

Quality Motors

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WHY ARE WE DOING THIS ANALYSIS

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To increase our sales, we should have a prediction methodology to help our Sales Team on positioning the listing price and Sourcing Team to identify a good buy back deal.

To compete with others, we should ensure our pricing stay competitive. Are there metrics able to assist our Sales/Sourcing Teams in deciding the pricing?

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If we create a prediction equation to identify the listing price, will this pricing solely take mileage and years of vehicles as main factors in deciding the price?

With large used cars dataset from craigslist, it contains lots of variables. We should able to identify valuable features which can help us target some good buy back deals more accurate.

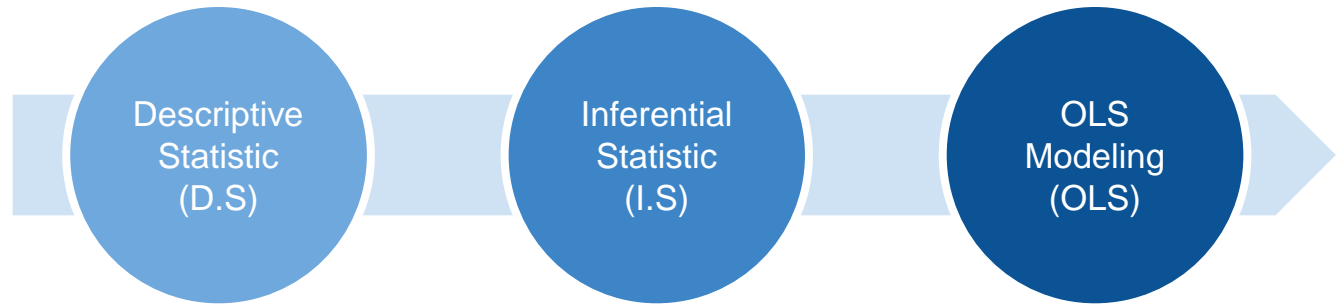
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If the deals are in other Regions of US, will it lead to a longer selling process and increase selling cost which impact on our revenue in the end?

If we successfully utilize our prediction, It can increase the efficiency and incentive of sales team by using prediction model rather than manually searching which lead to the increase the turnover rate of transactions.

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How do we analyze the dataset?



3

Regions

D.S

I.S

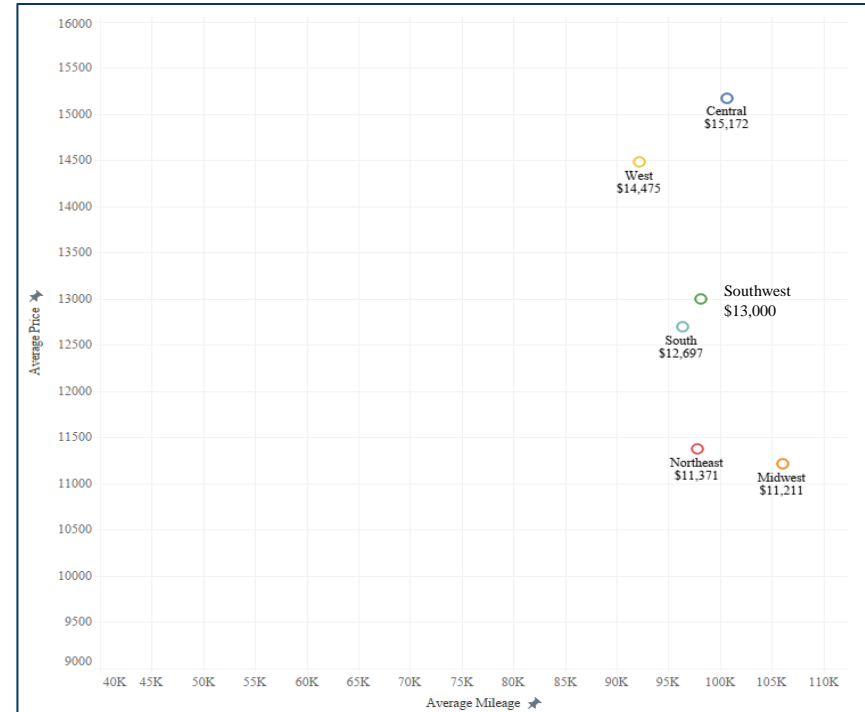
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We should target our buy back market in Northeast and Midwest. the average cars shipping fee is \$950-\$1000 per vehicle, if we buy back cars from Northeast and Midwest region and sell them back to West and Central region, our profit margin will approximately increase 5% - 17% per cars.

Key Insights:

1. The difference among different Region is around \$1000, we can identify good deals from other region other than local in order to minimize our cost and increase our profit margin.
2. In terms of average mileages, there is no significant difference among the regions.

Avg Price & Mileage VS Regions



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Manufacturer

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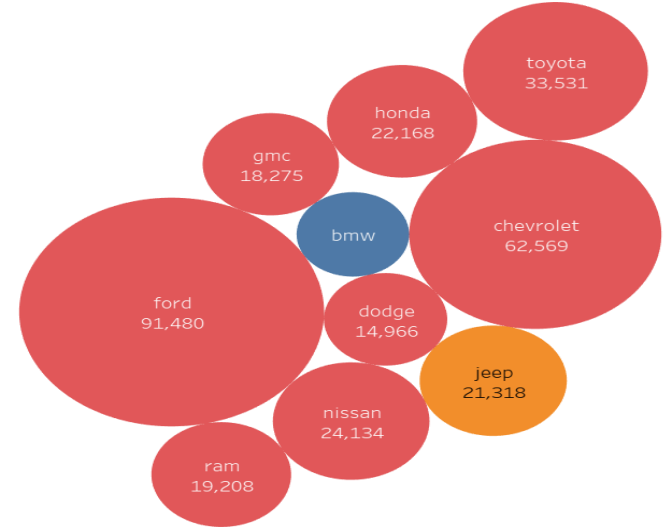
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Although Foreign brand used cars such as Japanese are known for their fuel efficiency, American brand used cars still maintain its competitiveness in the market.

Key Insights:

1. American brand cars have the greatest number of listings then foreign makes especially Japanese brand.
2. American brand cars have the highest average price among all three difference tiers such as RAM has the highest average price among Regular cars; Jeep has the highest average price among Mid_tier cars and Tesla has the highest average price among Luxury cars.
3. It also implies that American brand turn over rate is higher than Foreign brand, thus, we can list the price of foreign brand cars slightly higher than market price. As for American brand cars, we can target it lower than market price.

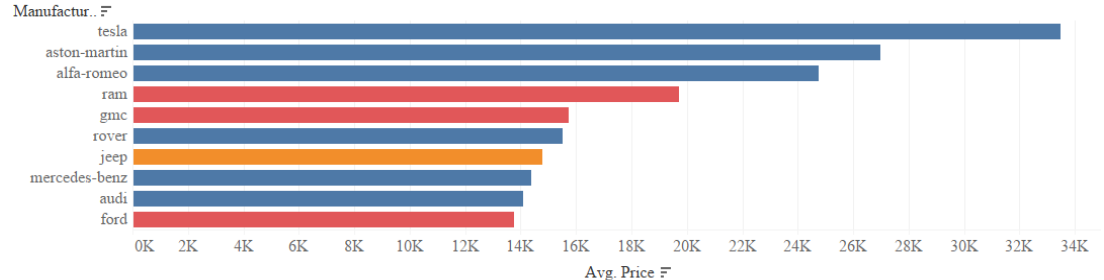
Number of Listings: Top 10 Manufacturers



Average Price : Top 10 Manufacturers

Brand Classify

- Luxury_cars
- Mid_tier_cars
- Regular_cars



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Cars' Type & Size

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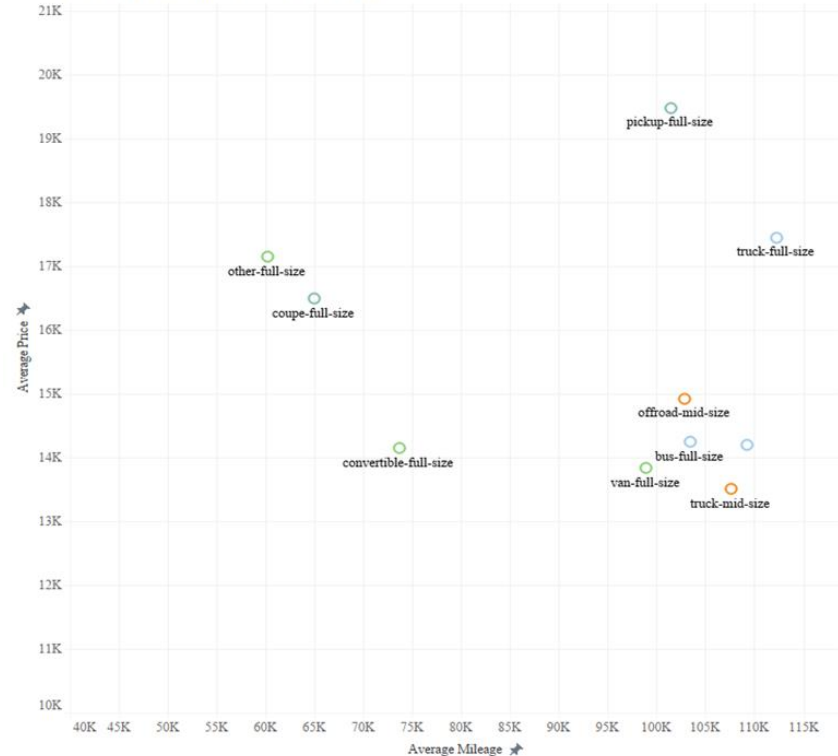
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Used car which can serve multi purpose can be priced at a higher listing price in the market although they have greater mileage.

Key Insights:

1. The graph shows Top 10 of used car in term their type and size by average mileage and price. Full size cars dominate the used cars market. Pick up and truck have higher listing price although they have greater mileage. It might because these type of cars are multi function serving different purposes: family and work
2. It also explains why Ford and Chevrolet have a greater number of listing in the market since they are known for their Pickup and Truck.
3. We should have this category of used cars available for clients in order to diversify our cars selection.

Used Cars Type: Average Price & Mileage



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Exterior Color

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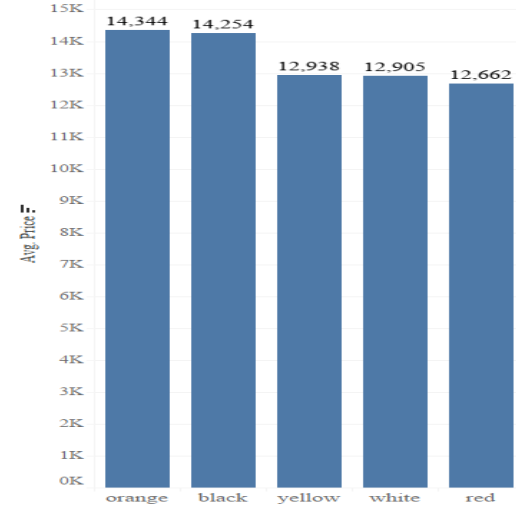
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In general, it is not surprised that standard color such as black/white/silver have the greatest number of listing in the market.

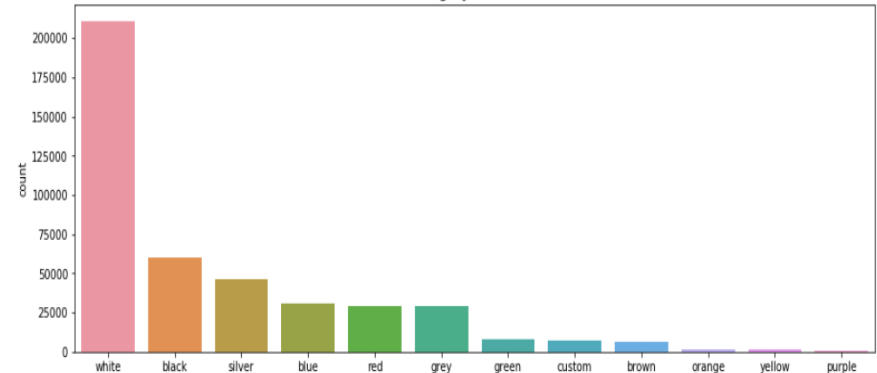
Key Insights:

1. Orange and yellow usually indicate fancy sport cars. The chance of selling it one per month are comparative low. Thus, we should take the selling time into consideration if we plan to buy back a used car with such colors.
2. Standard exterior colors such as black, white, silver and grey are still the normal color which are accept by general population. If we target on these color, it also can minimize our risk of not selling the used cars with special or custom color.

Top 5 Exterior Color vs Avg Price



Number of Listing by Vehicle Exterior Color



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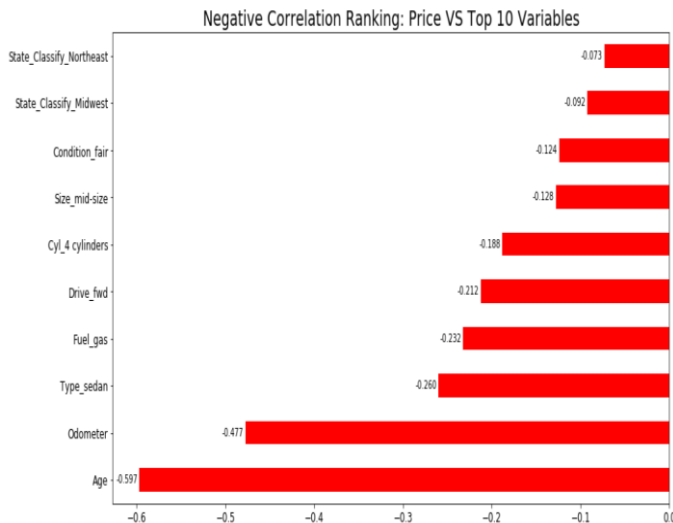
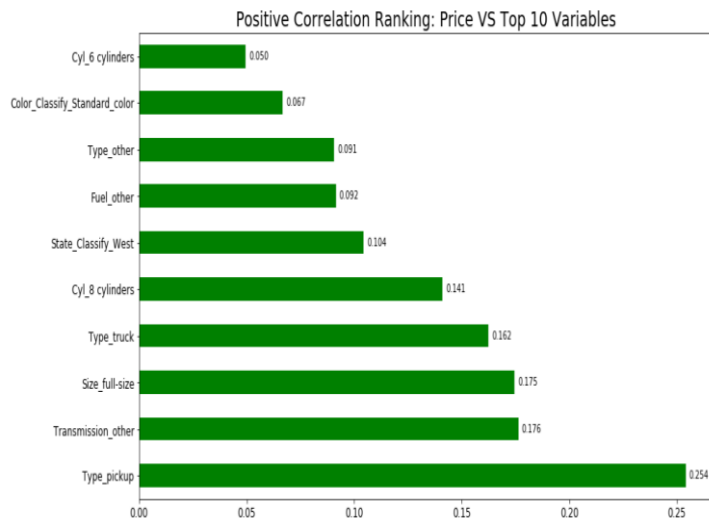
Top 10 Correlations Values

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Running Correlation value on each features can identify which features have stronger relationship with Price. Below we have the Top 10 Positive and Negative values which can highly impact on the listing price.



Key Insights:

1. Among the Top 10 Positive Correlation values, we can see the Pickup and truck as well as a greater number of cylinders have stronger relationship with price.
2. Among the Top 10 Negative Correlation Value, we can see that age and mileage of the cars do affect on the price, but they are not comparatively strong that we think they would. Thus, there are other features involve to define the listing price.
3. The location of the cars also has impact on the listing price because of the population size and demand of the used cars in local market.

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OLS Modeling

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From the Regression model, 97% of variables are significant to our listing price per their P values (<0.05). R-squared is 83.7% which is relatively high. It indicates our model is a good fit and 83.7% of Price can be explained by variables such as cars' type, Fuel type, Exterior color and Odometer etc.

Key Insights:

From the model, the age and mileage of used cars aren't the main factors on the listing price, there are other variables such as number of cylinders, cars type and size also plays important roles when we price the used car in the market.

Top 10 Positive COEF

	coef	P> t
Cyl_8 cylinders	2.23E+04	0
Cyl_12 cylinders	2.21E+04	0
Cyl_6 cylinders	2.12E+04	0
Cyl_4 cylinders	2.03E+04	0
Cyl_5 cylinders	1.86E+04	0
Cyl_3 cylinders	1.74E+04	0
Type_pickup	4.80E+03	0
Color_Classify_Standard_color	4494.2194	0
Color_Classify_Special_color	3721.5158	0
Size_full-size	3409.4318	0

OLS Regression Results

R-squared:	0.837
Adj. R-squared:	0.836
F-statistic:	3.452e+04
Prob (F-statistic):	0.00
Log-Likelihood:	-3.2858e+06
AIC:	6.572e+06
BIC:	6.572e+06

Top 10 Negative COEF

	coef	P> t
Fuel_electric	-7278.6444	0
Condition_fair	-6112.971	0
Condition_salvage	-5927.1983	0
Fuel_gas	-5890.4401	0
Title_status_missing	-5324.3971	0
Fuel_hybrid	-4324.635	0
Fuel_other	-3471.632	0
Title_status_rebuilt	-2374.9136	0
Type_sedan	-2330.5269	0
State_Classify_Northeast	-2060.0735	0



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THANKS!

Any questions?

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