Car Leases and when to buy them

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Introduction

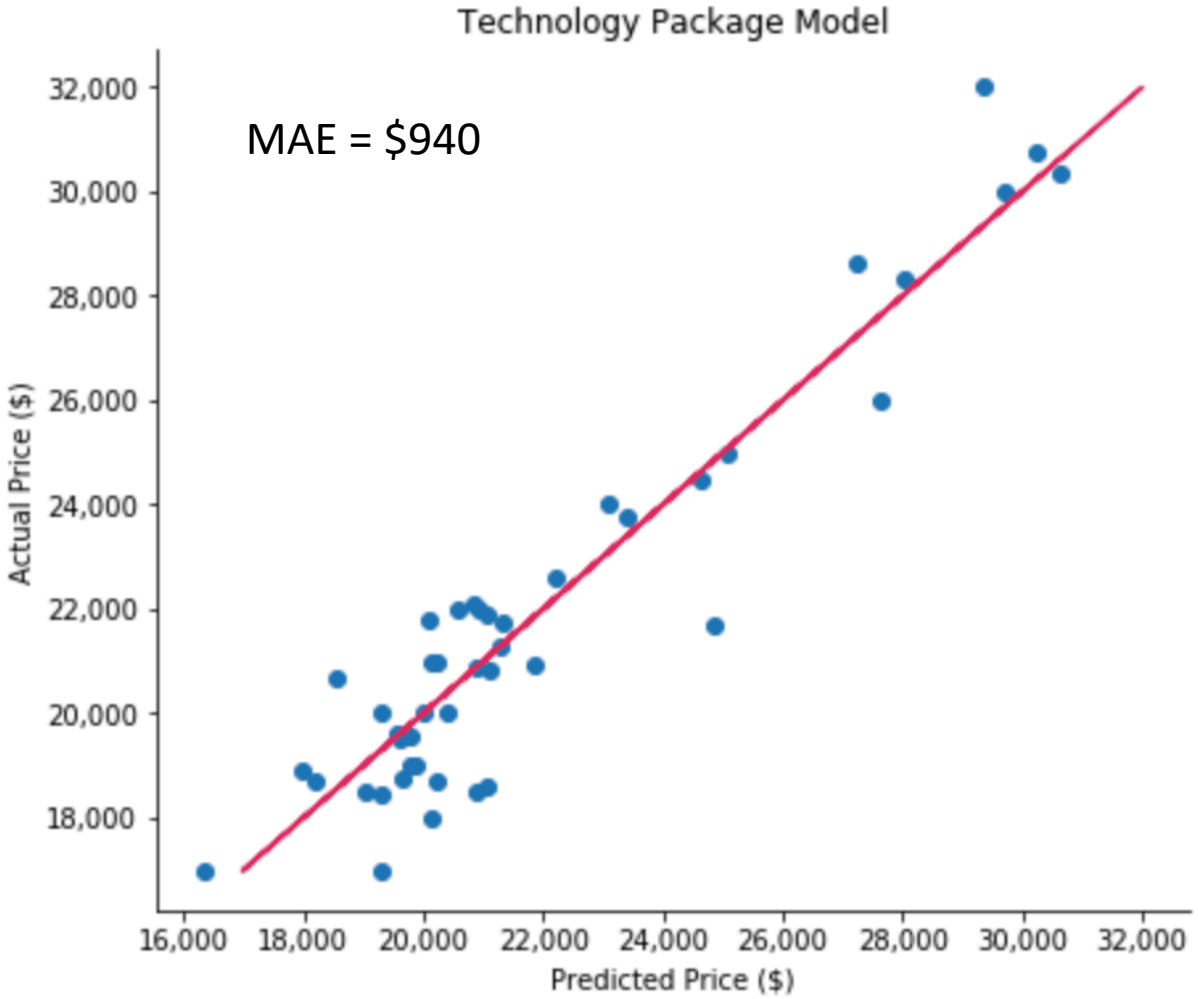
- Car lease versus buying and reselling a car (Depreciation)
- Let’s examine the Acura TLX

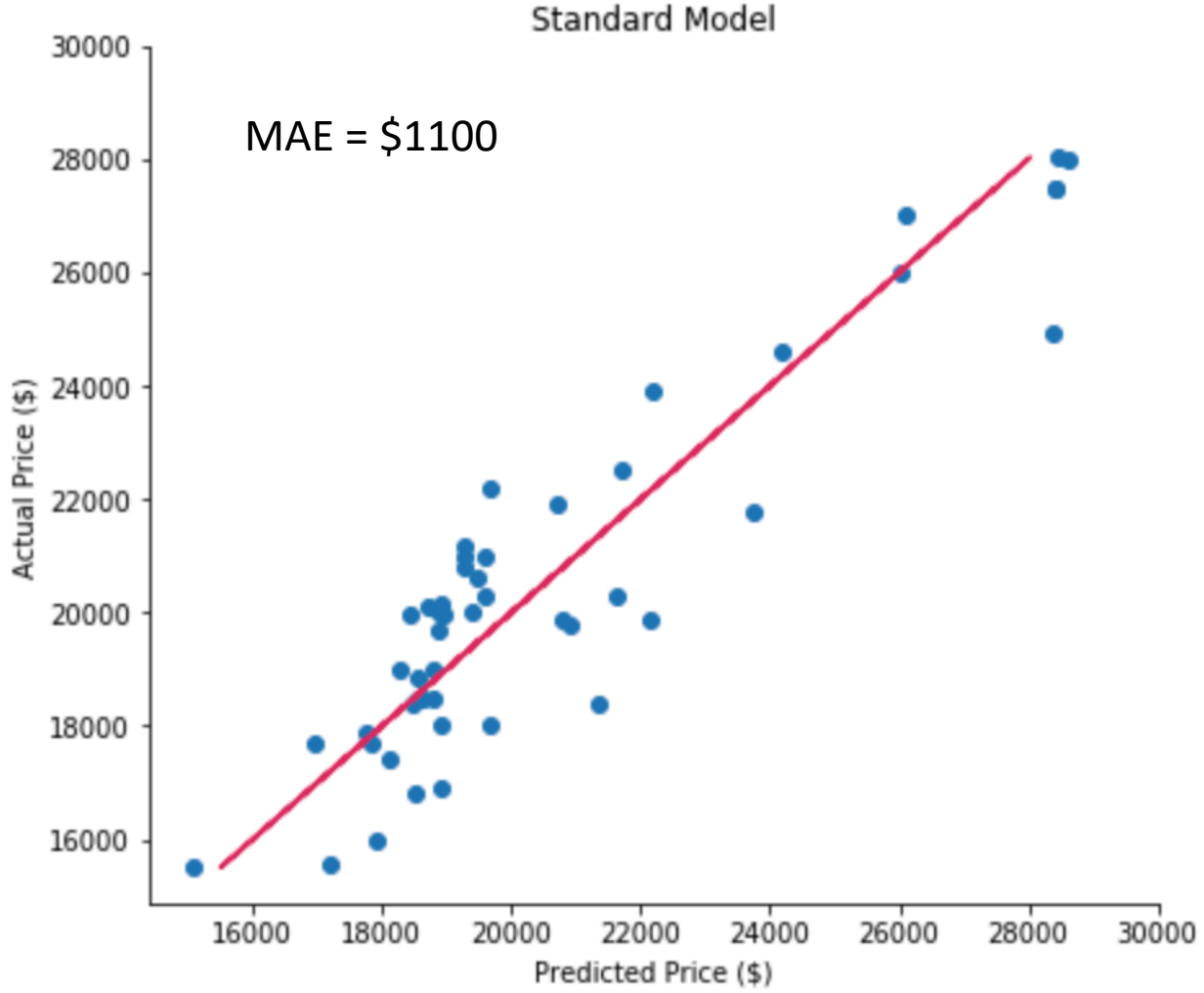
	Standard	Technology Package
Inline-4 FWD	**$33,995**	**$36,700**

Methodology

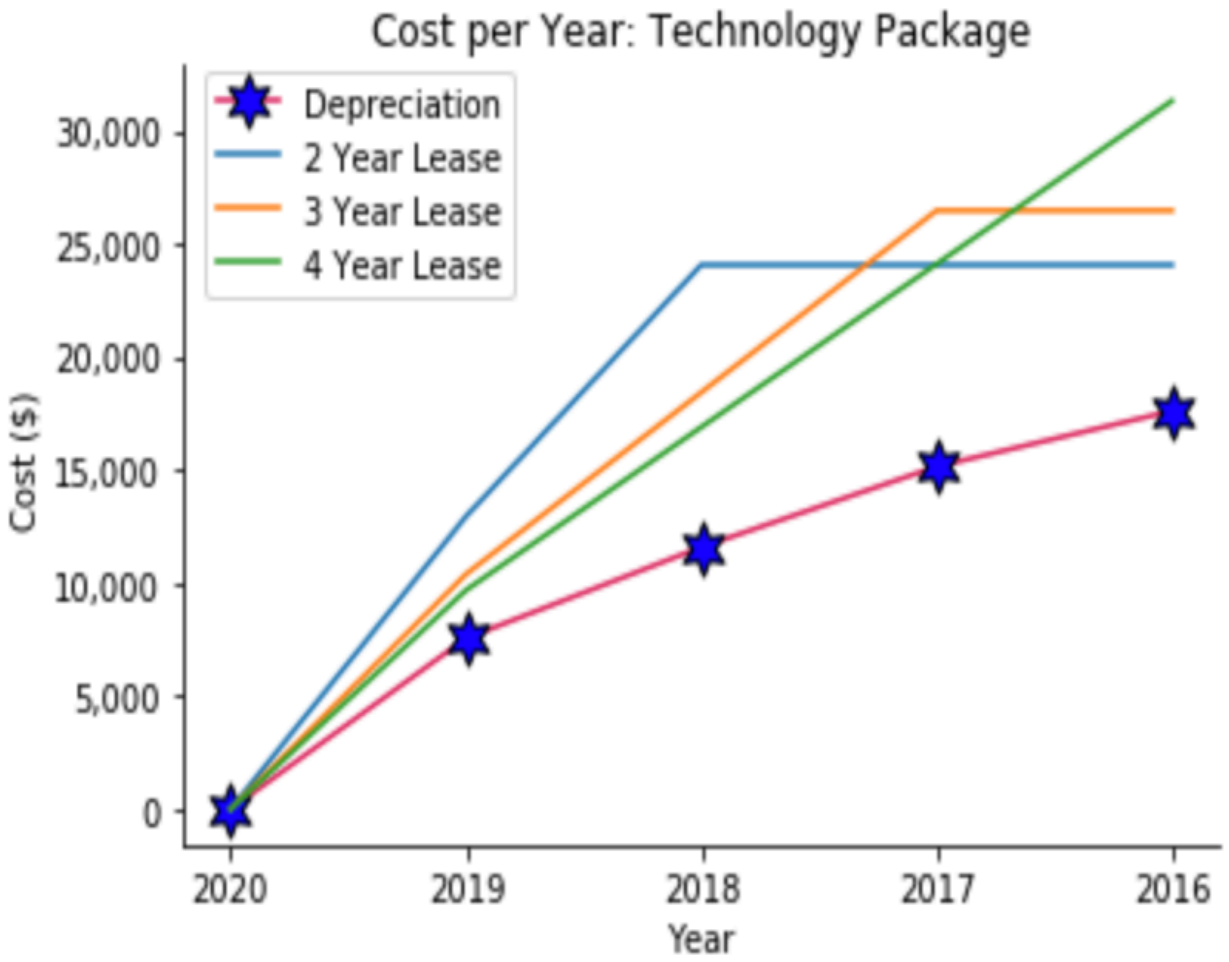
- Webscraped data from online car marketplaces
- Quotes on 2-4 year car leases from Acura dealership
- Used Mean Absolute Error (MAE) to determine performance of models
- Pandas, Selenium, Sklearn, Matplotlib

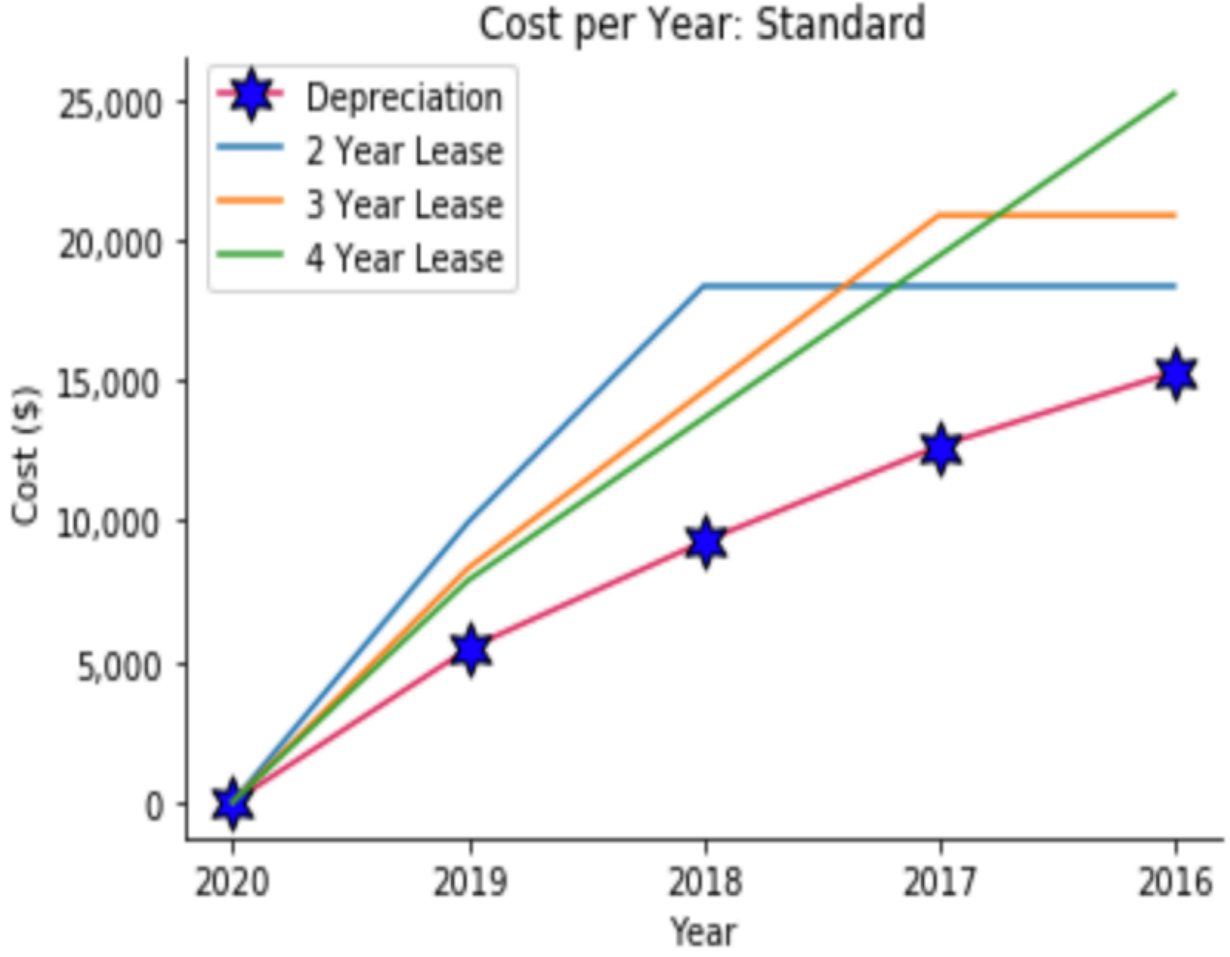
Results: Models





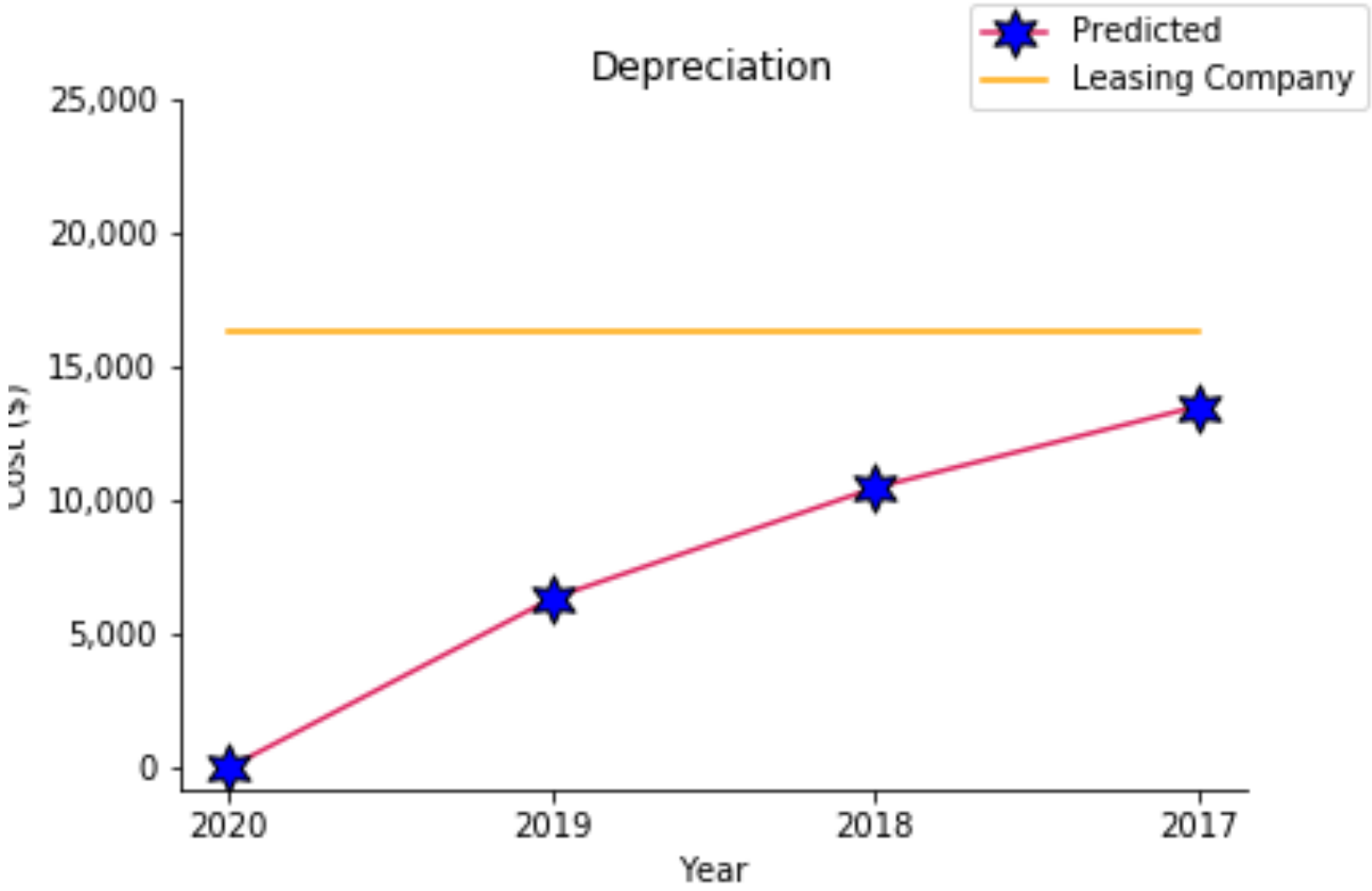
Results: Costs





Results: Residual Price

Results: Costs



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 todays

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.