

To analyze customer preferences and needs, we used a sample of 200,000 customers who have purchased a car from CarMax and their accompanying appraisal details. The data set includes various attributes of the purchased and appraised vehicles, including make/model/trim, mileage, appraisal and purchase value.

First, we looked at the make and model of the appraised vehicles to determine which brands and models are most commonly traded in. We found that the top traded in makes were ARU, HXQ, and AIH while the top traded in models were ARU_12, HXQ_14, and HXQ_8.

Next, we looked at the model year and mileage of the appraised vehicles to determine customer preferences for newer or older vehicles and lower or higher mileage. We found that customers tend to trade in vehicles that are around 2008-2014 model year and have mileage between 100k to 110k.

We also looked at the body, color, engine, cylinders, and other features of the appraised vehicles to identify customer preferences for specific features. We found that the most common body type traded in was "E", the most common color was "White", the most common engine type was "4.0L" and the most common number of cylinders was "4".

We also analyzed the online_appraisal_flag, to identify the customers who prefer to do the appraisal online. We found that the majority of customers (56%) prefer to do their appraisal in person.

Finally, we looked at the price, appraisal_offer, and market, to identify the trends in the data and to inform the dealership's pricing and marketing strategy. We found that the most sold car color is White and it is mostly sold in market 13.

Based on our analysis, CarMax can use this information to identify the types of vehicles that customers are most likely to be interested in and tailor their inventory accordingly. They can also use this information to inform their pricing and marketing strategy. Additionally, CarMax can use this information to offer more personalized service to customers by understanding their preferences for specific features, model years, and mileage.