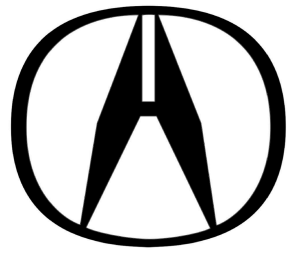




Buy or Lease: Guide to Car Leases

Luke Newman

Introduction

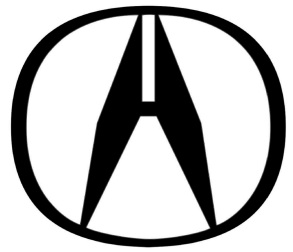


- Car lease versus buying and reselling a car (Depreciation)
- Let's examine the Acura TLX

	Standard	Technology Package
Inline-4 FWD	\$33,995	\$36,700

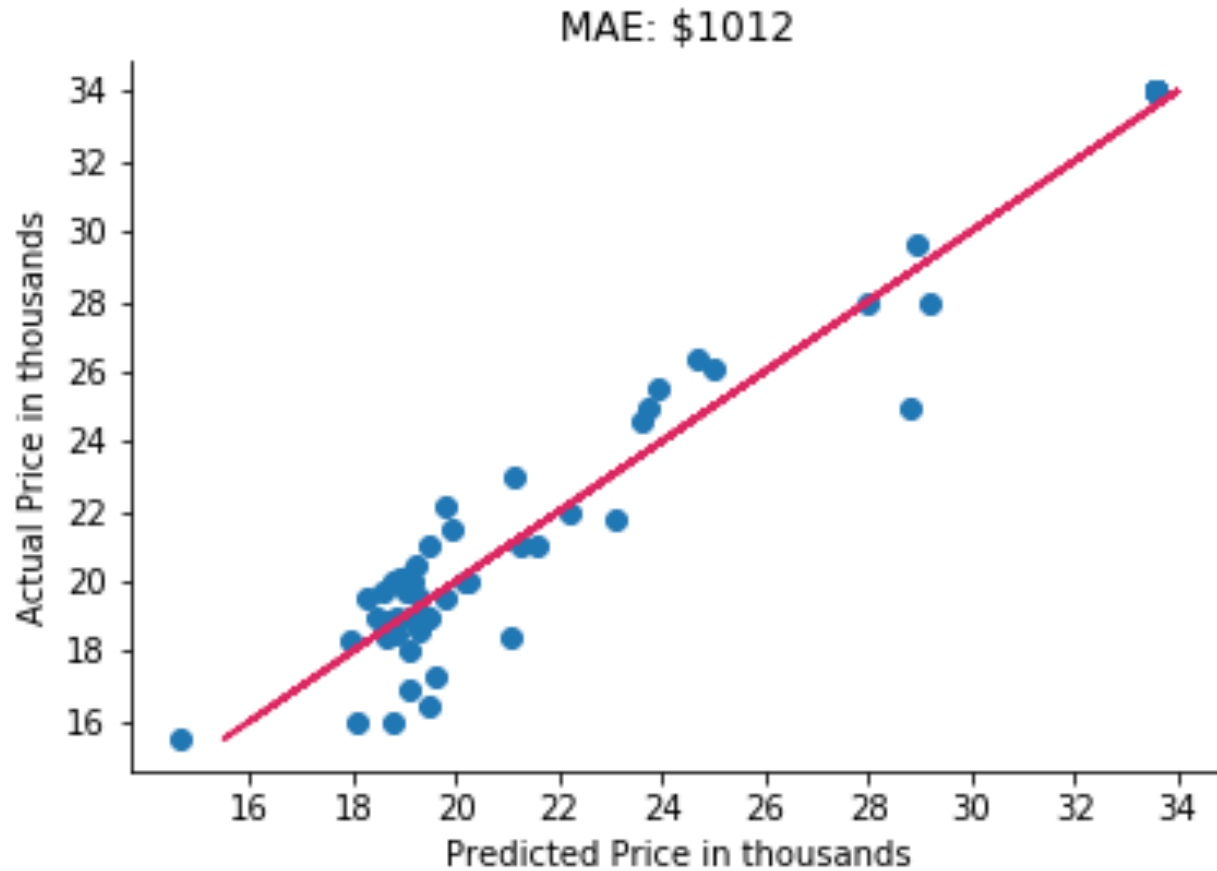
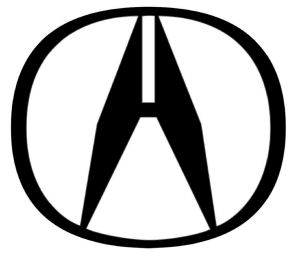


Methodology

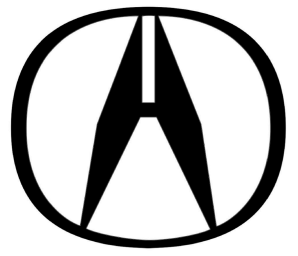


- Webscraped data from online car marketplaces
- Quotes on 2-4 year car leases from Acura dealership
- Used Mean Absolute Error (MAE) to determine performance of models
- Pandas, Selenium, Sklearn, Matplotlib

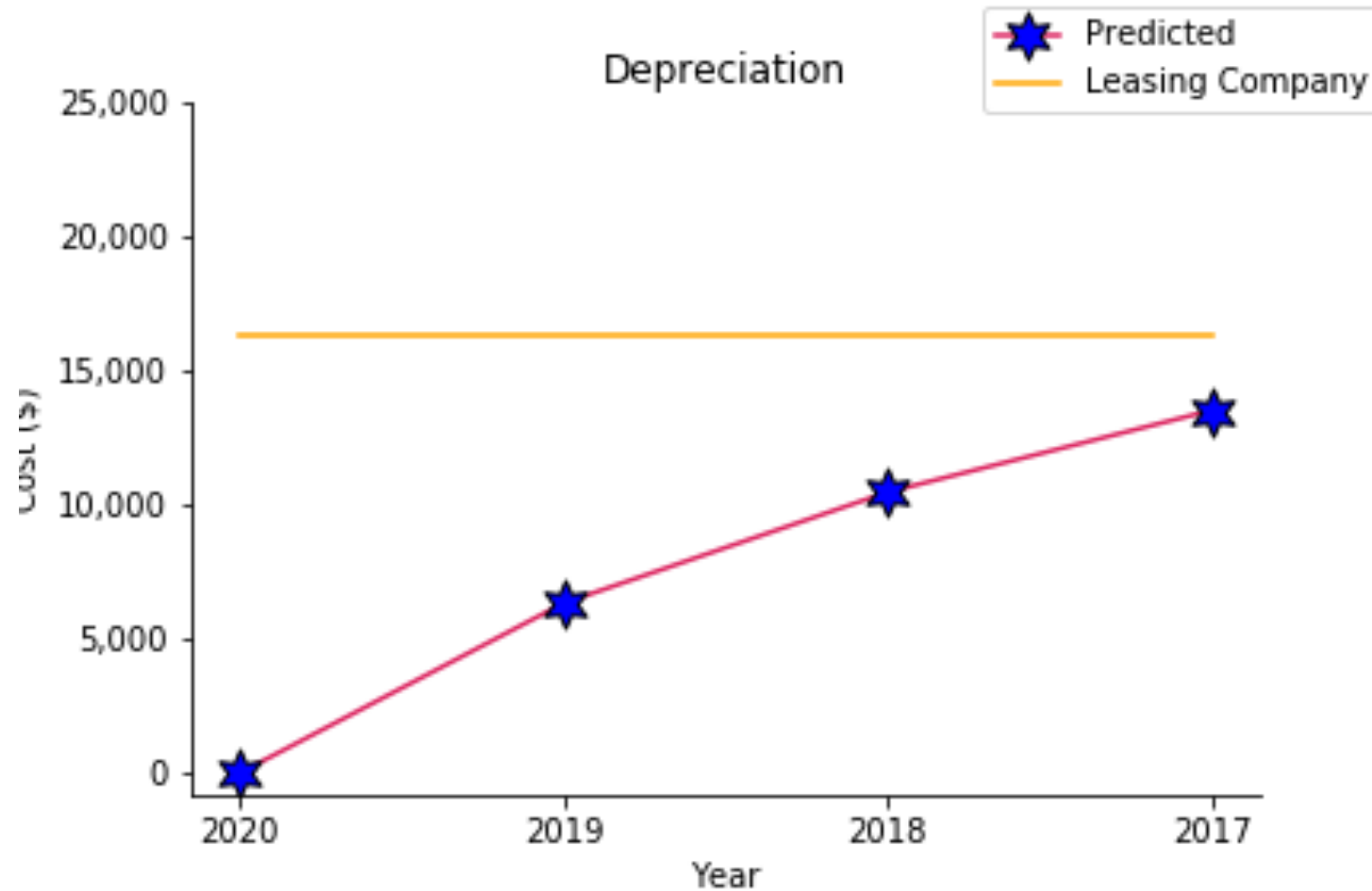
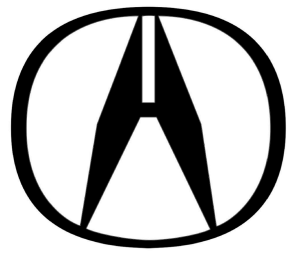
Results: Models



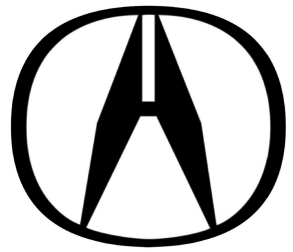
Results: Residual Price



Results: Depreciation



Conclusions

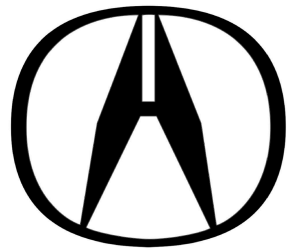


- Leasing a car is a lot more expensive!

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

Conclusions



Buy vs Lease

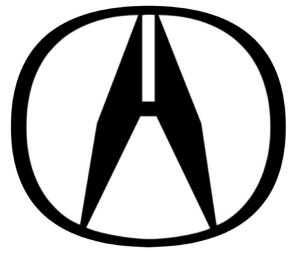
Buy (Negotiated)

Lease (36 months)

Buy	\$32,016	Monthly Payment	\$329
Sell	\$20,511	Down Payment	\$2499
Depreciation Cost	\$11,505	Cost of Lease	\$14,639

You Save \$3,124 from buying

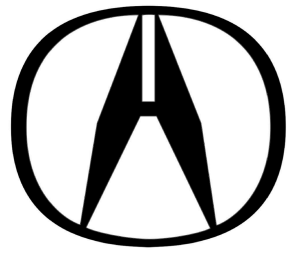
Future Work



With more time and resources I would

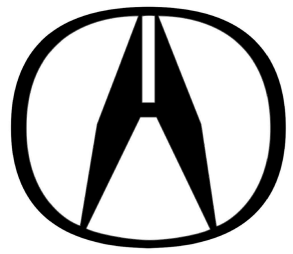
- Model many more cars and each specific trim
- Analyze financial markets to have a more stable model in future markets instead of just today's

Appendix

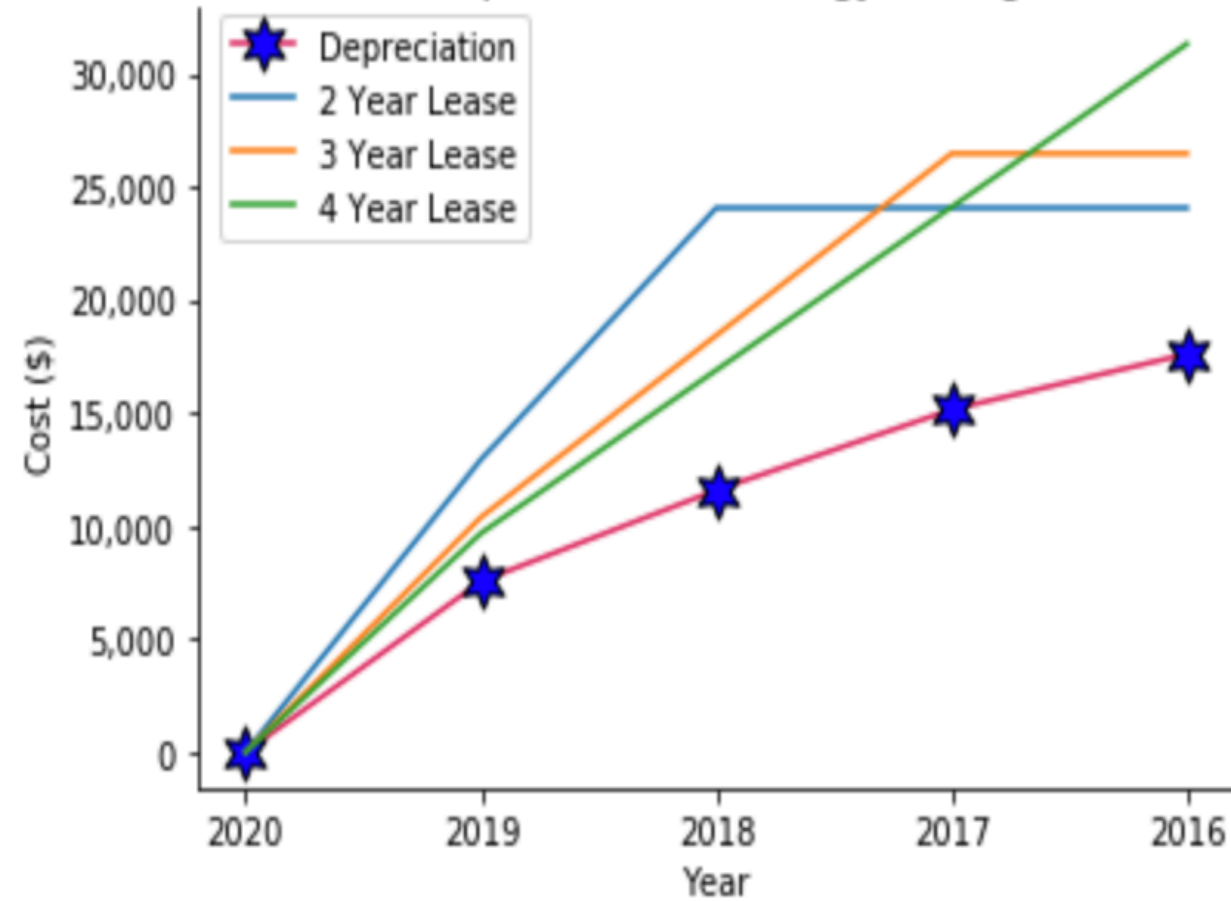


- Online car websites have anti-scraping software so webscraping with Selenium proved a lot more difficult. I Had to bypass their security measures to scrape the information I needed.
- Regularization methods proved trivial. Simple Linear Regression was most effective. However, using a polynomial to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

Appendix



Cost per Year: Technology Package



Cost per Year: Standard

