BENCHMARKS: A Citizen's Scorecard on Judicial Accountability in Massachusetts

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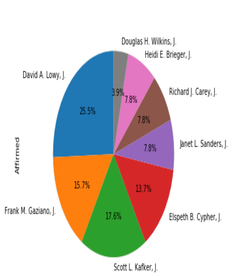
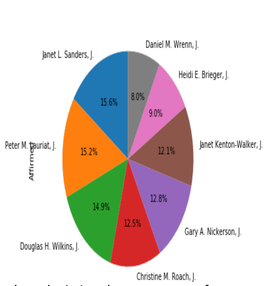
Introduction

The project for this semester was to build upon previous work on analysis of appealed cases in Massachusetts. We have examined and analyzed hundreds of cases ranging from both criminal and civil, with higher emphasis on civil cases. We've then performed insightful analysis on cases per-judge in order to determine qualities and attributes of each judge based on their reversal rate. We have also performed machine learning in order to possibly predict appeal verdict with some insightful information being obtained.

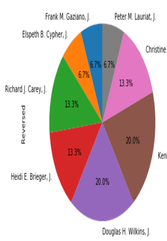
Pie-chart depicting the percentage of cases affirmed by certain judges during the period of 2018 - 2019



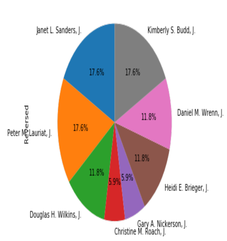
Pie-chart depicting the percentage of cases affirmed by certain judges during the period of 2008 - 2018



Pie-chart depicting the percentage of cases reversed by certain judges during the period of 2018 - 2019



Pie-chart depicting the percentage of cases reversed by certain judges during the period of 2008 - 2018



Pie charts depicting percentages of cases reversed for specific judges

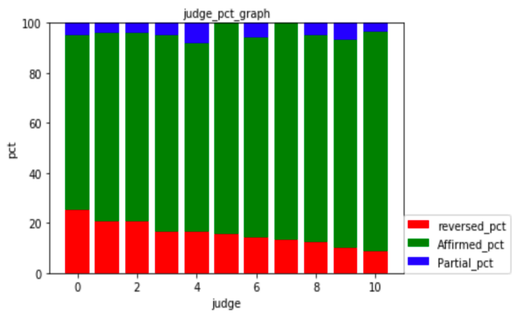
We considered extracting the cases from two websites namely, **masscases.com** & **ma-appellatecourts.org** From these reports we were able to determine the number of cases appealed each year and find the reversal numbers.

Analysis

We examined individual case summary scrapped from the **Massachusetts Appellate Court Website**. The main component of our analysis composes of data-frames generated by the web-scraping of the respective pages. We have utilized this data to generate pie-charts and histograms for visualizing the rate of reversals of judges.

	pct_reversed%	pct_affirmed%	pct_partial%	Total
Virginia M. Ward, J.	25.00	70.00	5.00	20.0
Elizabeth M. Fahey, J.	20.83	75.00	4.17	48.0
Timothy F. Sullivan, J.	20.83	75.00	4.17	24.0
Linda E. Giles, J.	16.67	78.33	5.00	60.0
Robert J. Kane, J.	16.67	75.00	8.33	36.0
Garry V. Inge, J.	15.62	84.38	0.00	32.0
John C. Cratsley, J.	14.00	80.00	6.00	50.0
Robert C. Cosgrove, J.	13.16	86.84	0.00	38.0
Robert A. Cornetta, J.	12.50	82.81	4.69	64.0
Christopher J. Muse, J.	10.00	83.33	6.67	60.0
Geraldine S. Hines, J.	8.77	87.72	3.51	57.0

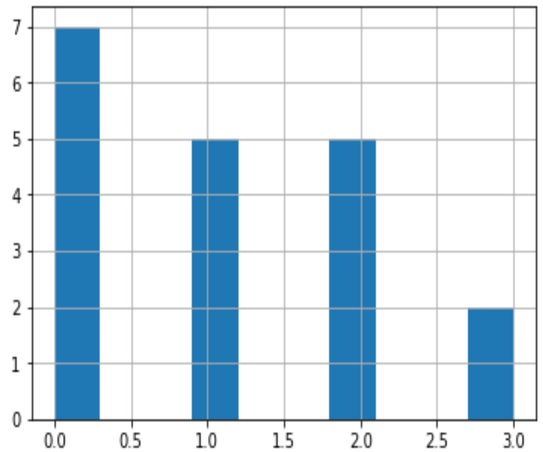
Dataframe of judges with the most reversals



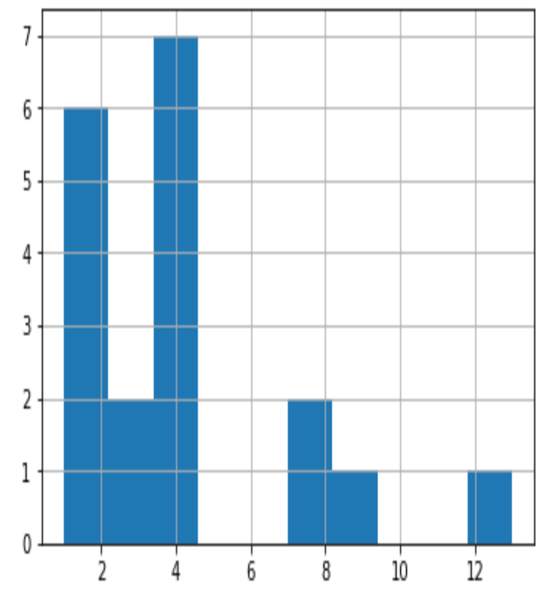
Judge Virginia M. Ward, J. is represented by number 0.
Judge Elizabeth M. Fahey, J. is represented by number 1.
Judge Timothy F. Sullivan, J. is represented by number 2.
Judge Linda E. Giles, J. is represented by number 3.
Judge Robert J. Kane, J. is represented by number 4.
Judge Garry V. Inge, J. is represented by number 5.
Judge John C. Cratsley, J. is represented by number 6.
Judge Robert C. Cosgrove, J. is represented by number 7.
Judge Robert A. Cornetta, J. is represented by number 8.
Judge Christopher J. Muse, J. is represented by number 9.
Judge Geraldine S. Hines, J. is represented by number 10.

Exploratory Analysis

For a more in-depth exploratory analysis, we have constructed histograms for each category of decisions/judgments (Affirm, Reverse and Partially). The corresponding visualizations are below.



Histogram for Reversed Cases (2018-2019)



Histogram for Affirmed Cases (2018-2019)

Conclusions

As part of the analysis, we were able to generate decision reversal percentages of certain judges. However, this rate of reversal can vary significantly as we analyze data that is relevant during the period of the 1990s. The previous team was successful to an extent in discovering the similarity conditions between different criminal cases. In our work, where we have done most of the work on civil cases, there have been no clear cut associations that can identify similarities in judgments relating to the cases.

We have applied data mining and machine learning algorithms for predicting the judgments based on the data we have. As mentioned before, due to the lack of large-scale data, it is not advisable to use these algorithms on new cases. Due to the small-scale training data, the algorithm might give erroneous results when tested on new data.

Future Steps

To get better analysis and results, several things need to be focussed on. First of all, more data would be required because machine learning and statistical models require a lot of data to provide generally applicable results. This would require the use of advanced scraping techniques since the court websites we used have high security. Secondly, legal expertise would be required on understanding. For this, a large amount of data is required for training algorithmic models. It would also be helpful if we get access to unpublished opinions. Court judgments and related information are sensitive and hence, it is difficult to scrape data. Usage of VPN is needed for speedy retrieval.

Acknowledgements

We would like to thank Maggie Mulvihill, Lance Galletti and John Merfeld for mentoring this Spark! Project.