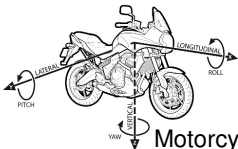


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Understanding Rider Differences in Mileage and Riding Frequency through the MSF100 Motorcyclists Naturalistic Study

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Motorcycle Research Group

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Overview

- Objective and Caveats
- Data Acquisition
- Snapshot of current dataset
- A brief look at riding seasons
- Riders with one full year of data
- Qualitative comparison of frequent and infrequent riders

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Objective

- To investigate differences in frequency, riding time and distance of frequent and infrequent riders.
- To understand the impact of factors such as temperature and time of year on motorcycle mileage.
- To Provide insight to range of motorcycle miles ridden during a one year period.


Caveat

- Last motorcycle came off the road four weeks ago. More processing and interpretation are needed.

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Data Acquisition

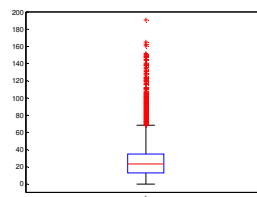


- Five color cameras
 - forward
 - rear
 - left
 - right
 - rider
- Machine vision lane tracker
- Accelerometers (3 axes)
- Gyro (3 axes)
- Forward radar
- **Speed**
- Turn Signals
- Brake lever inputs
- **GPS**
- Continuous collection
- 8-12 mo capacity
- Cellular communication

4

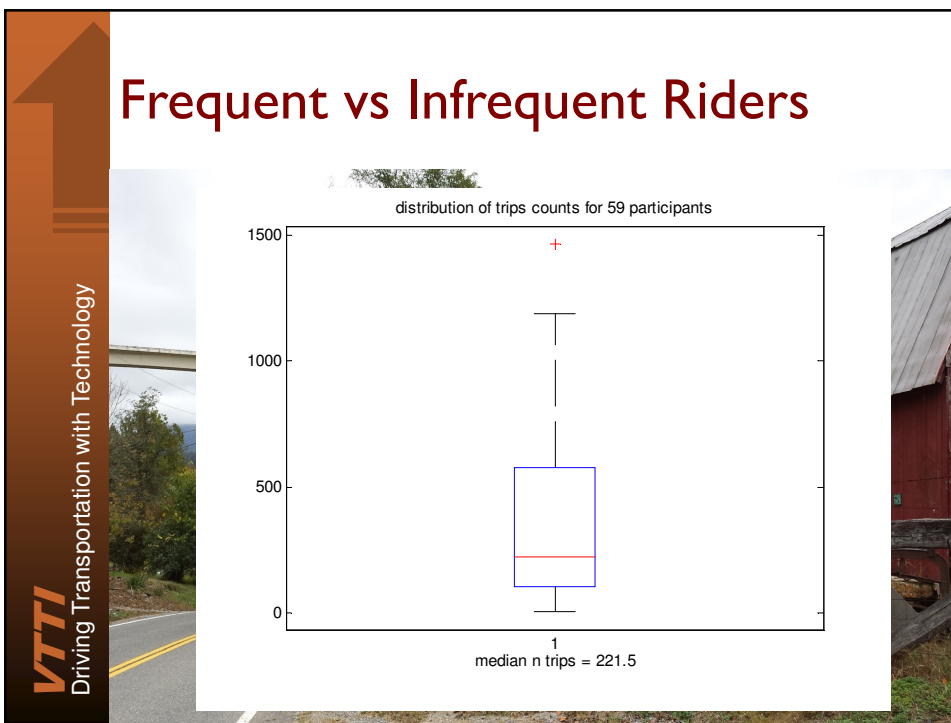
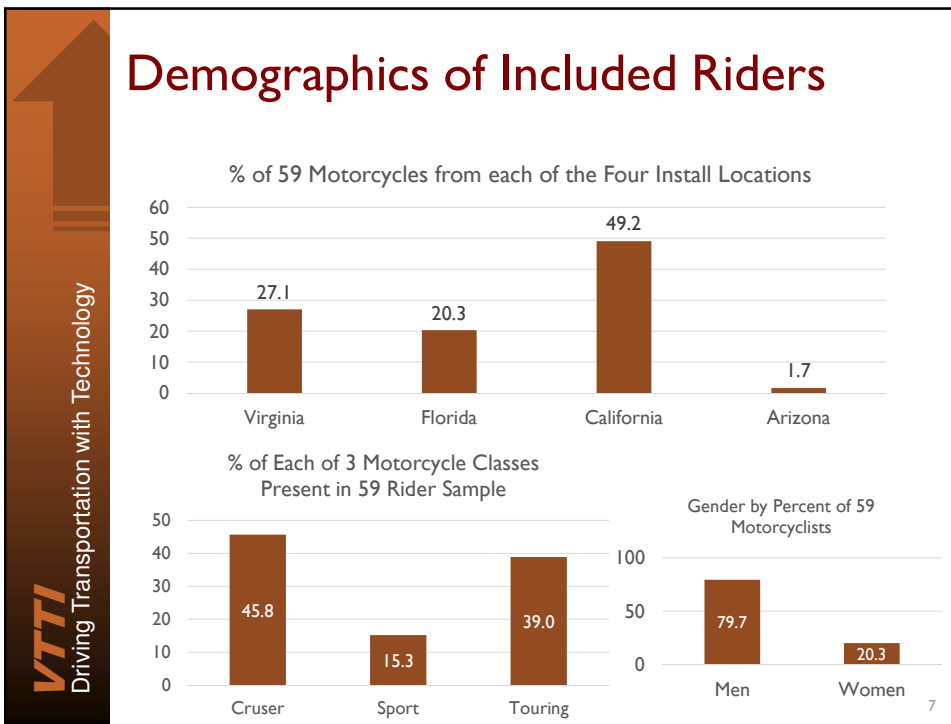
Data Addition and Processing

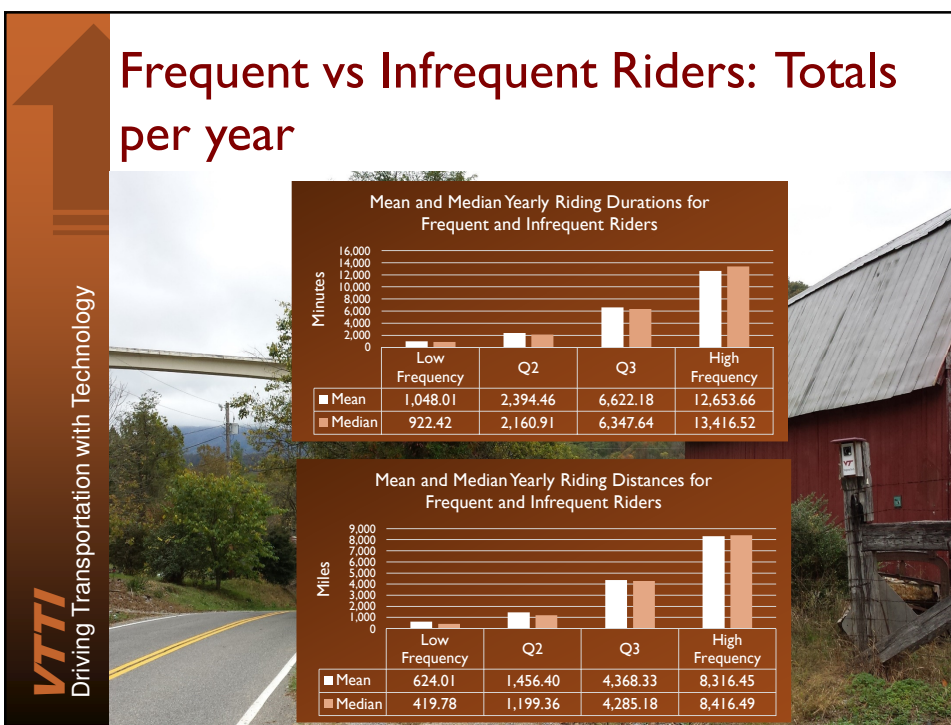
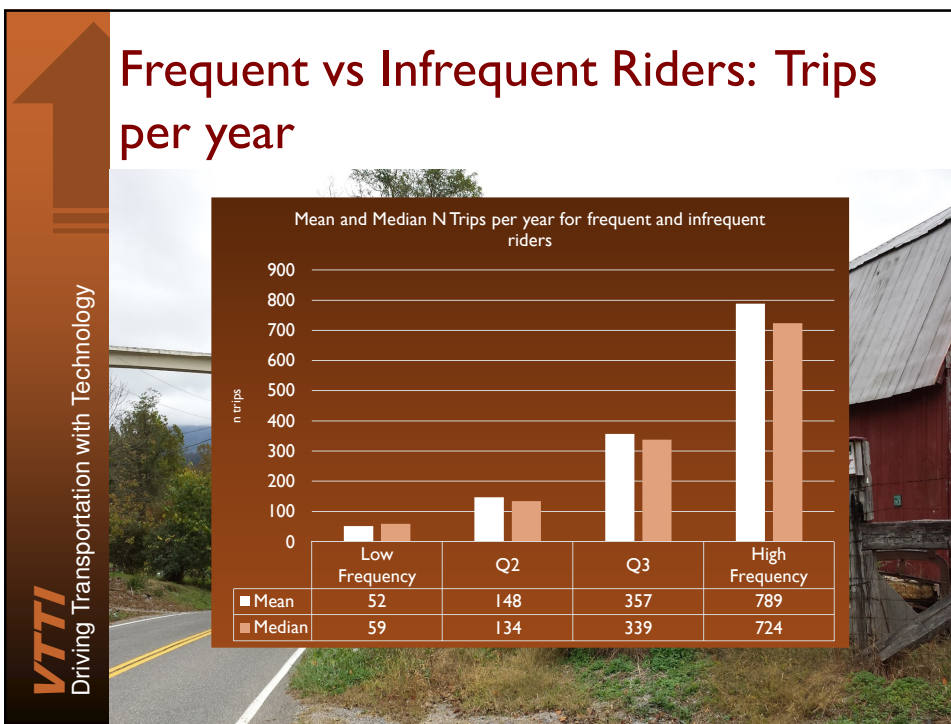
- GPS speed was integrated over time to estimate distance traveled.
- Where weather data were used
 - NOAA weather data were matched to trip start times and GPS location
 - Mean distance from NOAA station to trip start point less than 30 miles

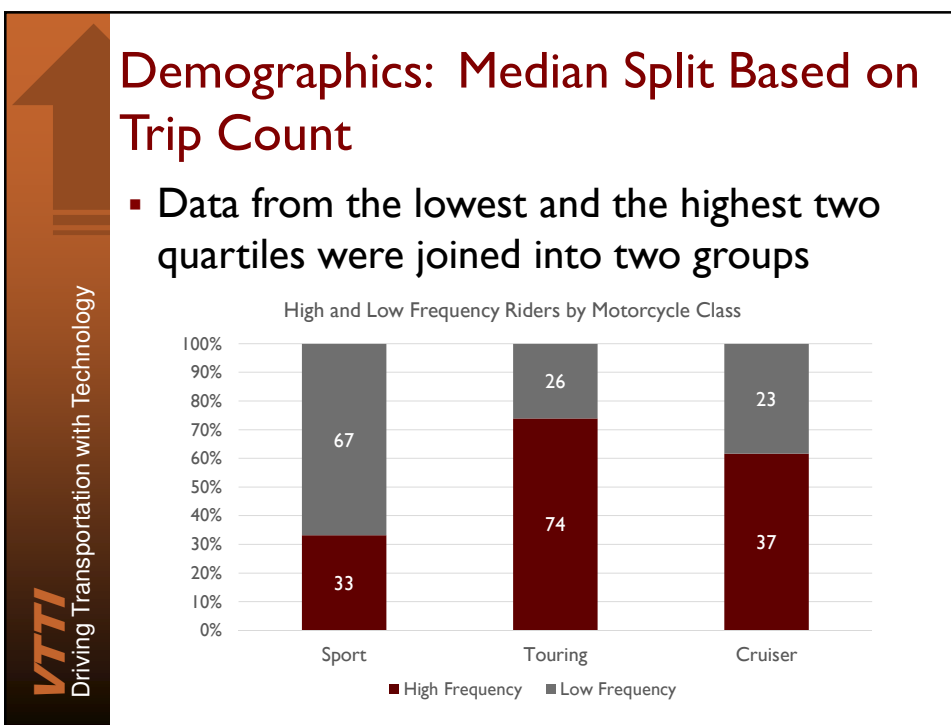
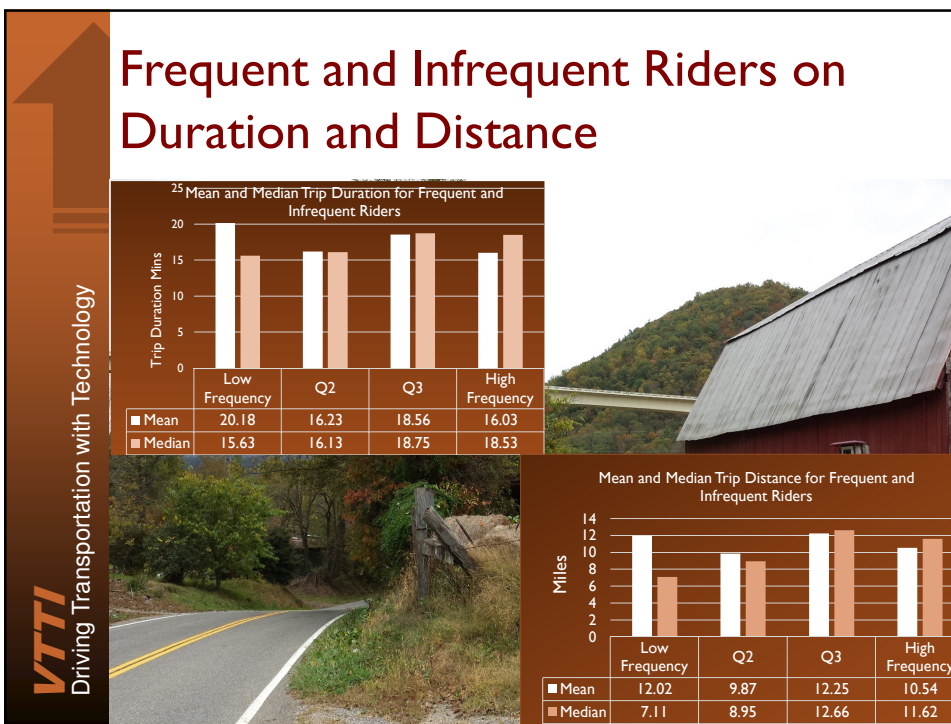


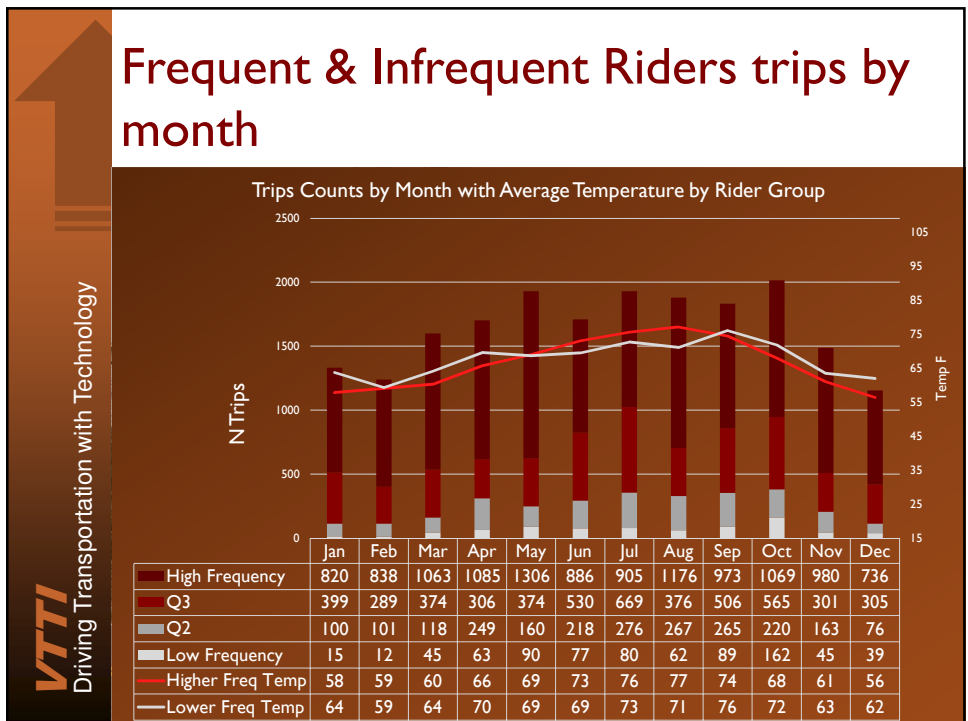
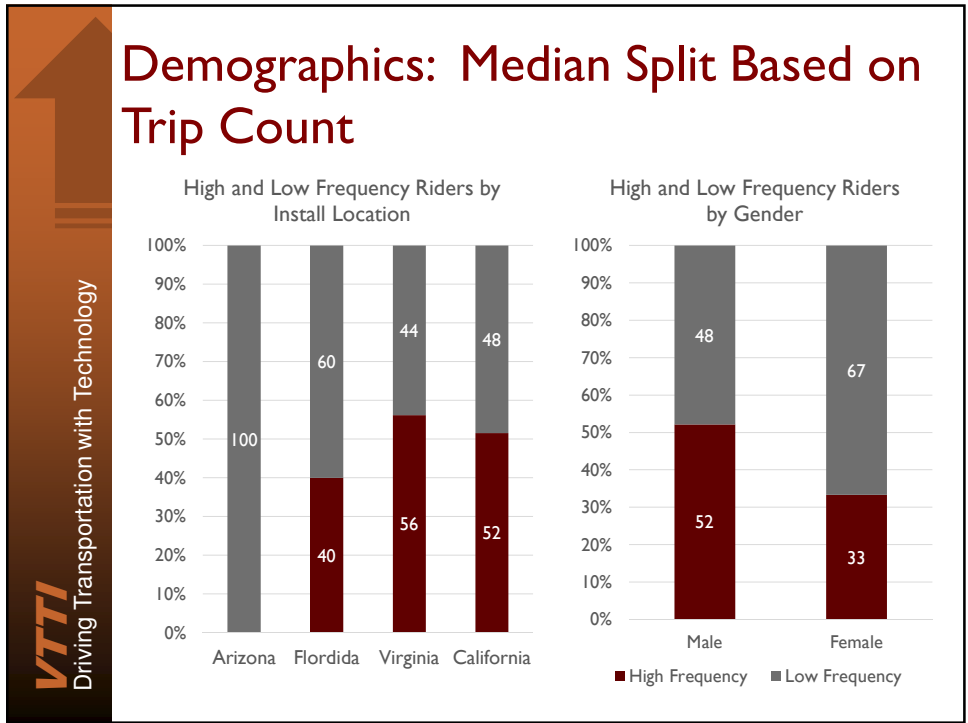
Dataset: Rider VMT Analysis

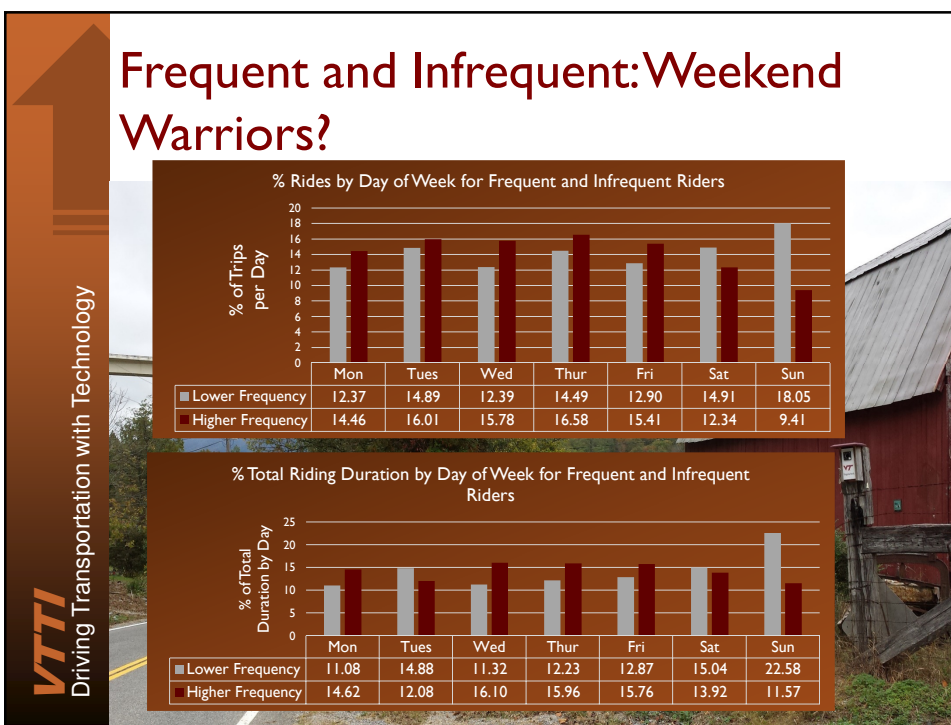
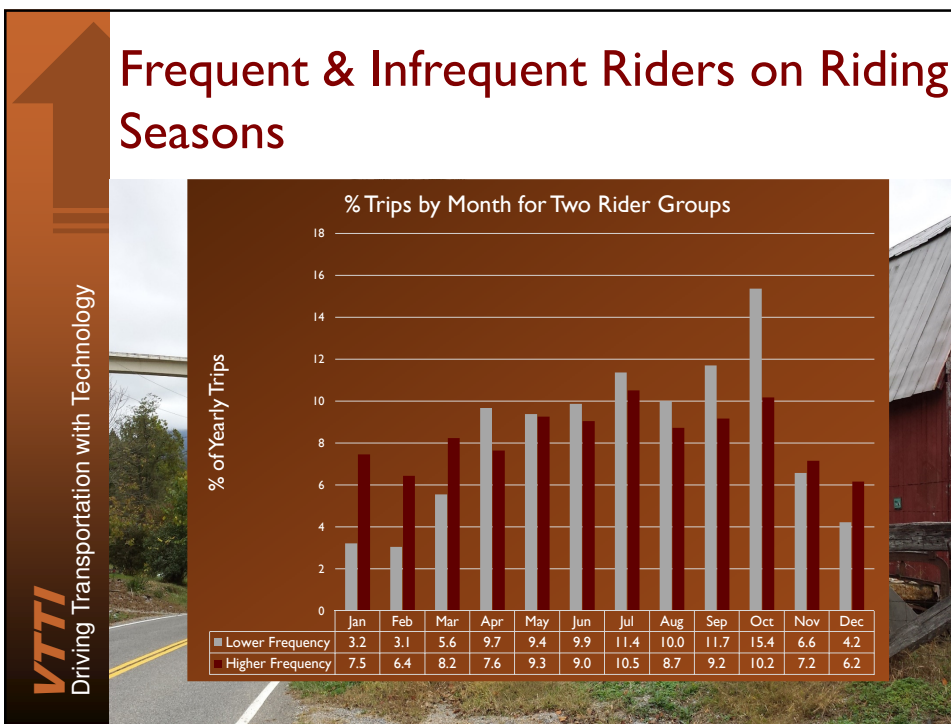
- Total dataset includes 100 riders and over 38,000 trips
- Trips consisted of:
 - A key On/Off epoch
 - Greater than 7 seconds with a travel distance > 0.1 miles
- 36 participants were removed for partial year of participation
 - moved, sold bike, did not complete participation, ran out of data collection time, etc.
 - Five participants were removed due to intermittent GPS data
- Dataset in presentation consists of 59 riders
 - Analyzed full year of data for exactly one year of riding
 - Allowed for accurate depiction of what one year of riding looks like across multiple locations and weather conditions.
- 22,933 trips were used in this analysis.











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Riding days per year frequent and infrequent riders

- Riding Day: Any day containing one or more trips for an individual rider
- Frequent Riders ride, on average, 145 days a year.
 - Average of 3.2 days in between riding days.
 - Median time between riding days = 2.45
- Infrequent Riders ride, on average, 33 days per year
 - Average of 16.17 days between riding days.
 - Median time between rides 8.75 days

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Summary

- Low Frequency riders are more likely to abide by a riding season
 - 80% of infrequent rides occur during an April through October window
 - 65% of frequent rides occur during same time
- Low & High Frequency Riders
 - Difference in number of trips per year
 - (mean = 789, mean = 52)
 - No difference in distance of trips (mean = 11.68 miles)
 - No difference in duration of trips (mean = 17.73 minutes)
- Lower Frequency Riders tend to ride more on the weekends than their higher frequency counterparts, and take longer trips (on average) when they do.

Summary

▪ FREQUENT

upper half of dataset based on trips per year

- Ride on average 145 days per year
- Range 61 – 307 days per year
- Ride 58 miles per day ridden
- Average 6,342 miles per year

▪ INFREQUENT

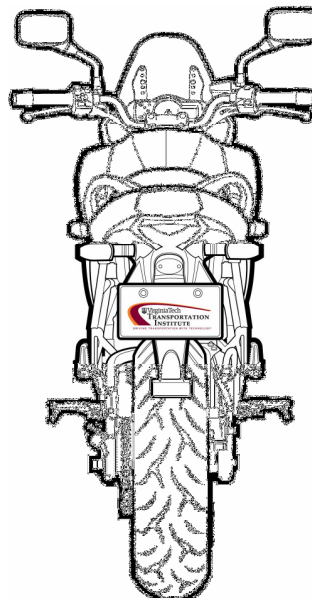
lower half of dataset based on trips per year

- Ride on average 29.5 days per year
- Range 3 – 71 days per year
- Ride 55 miles per day they ride
- Average 1,040 miles per year.

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Questions?



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Contact Information

If you have any questions about motorcycle related research at VTTI or would like further information, please contact:

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