
- **Download and Analyze Data**
  - Download reports
  - Review data
    - See if there are any outliers

# Traffic Count Practices

## Lessons Learned

- Avoid intersections/driveways
- Avoid counting where there could be on street parking
- Make sure setting up equipment on public property
  - Do not use private property without permission





# Traffic Count Resources

Traffic Count
TCDS

Nonmotorized
NMDS

Traffic Viewer
TV

- **MDOT RESOURCES**
  - MS2 Portal (ms2soft.com)
- **Consultants**
  - Many consultants will collect traffic counts
- **Work with other local agencies**
  - May be able to get counts from your MPO or other public agency
- **Purchase Equipment and Count**
  - Many options for equipment
    - Some Examples:
      - JAMAR Technologies
        - Tubes, Radars
          - Traffic Data Collection Equipment | JAMAR Technologies
      - Miovision
        - Scout Plus Cameras
          - Innovating Traffic Solutions for Smart Cities | Miovision

# Contacts

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# QUESTIONS ?

# Upcoming Events - ITE


[Technical Session – Institute of Transportation Engineers (itemichigan.org)]


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