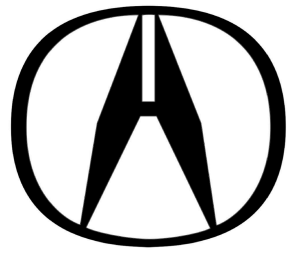




Car Leases and when to buy them

Luke Newman

Introduction

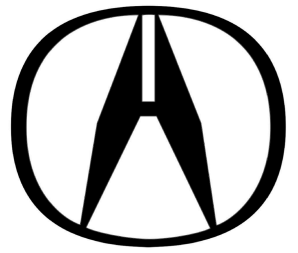


- Car lease versus buying and reselling a car (Depreciation)
- Let's examine the Acura TLX

	Standard	Technology Package
Inline-4 FWD	\$33,000	\$36,700

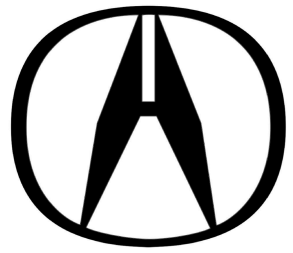


Methodology

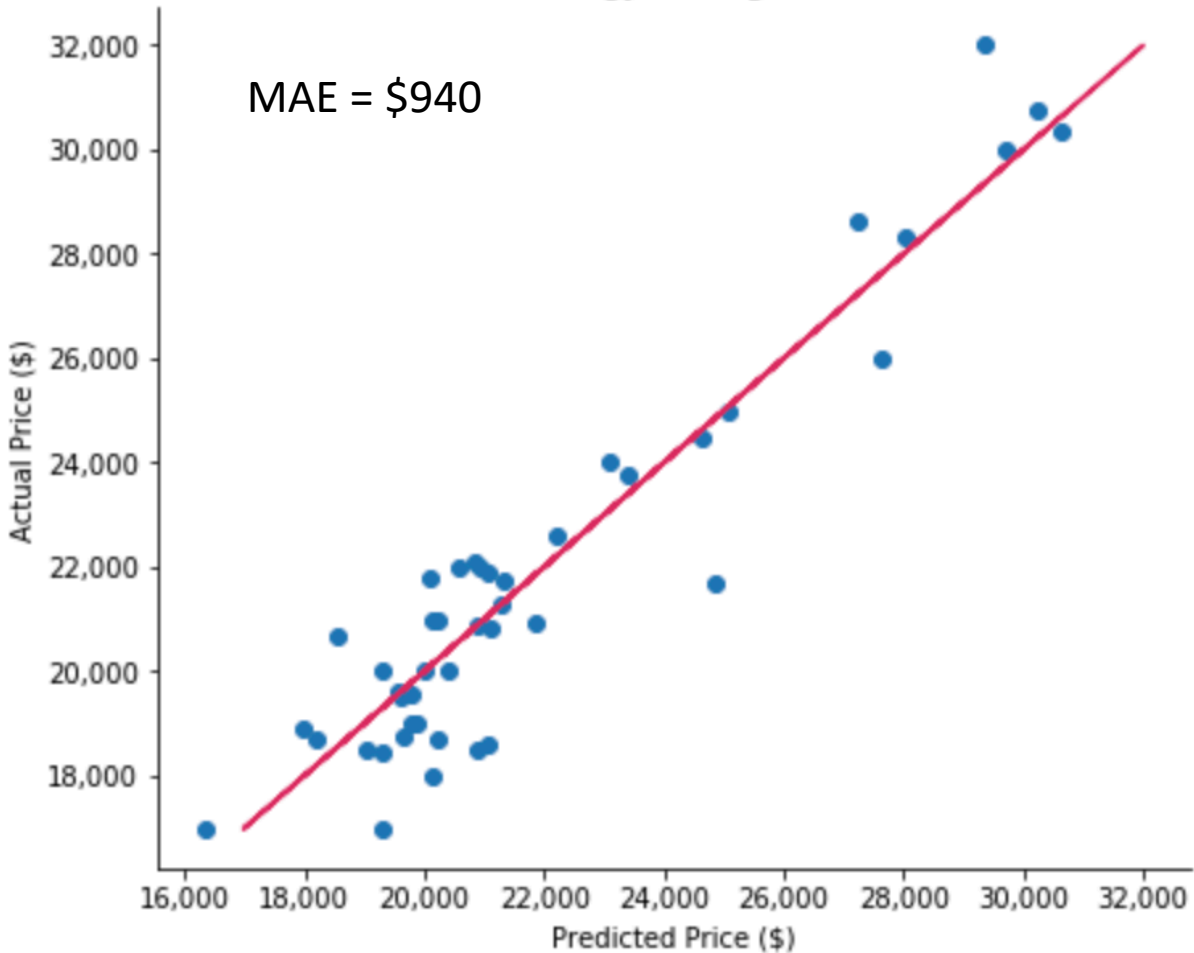


- Webscraped data from online car marketplaces
- Quotes on 2-4 year car leases from Acura dealership
- Used Mean Absolute Error (MAE) to determine performance of models
- Pandas, Selenium, Sklearn, Matplotlib

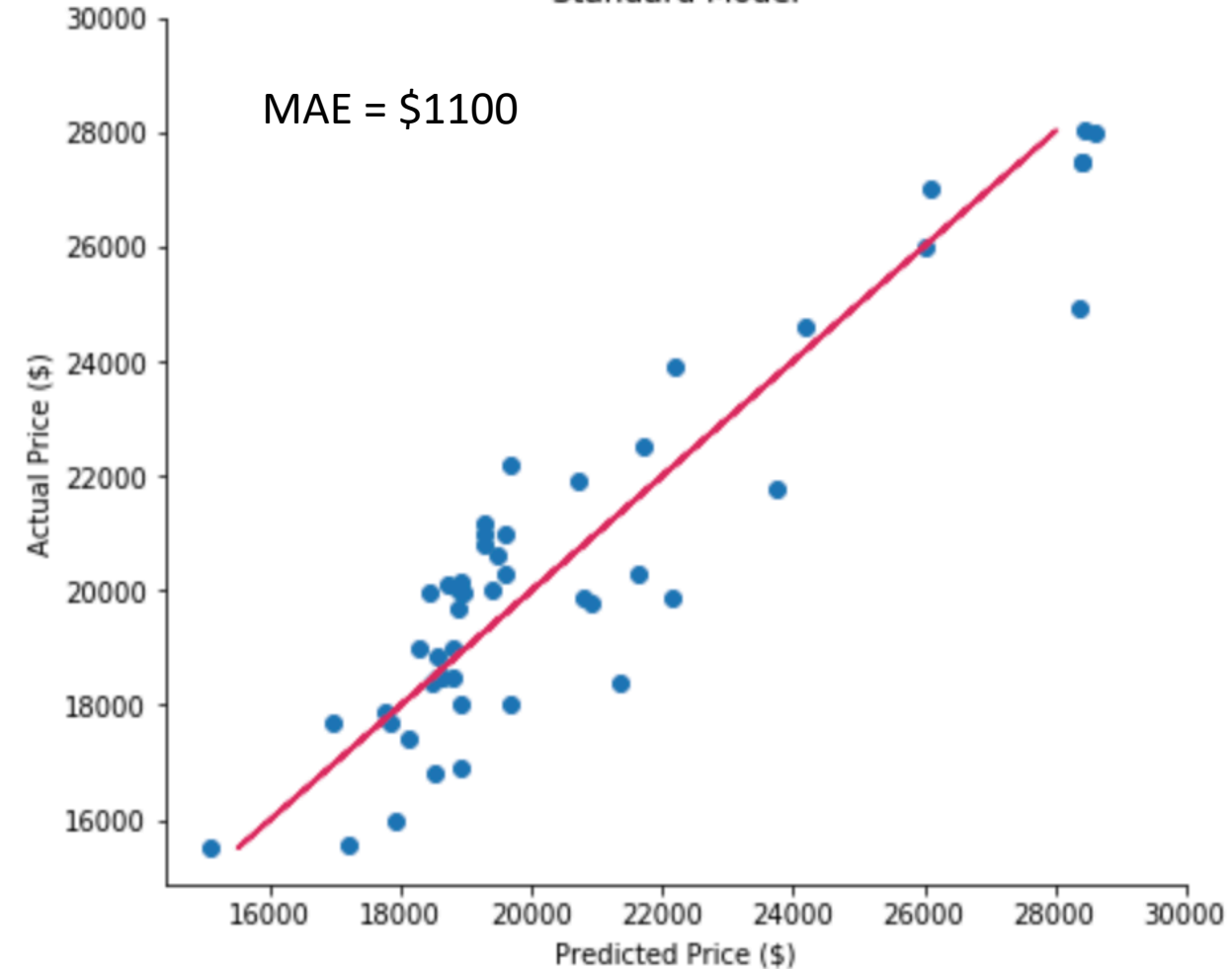
Results: Models



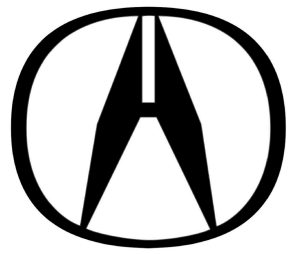
Technology Package Model



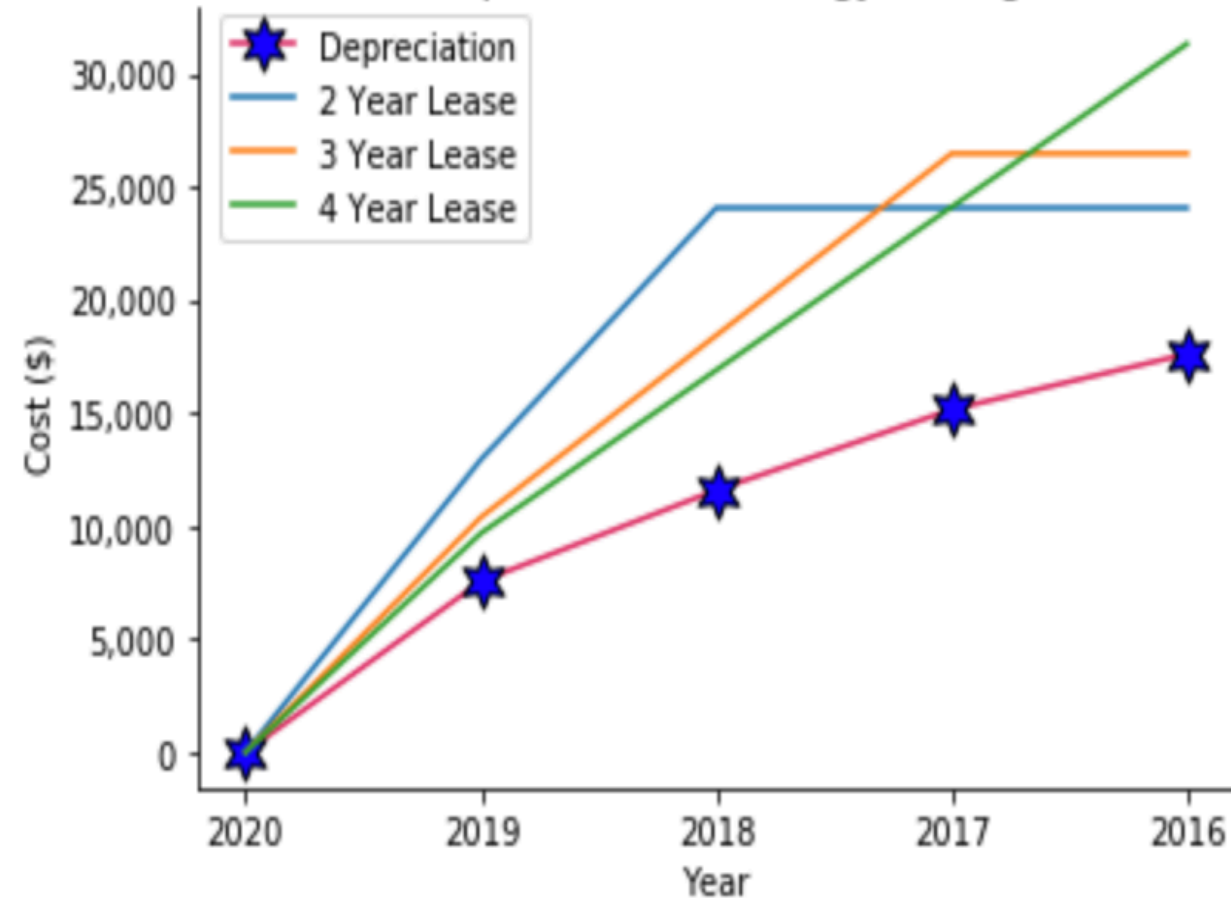
Standard Model



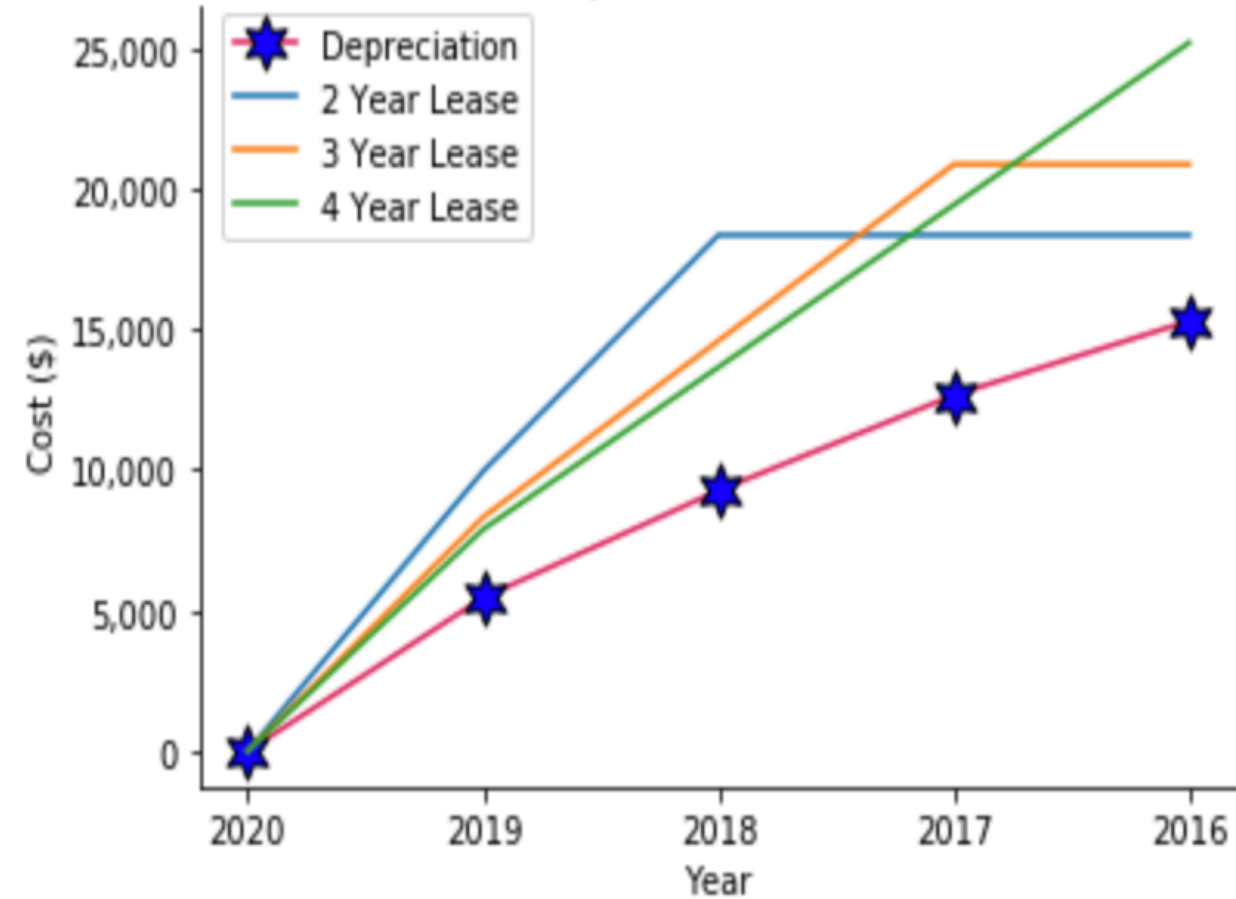
Results: Costs



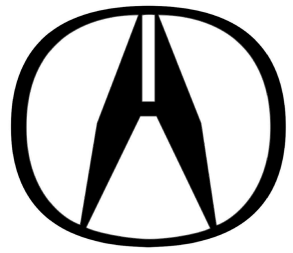
Cost per Year: Technology Package



Cost per Year: Standard



Conclusions

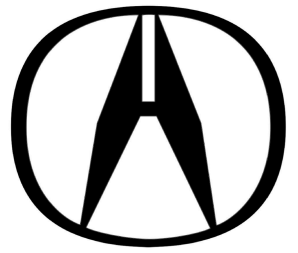


- Leasing a car is a lot more expensive!

Technology Package

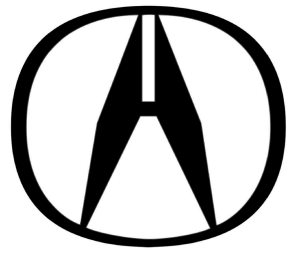
Lease	Two Year	Three Year	Four Year
Total Cost	\$24,061	\$26,465	\$31,312
Depreciation	\$11,582	\$15,144	\$17,603
Savings	\$12,479	\$11,321	\$13,709

Future Work



- With more time and resources I would
 - Model many more cars and each specific trim
 - Analyze financial markets to have a more stable model in future markets instead of just today's

Appendix



- Online car websites have anti-scraping software so webscraping with Selenium proved a lot more difficult. I Had to bypass their security measures to scrape the information I needed.
- Regularization methods proved trivial. Simple Linear Regression was most effective. However, using a polynomial to model depreciation captured how cars lose more value during the first two years than the rest of their lifespan.