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Traffic Flow Data Analytics: Bluetooth VS Waze

Objectives

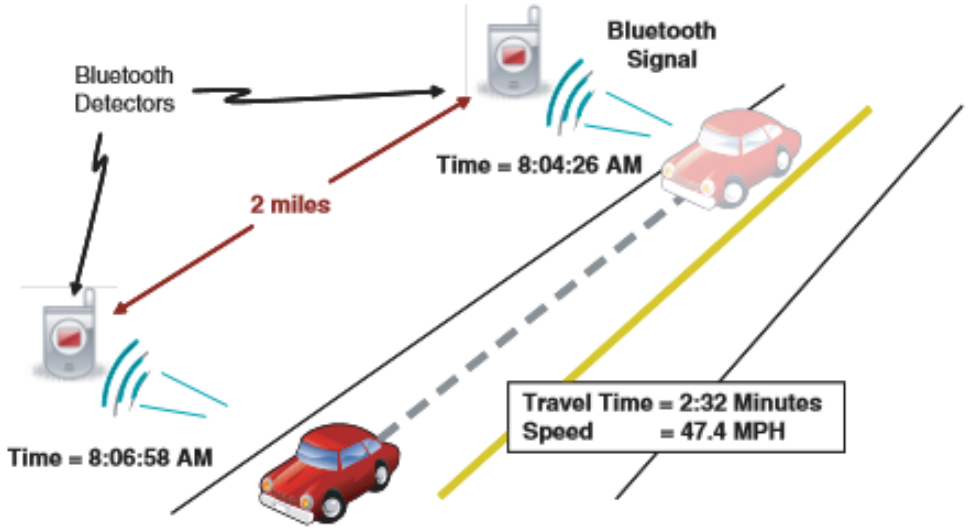
Data Source

Research Goal

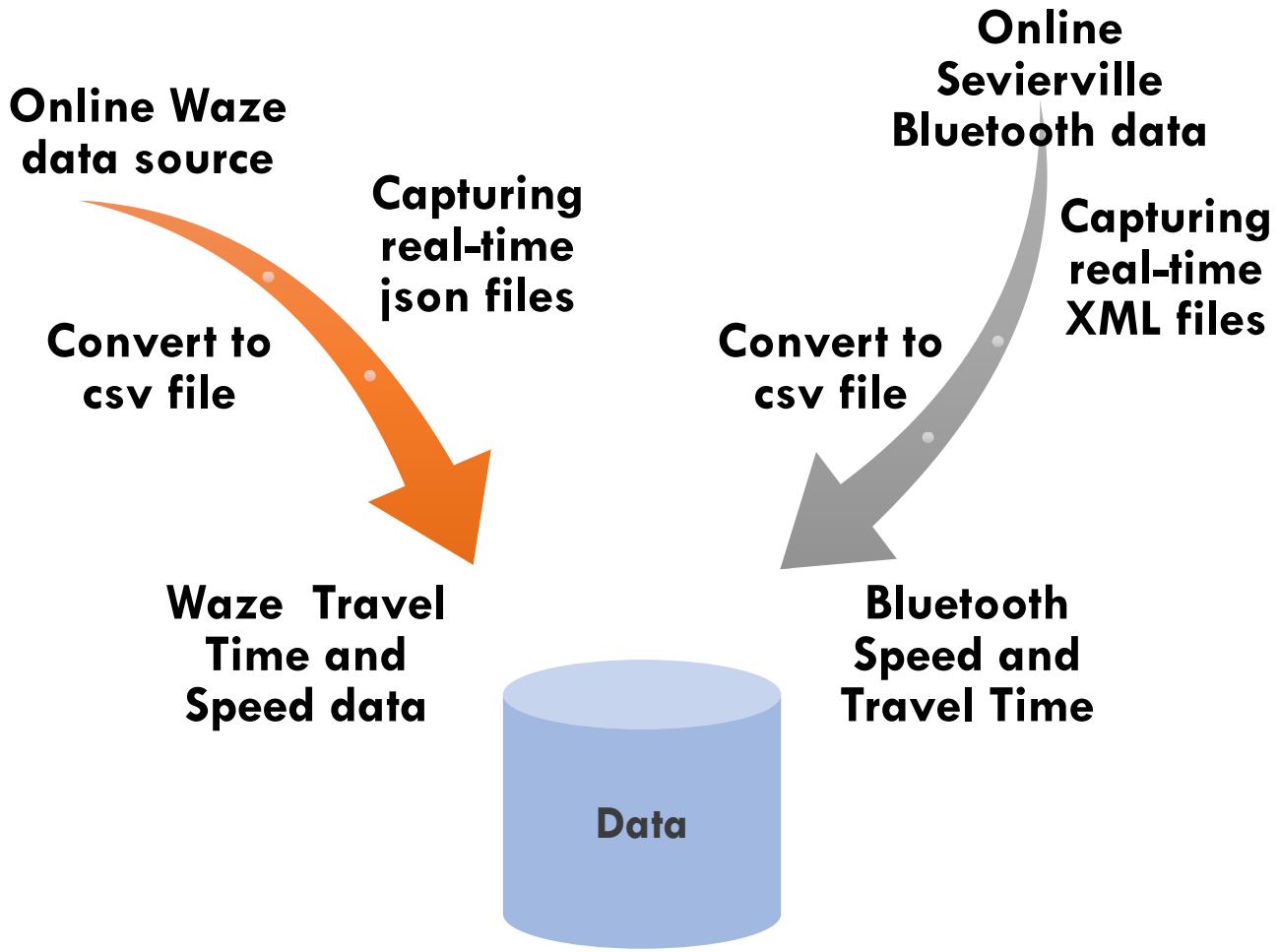
Steps Towards our Goal

OpenDIEL

Bluetooth And Waze Data Source



Data



One month

24hours

Speed & Travel Time

Research Goal

01

Very Open Goal

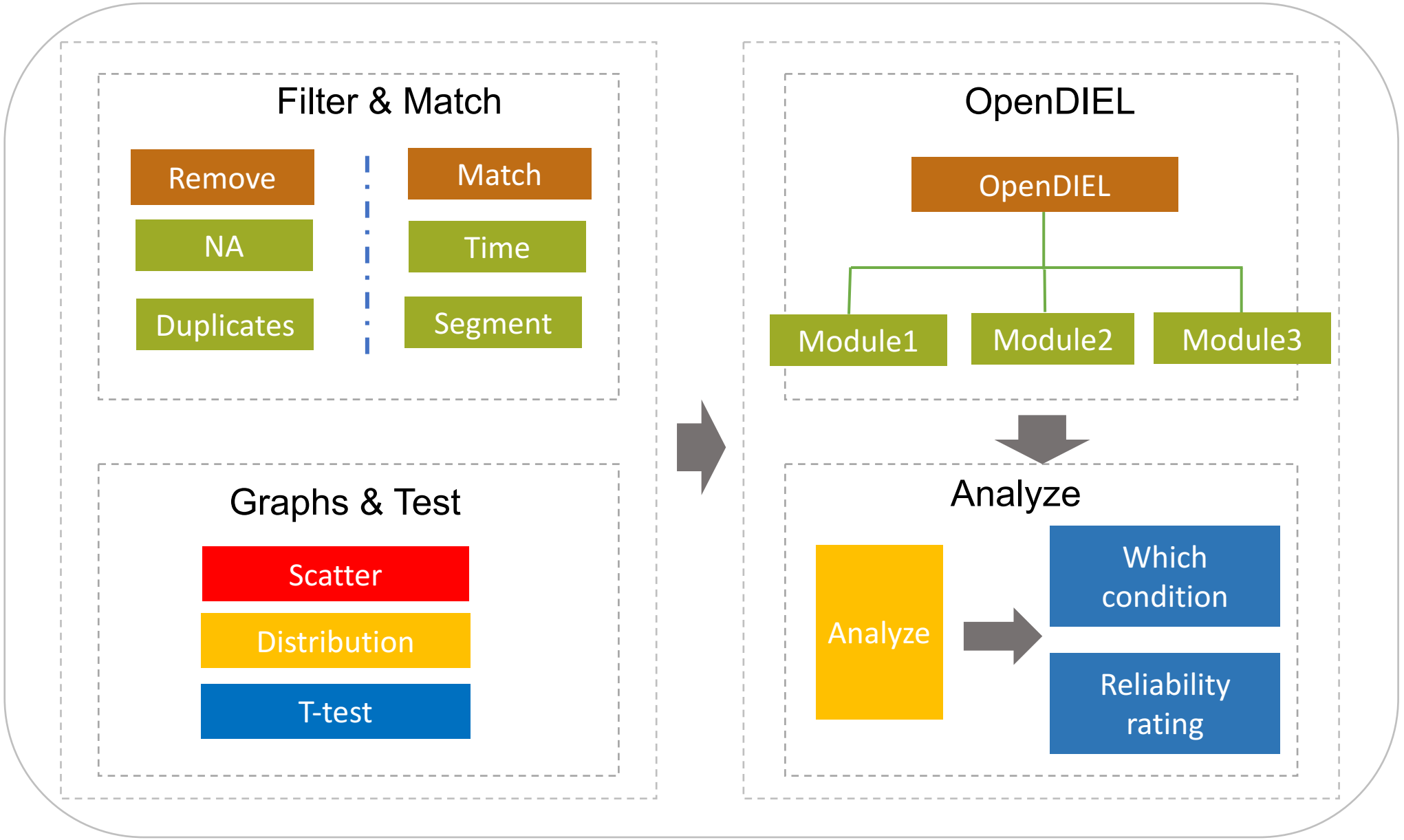
02

Testing to see if Waze Data is a reliable source to do research with

03

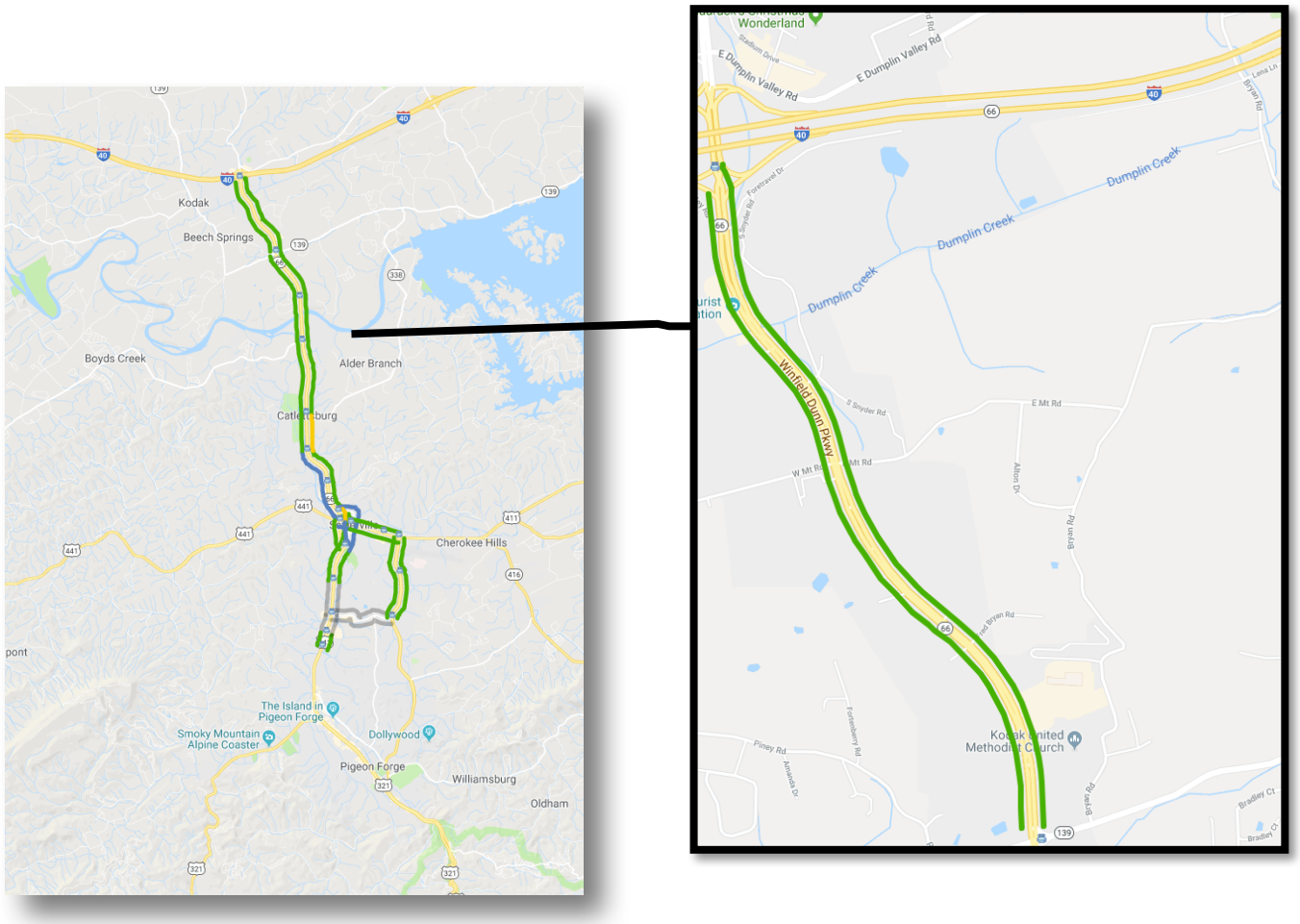
Going to slowly narrow down to a specific goal

Steps Towards are Goal

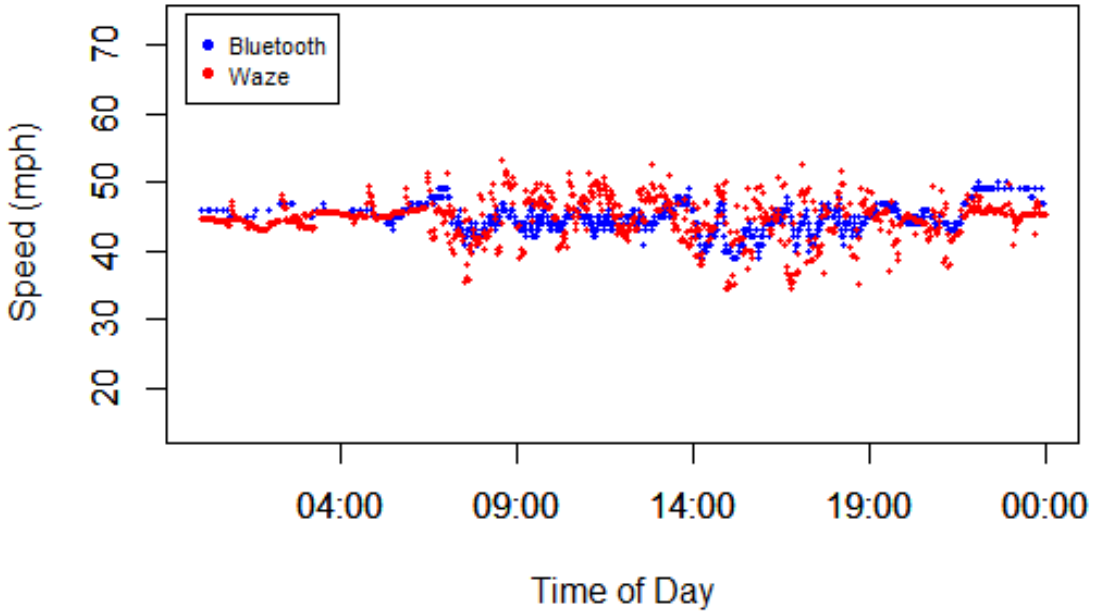


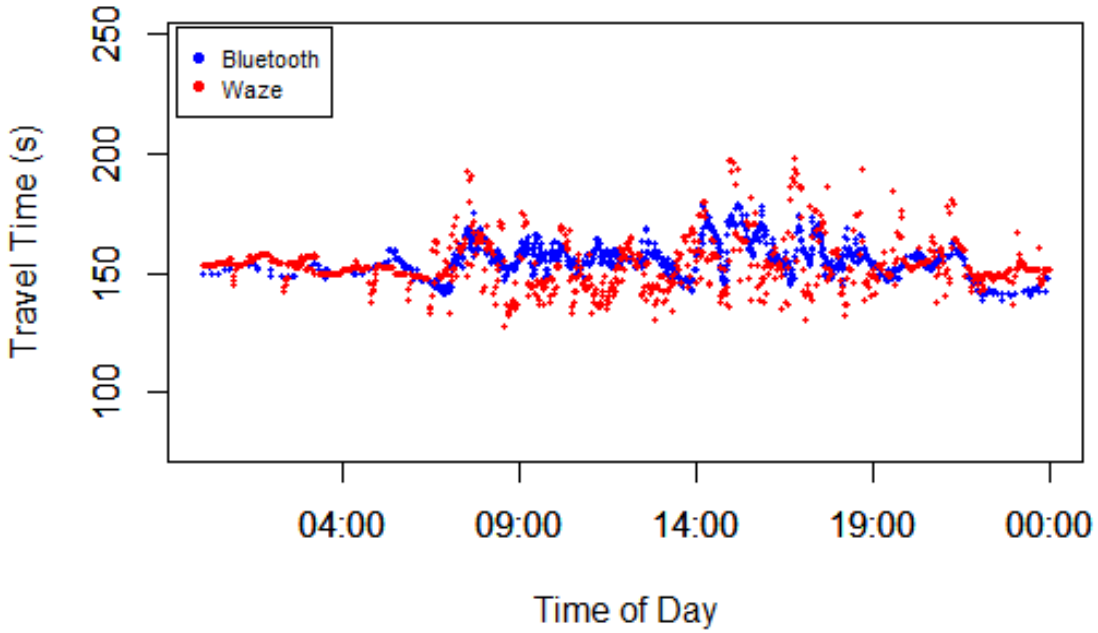
Segment

66&I40 to 66&139 length:3 km Tuesday, Jan. 15th 2019

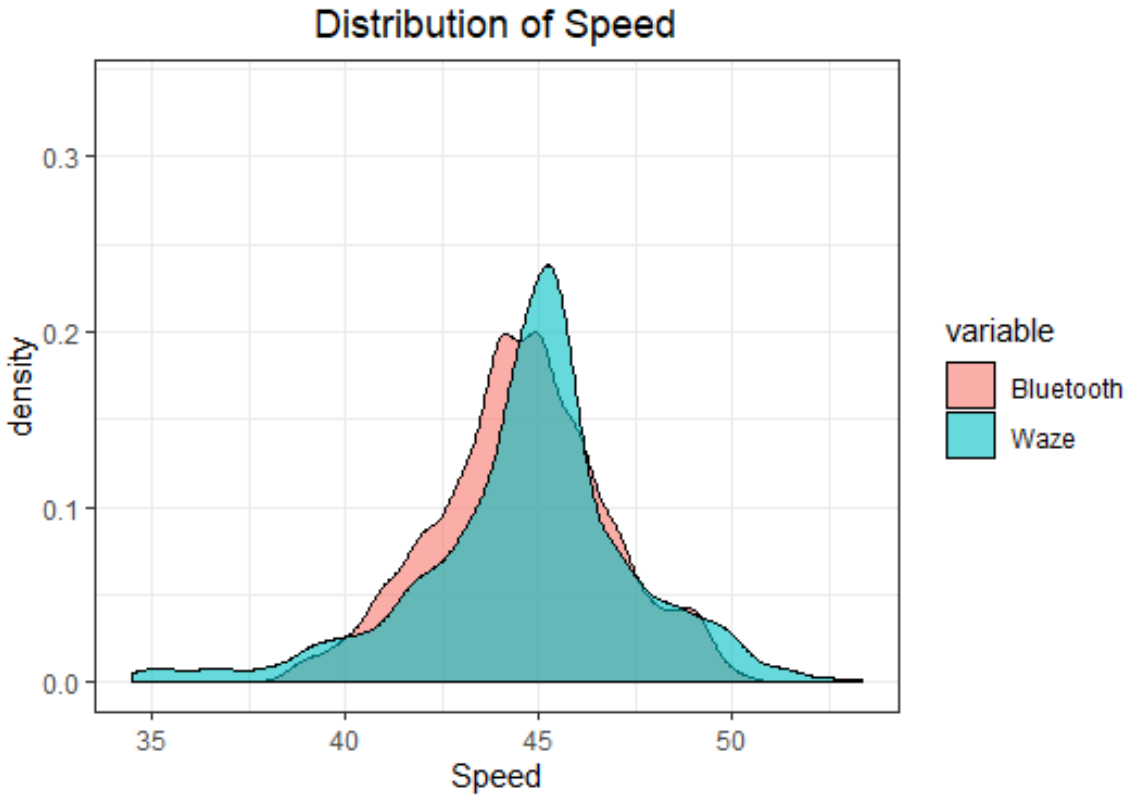


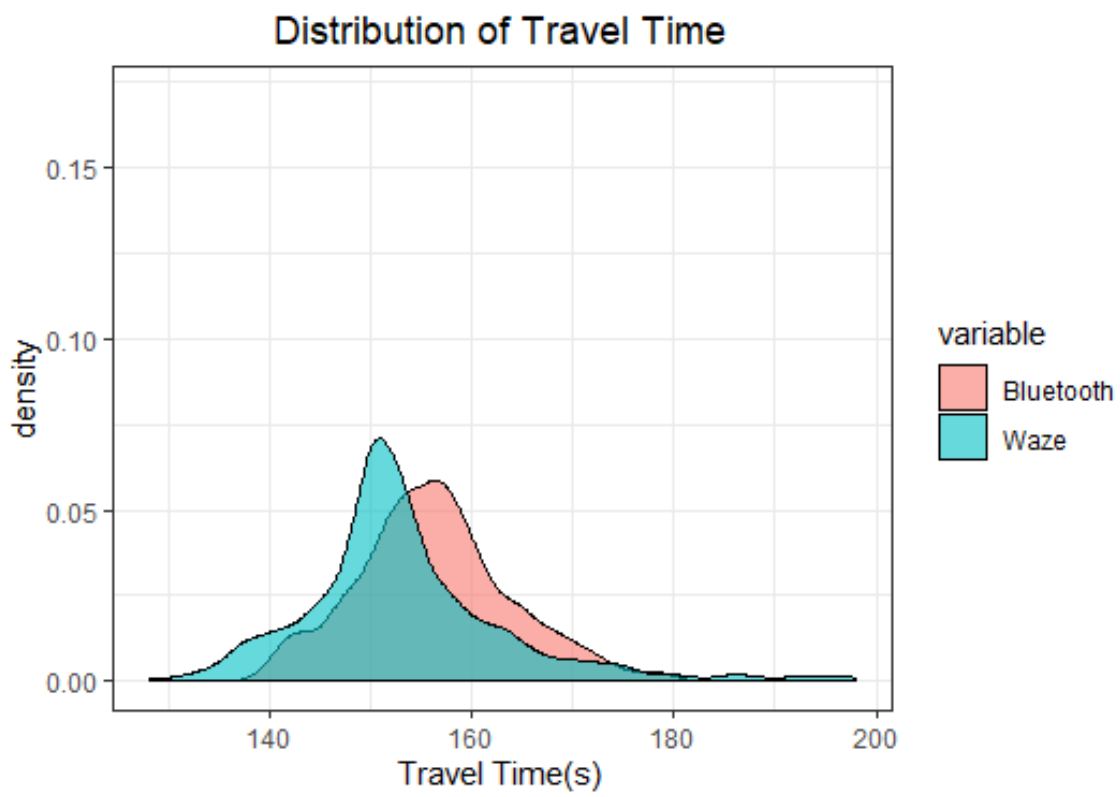
Scatter


Bluetooth
Waze
Speed (mph)
20
30
40
50
60
70
04:00
09:00
14:00
19:00
00:00
Time of Day


Bluetooth
Waze
Travel Time (s)
100
150
200
250
04:00
09:00
14:00
19:00
00:00
Time of Day

Distribution



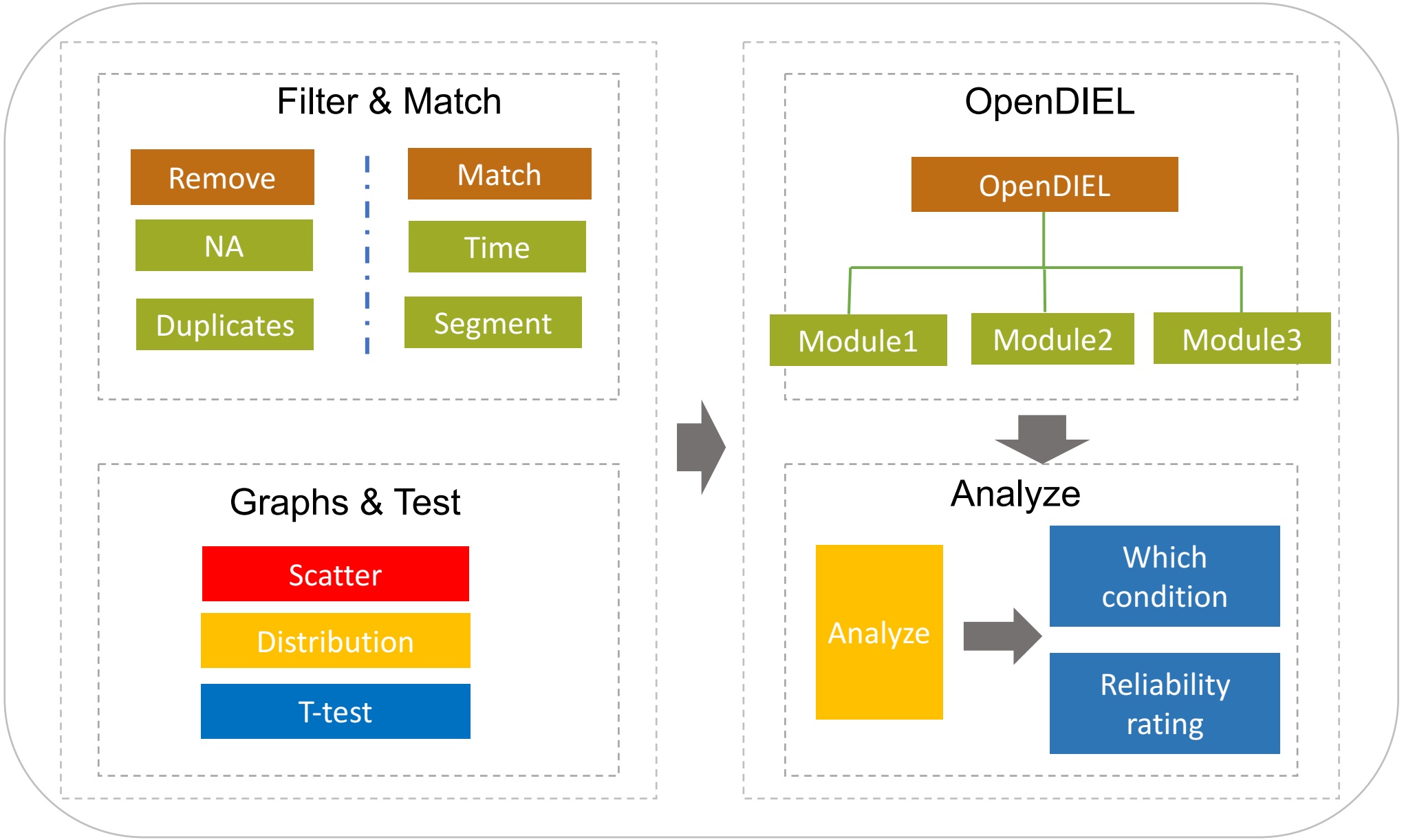


T-Test

```
2019-01-15
        Two Sample t-test

data:  TravelTime by Name
t = 7.4968, df = 2214, p-value = 9.406e-14
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 2.112695 3.609543
sample estimates:
mean in group bluetooth      mean in group waze
               156.2554                153.3943
```

Steps Towards are Goal



OpenDIEL Code – Module 1 and 2

- Module 1 – Create Folders and Move Files
  - Folder for one segment and one Day
  - Copies data specific for that day
  - Creates a text file with the Day and Segment for the Sorting and Comparing Data code.
- Module 2 – Sorting Data and Printing Graphs
  - Sorts through Bluetooth and Waze Data.
  - Pulls all the data for a specific Day and Segment
  - Prints out two graphs
    - Speed
    - Travel Time
  - Prints out Bartlett Test and T-Test

OpenDIEL Code – Module 3

- Module 3 – Analyzing Graphs and Data
  - Compares Bluetooth and Waze Data
  - Analyzes Graphs
  - Use Library “cfts”
  - Shows under what conditions the Waze Data should be used
    - What time of day?
    - What day of the week?

What we need to do …

- Filter data
- Compare based on RMSE (Root Mean Standard Error)?
- Aggregate data
- Compare in different scenarios:
  - Different time of day (peak-non peak)
  - Different days (Weekday/Weekend)
  - …