A summary of:

Modeling U.S. State-Level Policies by Extracting Winners and Losers from Legislative Texts

A paper written by Maryam Davoodi, Eric Waltenburg, Dan Goldwasser in association with Purdue University.

The paper is directed at the issue of identifying not the success of various bills in passing through the legislative process based on the text included, but rather on identifying who benefits from proposed legislation despite obfuscation within the text. Politicians are often provided with 'fill in the blank' bills that contain a wish list of policies from special interests, and are worded in a way intended to hide the distribution of their impacts on the larger populace. When combined with the sheer volume of bills across all state legislatures, which amount to 120 thousand bills per year, making a wide understanding without AI help difficult.

Prior work in the area of stakeholder impact analysis for legislation utilized more 'traditional techniques', or individual state policies. Davoodi indeed has previous work in this area, however this project is wider in scope and seeks to find insights in complete trends across the country in state legislation.

The novel method of achieving this goal of identifying winning and losing stakeholders in the data is as much a function of constructing an annotated dataset as it is the actual NLP model training. The paper establishes a pipeline where bills can have their stakeholders selected by crowdsourced volunteers. The paper does acknowledge however that there is a potential issue in this step of the process as it relies on the labeler being able to identify the stakeholders accurately. In order to construct this dataset, human assistance was hired via Amazon's

mechanical Turk for 4k various bills. Turks were vetted via the use of a political science test to verify that they had some understanding of the subject matter, however there was not always consensus between the hired Turks on who the stakeholders were for each bill.

With the dataset assembled, a number of existing models were used. One of which was the RoBERTa model. The method was to feed the labeled text into RoBERTa along with the information about who sponsored the bill in an additional vector, and this would generate predictions that are combined with predictions from Davoodi's prior work on a role-call prediction model to generate an output with roughly 70 f1 score.

The authors evaluated their work by splitting their annotated training set into a training and a testing set, and utilizing the standard methods of measuring accuracy along with qualitative analysis of the various graphics that were produced by the output.

The authors believed their work to be effective for cursory inspection of the relevant parties addressed by the text of a bill. For my opinion, I think their process is flawed and subjective. The issue comes in their training set creation, as those who 'gain' and 'lose' from a law is often a question that is political in nature not only to the writer of the bill but also the reader, whose interpretation will change based on their alignment. According to the metrics of their training set, they did a good job, however their process for vetting M-Turks for the job of annotation was a political science test, which means the 'correct' answers to the test depended on the theories of political science subscribed to by the grader, limiting the effectiveness of the tool they produced to identifying stakeholder benefits specifically from their view, which I suppose can be considered a qualified success.

According to google scholar, this paper has generated one citation. To be honest, I do not believe the work of this paper to be particularly important. While the goal is admirable, I believe the attainability of it to be beyond the current methods available as the task of identifying who all gains and loses from a piece of legislation can be so complex and nuanced as to be beyond the ability of experts to create a verifiably correct annotated data set. Primary author Davoodi is a student with a total of 24 citations, and sponsor Dan Goldwasser has a total of 2545 citations with a primary focus on identifying political alignment from media discourse.

Works Cited

Maryam Davoodi, Eric Waltenburg, and Dan Goldwasser. 2022. Modeling U.S. State-Level Policies by Extracting Winners and Losers from Legislative Texts. In Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers), pages 270–284, Dublin, Ireland. Association for Computational Linguistics.