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## Is the CBC a Neutral Voice in Canadian Politics?

Application of ChatGPT to Bias Detection.

### Trust in the News Media in Canada

Research has shown a steady decline in the level of trust in the news media in the past few years in Canada. According to the [2022 Reuters Digital News Report](#), the proportion of Canadians who believe the news media are independent of political/government influence was down 10% since 2017. This is particularly striking within the Canadian landscape where the largest media entity is the government funded Canadian Broadcasting Corporation. As a government funded institution, the CBC is under particular scrutiny by the public to remain neutral in its news coverage and be completely devoid of political influence from all levels of the Canadian government. This decline of trust in the news media may signal changing perceptual biases of the public, or a genuine shift in the level of political capture of the news media, or a combination of both. Either way, this is not good news for legacy media.

This paper offers an examination of political bias in news reporting of the Canadian Broadcasting Corporation. The CBC was selected for this analysis due to its importance in the Canadian news sphere, and the expectation of Canadians for it to remain uninfluenced by the government that funds it. The research herein focuses solely on text news articles published online by the CBC. Analysis of bias are applied using the newly released ChatGPT, a chat generative AI model from OpenAI.

## Data Gathering Process

All data used in this analysis is collected from articles under the `cbc.ca/news` page path. Gathering a list of web-links to articles published under the path between a time range is accomplished using the Google RSS News Feed tool at `https://news.google.com/rss/search`. This allows for query parameters which specify search terms, publication dates, and the URL sub paths. Specifying a search term will return articles which contain that term. For this analysis, we used current leaders of the three major political parties in Canada as the search terms. Specifically, they are Justin Trudeau (Liberal Party leader and current Prime Minister), Pierre Poilievre (Conservative Party leader) and Jagmeet Singh (New Democratic Party leader). Names of the political party leaders are used since they are easy to search for (returning reliable results) and they are good proxies for the parties and political ideology. In addition, only articles published between 01-January-2022 and 14-January-2023 are used.

```
https://news.google.com/rss/search?q="Justin Trudeau"+inurl:cbc.ca/news+after:01-Jan-2022+before:31-Jan-2022
```

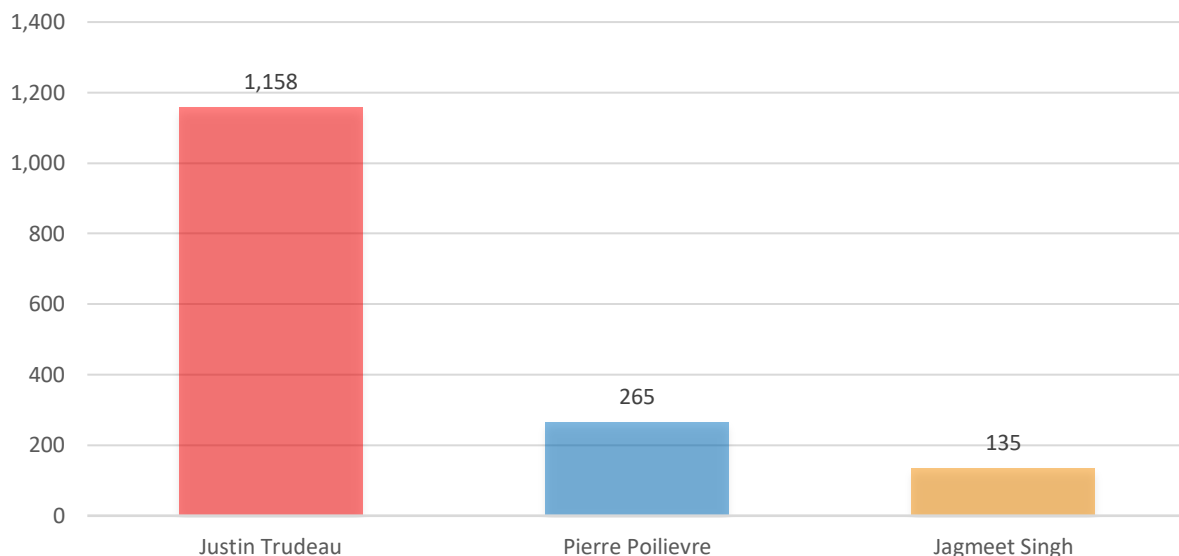
An example Google RSS New Feed query for articles published on `cbc.ca/new` during the month of January 2022 which mention Justin Trudeau within the article text.

After the links to the articles are collected, the entire text of the article is scrapped from page. An excerpt is extracted around the query term (name of the political leader), taking 50 words on either side of the term to gather the context. This is done to comply with the 400 token limit of ChatGPT as well as to not include superfluous text. These excerpts are the text blocks analysed for bias in this paper.

## Summary of the Data

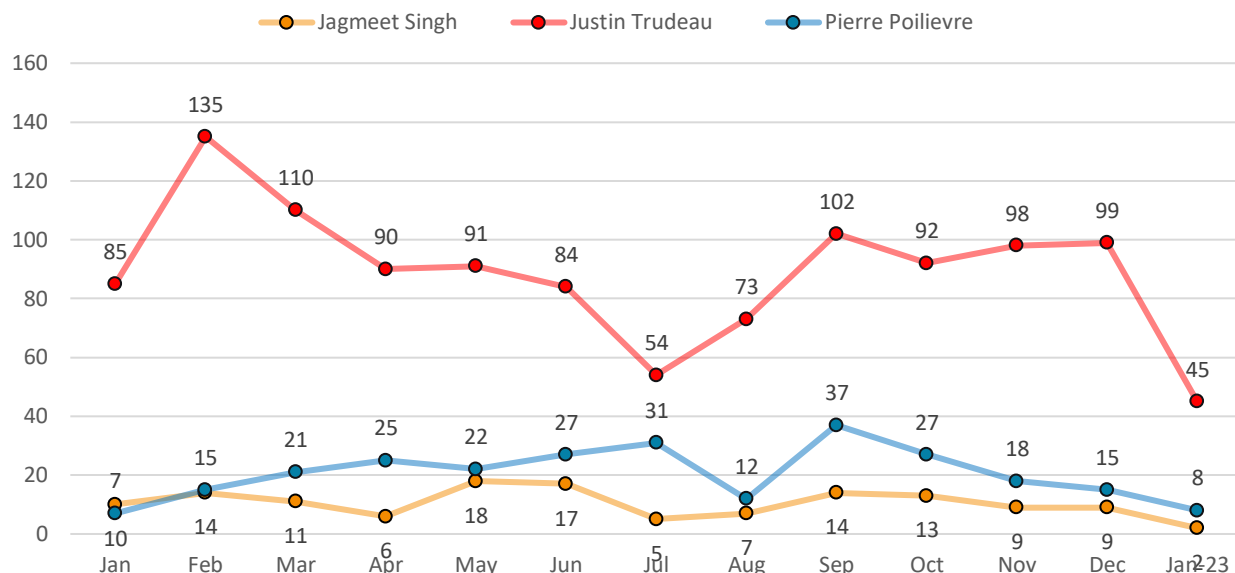
In total, 1,224 articles were collected and with 1,558 excerpts extracted from these articles. About 75% of the excerpts refer to Justin Trudeau, 17% to Pierre Poilievre and 8% to Jagmeet Singh. The skewness of the data is expected due to the positions and prominence of these three leaders over the period.

### Total Articles Mentioning Party Leaders



Below is a plot of total article mentions per month which fluctuate in magnitude with news events. As an example, February 2022 saw a spike in the number of times Justin Trudeau was mentioned by the CBC as this was the time when Ottawa saw major protests and the Emergencies Act was invoked. Similarly, there was a spike in the number of mentions of Pierre Poilievre in September 2022 when he was elected leader of the Conservative party.

## Monthly Articles Mentioning Party Leaders



As will be shown in the analysis, the dataset collected contains enough data over a long-enough period to be able to make statistically significant conclusions at the 99% confidence level. All the data is available at <https://github.com/avukadin/biasAnalysisWithChatGPT>.

## Application of ChatGPT

This paper looks to assess a single form of news bias: *selectivity bias*, when stories are selected or ignored, sometimes on ideological grounds. To evaluate the level of selectivity bias, ChatGPT is asked the question “Does this news show <Name> in a positive, negative or neutral way?”. The answers are then aggregated by leader to determine whether there is a statistically significant difference between the number of positive or negative news stories written about each leader. This question is presented with the context of the news excerpt included, for example, a full prompt to the ChatGPT API may look like the below.

Does this news show Jagmeet Singh in a positive, negative or neutral way? Answer in a single word.

### NEWS SNIPPET:

government. It's important for political leaders to recognize when a line has been crossed. But such moments are starting to become regular occurrences. Two years ago, a man drove through the barricades at Rideau Hall . Last fall, someone threw gravel at the prime minister. In May, NDP Leader Jagmeet Singh was harassed while campaigning in Peterborough, Ontario. In July, a restaurant in Prince Edward Island was targeted for online harassment after Prime Minister Justin Trudeau stopped to have lunch there. So in addition to condemning harassment and renewing the conversation about the personal security of politicians, voters and

ANSWER:

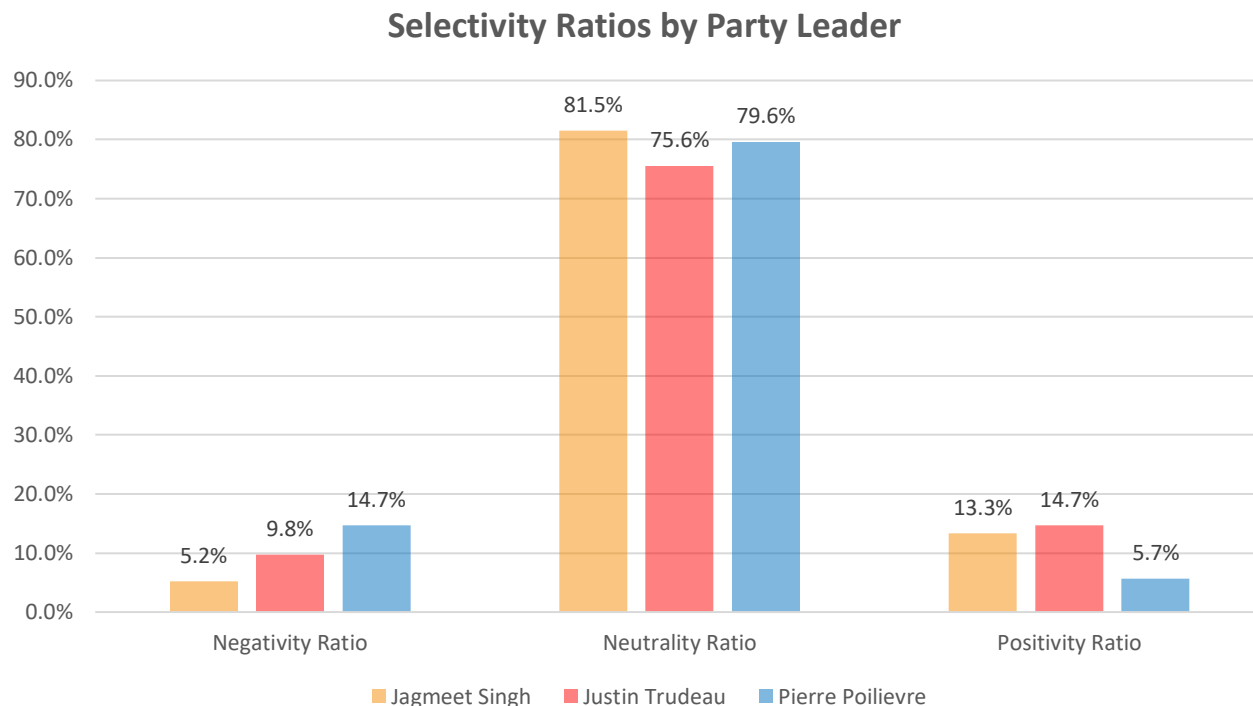
The answer is limited to a single token by appending the prompt “Answer in a single word”. This encourages an output of either “Positive”, “Negative” or “Neutral”, which makes the response easier to process,

## Analysis and Results

This paper uses a simple method of aggregating ChatGPT responses across articles. The ratio of “Positive”, “Negative” and “Neutral” news excerpts for each leader are taken, for example:

$$\text{positivity\_ratio}_{\text{Justin\_Trudeau}} = \frac{\text{Total \# of "Positive" excerpts for Justin Trudeau}}{\text{Total \# of excerpts mentioning Justin Trudeau}} \times 100\%$$

These ratios are referred to as “Selectivity Ratios” in the rest of the paper. Below is a plot of the “Selectivity Ratios” for each classification and party leader.



The total percentage of articles classified as “Negative”, “Neutral” or “Positive” by ChatGPT for articles published between 01-Jan-2022 and 14-Jan-2023. The question asked in this case is “Does this news show <Name> in a positive, negative or neutral way?”.

First, note that most articles excerpts are classified as “Neutral”. Second, results indicate the ratio of story excerpts classified as “Negative” is highest for Pierre Poilievre. In other words, about 15% of the time, when Pierre Poilievre is mentioned in a CBC news article, it is within context which reflects negatively on the leader. Contrast this with Jagmeet Singh, who has about 5.2% of mentions being classified as “Negative”. Third, “Positive” mentions favor Justin Trudeau at 14.7%, while Pierre Poilievre has the lowest ratio of 5.7%. Below are the three statements which can be made using a 99% confidence interval of the difference in the “Selectivity Ratios” between leaders from the ChatGPT results.

- 1) Compared to Justin Trudeau, Jagmeet Singh has 4.3% to 4.8% less negative, and 1.3% to 1.7% more positive mentions.
- 2) Compared to Pierre Poilievre, Jagmeet Singh has 9.0% to 10.1% less negative, and 7.3% to 8.2% more positive mentions.
- 3) Compared to Pierre Poilievre, Justin Trudeau has 4.7% to 5.2% less negative, and 8.8% to 9.2% more positive mentions.

Note that the confidence intervals do not contain zero. This indicates that our estimates of the population means (the ratios) are statistically different and that the direction of the bias is also statistically significant with high confidence.

## Drawbacks of this Study

It is important to note that bias in AI models has long been known to exist, and no doubt does in ChatGPT in various forms. This study does not adjust for any bias inherent in ChatGP therefore, this may be a confounding variable in the analysis. At the end of the day, we are asking ChatGPT for its opinion, which may be a biased one in this context. For this reason, the full data is made available at XXX to provide further clarity on results and allow investigation by the reader if desired. From our investigations into the individual datapoints, we believe a neutral observer could agree that the majority ChatGPT's assessments are plausible. Another drawback is that it may be the case that for example, Justin Trudeau does more positive things with his time compared to the other leaders. Therefore, Trudeau would naturally have a higher percentage of stories written about him which would be deemed positive by ChatGPT. We leave the plausibility of this to the reader. Lastly, other forms of bias are not considered. For example, this analysis does not include any data on the prominence/accessibility of these articles on the CBC website.

## Conclusions

The results indicate that the CBC may have selectivity bias with respect to writing and omitting stories on the three Canadian political leaders. The organization tends to publish a smaller percentage of positive stories on the Conservative leader Pierre Poilievre, compared to his colleagues in the other parties. This also holds for negative stories as well, with Jagmeet Singh holding the smallest percentage of mentions with a negative tone, and Pierre Poilievre having the largest. The direction of the bias between all pairs of party leaders is significant with a 99% confidence as shown in the analysis. The magnitude of these differences is also significant, as a proportion, Pierre Poilievre has about 3x more negative article mentions as compared to NDP leader Jagmeet Singh, and about 2.5x times fewer positive mentions as compared to Liberal leader Justin Trudeau.