

Overview

Shift's operations team that is responsible for customer outreach deals with thousands of potential sellers per month. One way our data scientists can make their job easier is by prioritizing which sellers they outreach to first. The goal of this assignment is to derive a score that represents the expected value to Shift of acquiring a specific vehicle.

The expected value that we want to derive in this homework assignment is the difference between what Shift can sell the vehicle for at retail and what dealerships buy vehicles for at wholesale.

The Data

The dataset includes a random sample of seller inquiries Shift has received in the last ~5 months for a select set of models. You will find that some sellers have expected value set to \$0, and that's because they never ended up selling their vehicle through Shift, so we don't know what we could have sold their car for at retail. The other set of sellers, those that have a non-zero value for expected margin, did sell their vehicle through Shift and the value represents the final selling price less the wholesale value of their vehicle.

Q: What is the wholesale value?

A: The wholesale value is how much this vehicle would have sold for at an auction.

The Assignment

We'd like you to present to our engineering and data science team your approach to the problem, which statistical/machine learning methods you used to come up with the model, the model itself and accuracy of your predictions. A handful of slides will suffice, but in addition to the presentation, we would like to see your code and any model diagnostics that you think will be useful to share.

Data Glossary

Field	Description
Quote ID	Unique Seller Identifier
Location Zip	Postal code of the seller
Percent to Market	Price at which Shift would try to sell the vehicle relative to comparable vehicles currently listed in the market
Market Average Days To Sell	# of days it takes an average dealer to sell a similar vehicle
N Similar Vehicles	Number of similar vehicles for sale nationally
Region Shortcode	Region of the seller
Exact List Price	Price Shift would list the vehicle for (if acquired)
Wholesale Price	What dealers can buy a similar vehicle for at an auction
Seller Source	Whether the seller contacted us through shift.com or through our iOS app
Expected Margin	The value of Shift selling this car for the retail price