Module 3 Project

Who Gets out of Traffic Tickets?

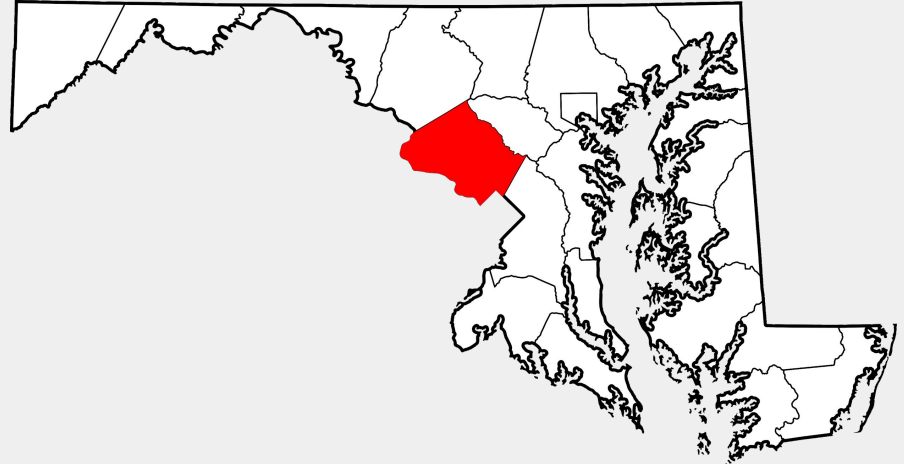Last Update: Aug 2019

Key Questions

→ How can we minimize tickets?

→ [The rental car business is a growing business in the US](#)

  ◆ Good market conditions
  ◆ Car sharing apps

→ Tickets are an annoyance

  ◆ Happy customers always better
  ◆ Administrative hassle

→ Which cars get out of tickets most often?

Our Data

- Our data comes from the [Montgomery County open data portal](#).
- We used [traffic stop data](#) from 2012.
- We looked at the percentage of traffic stops that resulted in a citation vs a warning or a "fix-it" ticket.
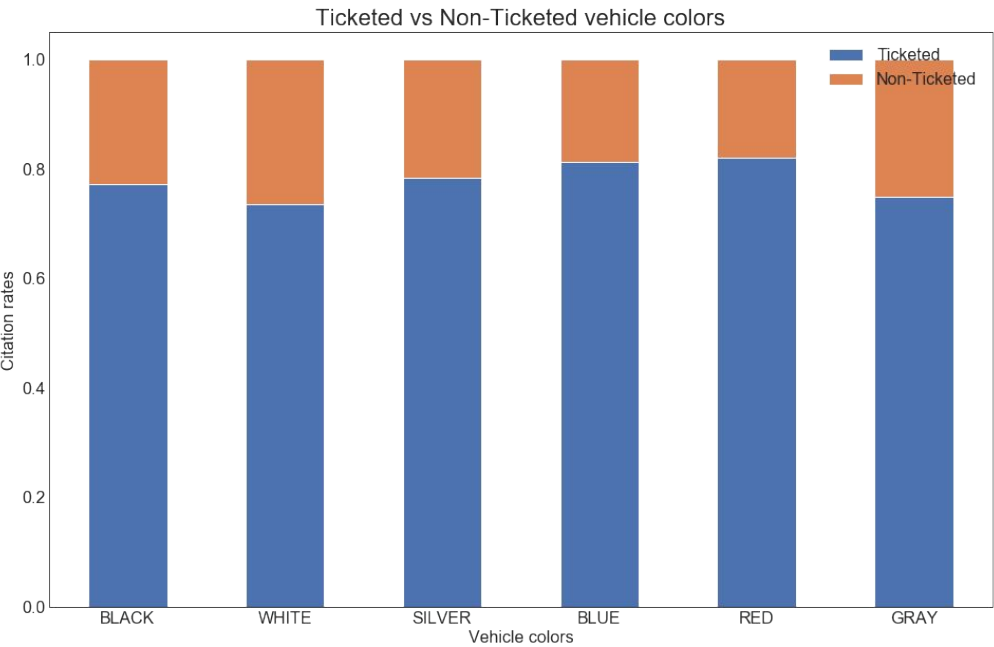- Focus is on basic categories, color and make

Car Colors and Citation rate

- We looked at the most common car colors:
  - Black,
  - White,
  - Blue,
  - Gray,
  - Silver, and
  - Red.
- We used analysis of variance (ANOVA) to see if there were differences between colors
  .
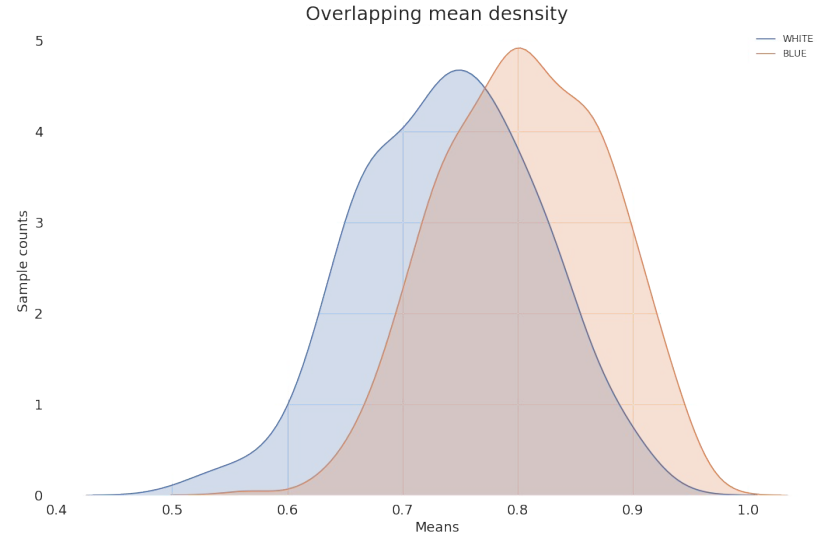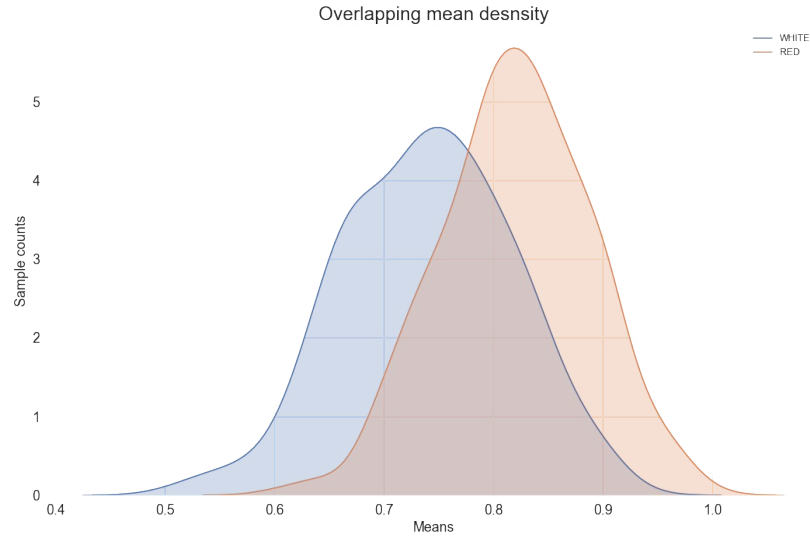- We looked into specific comparisons with Tukey's HSD procedure

Car Colors and Citation Rate: Analysis

Ticketed vs Non-Ticketed vehicle colors

First Color	Second Color	Mean Difference	Min Difference	Max Difference	Signifigant Difference?
BLACK	BLUE	0.0260	-0.0177	0.0697	False
BLACK	GRAY	-0.0293	-0.0730	0.0143	False
BLACK	RED	0.0340	-0.0097	0.0777	False
BLACK	SILVER	0.0107	-0.0330	0.0543	False
BLACK	WHITE	-0.0587	-0.1023	-0.0150	True
BLUE	GRAY	-0.0553	-0.0990	-0.0117	True
BLUE	RED	0.0080	-0.0357	0.0517	False
BLUE	SILVER	-0.0153	-0.0590	0.0283	False
BLUE	WHITE	-0.0847	-0.1283	-0.0410	True
GRAY	RED	0.0633	0.0197	0.1070	True
GRAY	SILVER	0.0400	-0.0037	0.0837	False
GRAY	WHITE	-0.0293	-0.0730	0.0143	False
RED	SILVER	-0.0233	-0.0670	0.0203	False
RED	WHITE	-0.0927	-0.1363	-0.0490	True
SILVER	WHITE	-0.0693	-0.1130	-0.0257	True

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Car Colors and Citation Rate: Results

- We found that the largest differences were between white and red cars, and between white and blue cars.

Overlapping mean desnsity
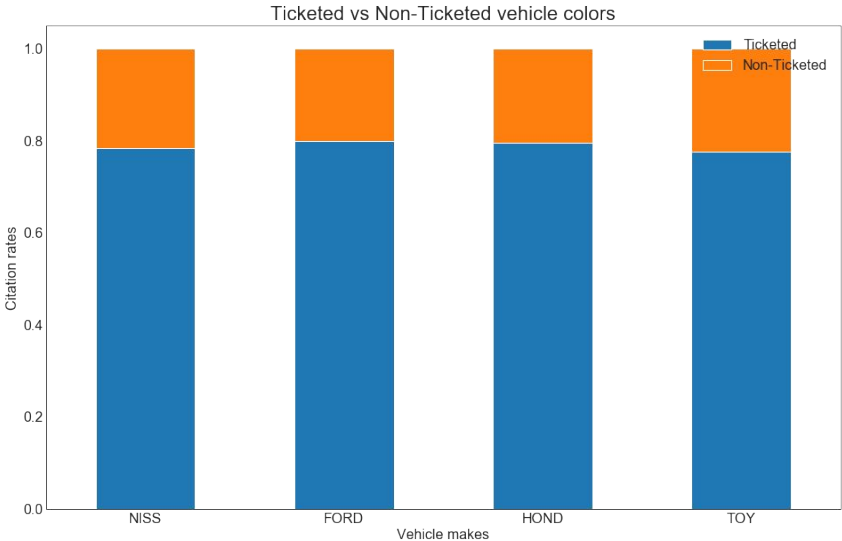

Overlapping mean desnsity

Car Colors and Citation rate

- We looked at the four most common car manufacturers in our data: Honda, Toyota, Nissan and Ford.
- For each make we estimated the rate for getting out of tickets
- We again used ANOVA to determine if the rates were different.
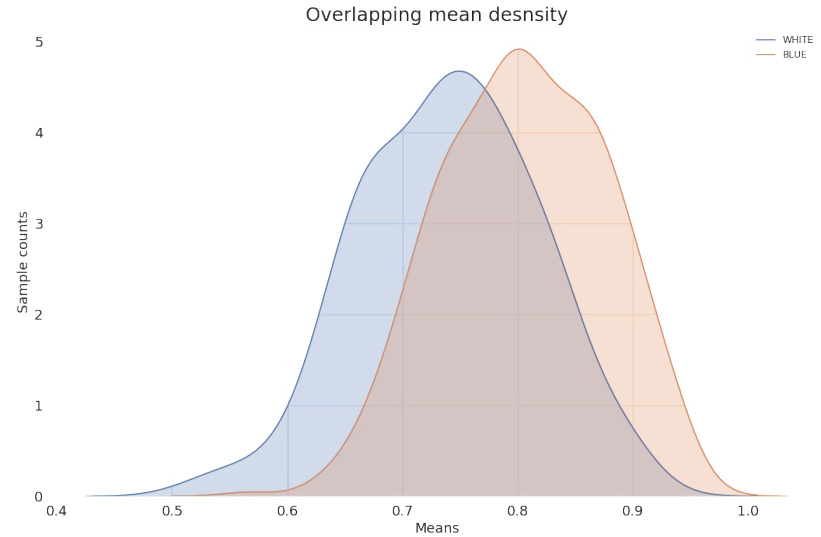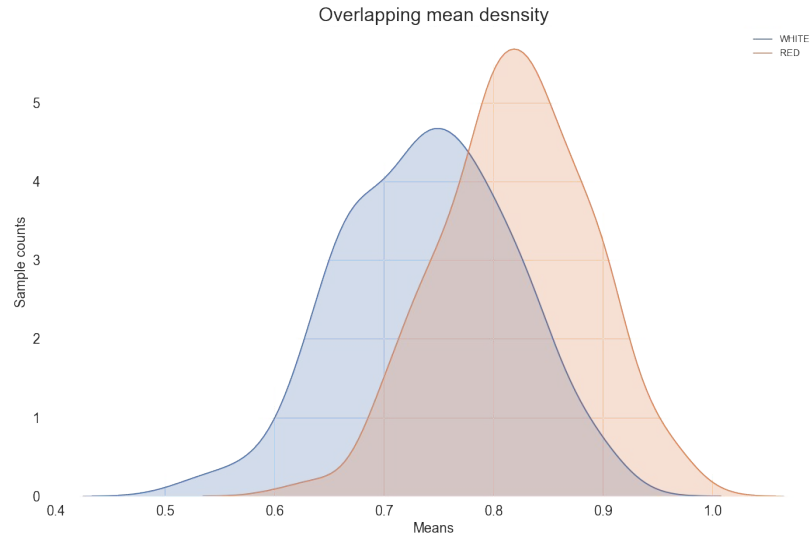- We then used Fisher's LSD procedure to compare the makes directly.

Car Colors and Citation Rate: Analysis

Ticketed vs Non-Ticketed vehicle colors

First Make	Second Make	P Value	Signifigant Difference?
FORD	HOND	0.1988	False
FORD	NISS	0.7400	False
FORD	TOY	0.6358	False
HOND	NISS	0.0787	False
HOND	TOY	0.0471	True
NISS	TOY	0.8885	False

Car Makes and Citation Rate: Results

- We found that the largest differences were between white and red cars, and between white and blue cars.

Overlapping mean desnsity — WHITE / RED

Overlapping mean desnsity — WHITE / BLUE

Recommendations & Limitations

Recommendations

- White cars get out of tickets the most often
- Red and Blue cars get out of tickets the least often.
- percentages.
- For makes, results are less clear
- Hondas get out of tickets more than Toyotas

Limitations

- Only one geographical area
- Only data on stops, no data on stop frequency

Further Research and Next Steps

- Expand area beyond montgomery county
- Look at some of the more rare colors and brands
- Look more into the types of citations and warnings given