Social Media Use and Polarization In Ontario: 2018 Case Study

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1 Introduction

In the following we use the 2018 Ontario Provincial Election Study to examine the extent to which digital and social media consumption is implicated in any perceivable level of polarization - affective or policy-based - in Ontario. We deploy several measures of each and find that overall there is limited evidence that social media usage or digital media consumption is implicated as such. Instead, following Dubois & Blank (2018), we find that political interest is a much more powerful predictor of polarization and in fact partially interacts with social media usage to reduce polarization. First, we survey the literature on polarization and its relationship with different types of polarization. Second, we describe the conditions of the Ontario 2018 provincial election and explain why we might be expected to see high levels of polarization at all in that election campaign. Third, we describe the Ontario Provincial Election Survey and various measures of polarization. We conclude with our results and discussion.

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2 Digital Media Consumption And Political Polarization

2.1 What is Polarization

It is a truism that political life is polarized, but it is surprisingly difficult to measure this phenomenon. Some American scholars argue that ideological, or policy polarization, has been increasing for both political elites and the electorate more broadly (Abramowitz & Saunders, 2008). Another group argues that partisan sorting has led parties to become more ideologically homogeneous, while party elites have become more polarized, which leads to the perception that the electorate is becoming more polarized (Fiorina et al., 2011; Mason, 2015). Finally, a third group argues that despite holding similar policy views, they simply increasingly dislike and distrust people who support a different political party (Iyengar et al., 2019; Mason, 2018a). These different understandings of political polarization have led studies on polarization to differentiate between what is called called issues based polarization (Mason, 2018a) and affective identity based polarization (Mason, 2018b).

Beyond competing conceptualizations of measures, it is not clear how much of this phenomonen applies in the Canadian context. There is clear evidence that the elite in the United States is ideologically polarized and that these ideological divisions have important consequences for American politics. However, there have been far fewer studies examining elite polarization in Canada. Cochrane (2015) has shown that the rise of the Reform Party and the Canadian Alliance on the right helped to transform the Canadian party system dominated by bland, a-ideological, brokerage parties into one organized more coherently on a left-right continuum. However, despite the rise of elite ideological polarization in Canada partisan consensus can still emerge during times of crisis such as the COVID-19 pandemic, while the United States was marked by more partisan conflict over these issues (Gadarian et al., 2021; Merkley et al., 2020). Evidence of ideological polarization in the mass public is even less clear in both Canada and the United States. One the one hand, one of the bedrock foundations of public

opinion literature is that people tend to not have constrained ideological belief systems, or stable attitudes (Converse, 1964). However, some say that this is changing, with the number of voters adhering to clear ideological systems or bundles of policyies that "hang together" increasing dramatically Dalton (2021). Mass ideological polarization generally refers to one of two ideas. First, that supporters of opposing parties or camps have distinct political beliefs, which is also referred to as policy polarization. Studies have provided evidence that Americans are increasingly divided on various emotionally charged issues including abortion, gay marriage and religion. **SOURCE** Second, that partisans are increasingly supportive of left or right-wing ideology and place themselves on the left or right of the political spectrum. These competing definitions of ideological polarization have led to different conclusions on the scale of ideological polarization in the United States and other advanced industrialized democracies.

There is mixed evidence about the nature of ideological and policy-based polarization in Canada. One of the policy issues over which Canadians are the most polarized is climate change, with supporters of the Conservative Party of Canada being less likely to believe in the existence of climate change in 2012 (Lachapelle et al., 2012). However, Merkley finds virtually no systematic evidence that Canadians' attitudes are becoming more bimodal, drifting to ideological extremes (Merkley, 2022). That said, it does appear that Canadians are sorting themselves into more consistent groups and more correctly aligning themselves with ideological parties (Kevins & Soroka, 2018). However, other studies have shown that policy polarization and partisan sorting only exists in certain regions of Canada. For example, McLay & Ramos (2021) found that Atlantic Canada is not experiencing the same levels of ideological polarization as the rest of Canada. Overall, there is some evidence that Canadians are becoming more ideologically polarized, particularly through increased sorting. However, this ideological polarization is not to the same extent as in the United States.

However, beyond this issue of increased ideological sorting, there is also a evidence that Americans simply increasingly dislike each partisans of the other party. While the evidence about

policy-based polarization in the mass public is fairly mixed, evidence for increasing affective polarization seems to be cleaerer (Iyengar et al., 2019). Worse, it is perhaps of greater threat to the viability of liberal democratic competition which requires that partisan competitors for power acknowledge that the other party, even if they are wildly misguided in the eyes of in-partisans, are at least legitimate participants in the system (Rosenblum, 2010). However, it has been less studied in the Canadian context. Most studies that examine affective polarization in Canada include Canada as one of many cases when examining American polarization in a comparative perspective (Boxell et al., 2024; Garzia et al., 2023; Gidron et al., 2020). Using different measures these studies had conflicting results regarding levels of affective polarization in Canada. Using the Canadian Election Study (CES) and a measure of affective polarization developed by Reiljan (2020), Garzia et al. (2023) find that levels of affective polarization have been increasing in Canada but have not reached levels seen in the U.S. In contrast, Gidron et al. (2020) found that levels of affective polarization have actually decreased in Canada since 1995. This study used the Comparative Study of Electoral Systems (CSES) and measured level of affective polarization as the difference between an individual's rating of their in-party and their average rating of all out-parties. Finally, Boxell et al. (2024) use the CES and their own novel measure of affective polarization similar to that developed by Reiljan (2020). This study also found that levels of affective polarization have been increasing moderately in Canada. Lastly, Johnston (2023) uses the standard deviations of feeling thermometers to conclude that feelings towards all of Canada's political parties have become more dispersed, that is to say, polarized, since 1965, with feelings towards the Liberal and Conservative Parties being the most polarized. Other Canadian studies have found that levels of affective polarization have been increasing in Canada since the 1990s **SOURCE**. Therefore, there is evidence that affective polarization is increasing in Canada, however the evidence is not as conclusive as in other countries such as the U.S.

It is often considered a forgone conclusion that the rise of digital and social media are implicated

in these phenomena. On the one hand, digital news media derive their income overwhelmingly from subscriptions, rather than advertising CHECK THIS. As a consequence, they tend to produce more ideologically tinted coverage CHECK THIS. On the other hand, social media platforms are said to facilitate or create "echo chambers" or "filter bubbles" where users only encounter ideas and policies that they already agree with (Terren & Borge, 2021). Since the internet is a high choice media environment individuals can either choose to be exposed to diverse information or select media that reinforce their pre-existing opinions (Dubois & Blank, 2018). On social media echo chambers occur because users shown ideologically agreeable materials as a result of these platforms' algorithms that show users content based on their past behaviour (Raynauld & Greenberg, 2014).

However, the empirical evidence supporting the existence of echo chambers on social media has been mixed. Most studies in the United States find that Republicans and Democrats have similar media diets, both online and offline SOURCE. Additionally, studies have found that there is some evidence that echo chambers exist on Twitter (now known as X) but not on Facebook. Notably, Terren et al. Terren & Borge (2021) found that studies that used digital trace evidence found more evidence of echo-chambers and polarization than studies that used self-reported data. For example, using Facebook trace evidence, Bakshy et al. (2015) find that most users have Facebook friends who belong to the other party and that individuals are exposed to cross cutting content. They also find that individual choices, not algorithms, are what determine if an individual engages with opposing viewpoints. Lastly, in the Canadian context, using self reported social media usage, Dubois & Blank (2018) find that the majority of social media users encounter information they disagree with, use multiple sources, and often attempt to confirm the information they are presented. It seems like the existence of echo chambers on the internet may be overstated.

Moreover, the evidence linking the presences of echo chambers to increased polarization is also unclear (Kubin & von Sikorski, 2021). Some studies find that increased social media usage

predicts increased polarization (Cho et al., 2018; Tucker et al., 2017). This relationship is also re-enforced by posting more on social media and sharing politically relevant content. However, other studies have found that social media usage has a small or no effect on polarization. Through a review of recent studies on the relationship between social media usage and polarization, Bavel et al. (2021) posit that although social media usage is unlikely to be the main driver of polarization it is often a key facilitator. Additionally, recent experimental evidence has found that individuals who de-activated their Facebook accounts became less polarized due to less exposure to polarizing political news and opinions (SOURCE). Other studies have demonstrated that the "echo chamber" aspect of social media is not what drives polarization. Instead, exposure to hyper-partisan messages from the *opposing* party leads to a significant increase in levels of affective polarization among Republicans but not Democrats SOURCE.

Lastly, using strictly observational data Boxell et al. (2017) observe that adults over 75 are becoming polarized at a faster rate than those under 40, while also being far less likely to use social media. Therefore, any account that links social media usage to increased polarization must also account for why individuals who do not use social media are becoming more polarized than social media users.

In contrast to the contested relationship between polarization and social media usage there is clearer evidence that increased online news consumption is linked to increased polarization. Early studies of online news media found that partisan online sources engage in greater partisan filtering of content than traditional news wires (Baum & Groeling, 2008). Additionally, studies have found that individuals who consume news online are often more polarized than those who only use offline "legacy" news sources (Fletcher et al., 2020). Garimella et al. (2021) find that both the structure of news sites and the behaviour of online news consumers contributes to users only consuming news that reinforces their ideological priors. Specifically, they find that the online news environment allows users actively seek out news sources that are ideologically aligned with their prior beliefs. Another potential explanation for the increased levels of

polarization among online news users is through the comment section. Asker & Dinas (2019) find that exposure to emotionally intense comments on online news articles increases levels of polarization. These findings suggest that even when users are exposed to heterogeneous online news sources their levels of polarization increase.

3 Ontario 2018 Summary

There are several reasons to think that the Ontario 2018 general election might feature some degrees of polarization. First, it was the fifth election since the Ontario Liberals were first elected in 2003. As with any government with such a long tenure, the government had endured the consequences of many decisions gone wrong. The provincial government's attempts to increase the role of renewable energy in the provincial electricity supply had lead to an increase in electricity rates (Ontario, 2011). In 2011, the government suddenly cancelled the construction of two natural gas electricity plants in electorally-sensitive districts, incurring hundreds of millions of dollars in penalties Auditor-General. (2013b); Auditor-General. (2013a). In 2012, it emerged that the provincial air transportation agency for patients had become embroiled in complicated contractual arrangements, incurring millions of dollars in liabilities Auditor-General. (2012). In 2015, a new provincial sex education curriculum was adopted, including some controversial material incurring the wrath of social conservatives .

Second, the two primary party leaders in the election campaign, Kathleen Wynne for the Liberals and Doug Ford for the Progressive Conservatives were individuals with traits and backgrounds that might incur distinct enmity from out-partisans. Wynne is a gay woman, contributing to some of the hostility by social conservatives.[1] On the other side of the campaign, the PCs were led by leader Doug Ford, a new entrant to provincial politics, but a veteran of Toronto municipal politics. He was the brother of former Toronto mayor Rob Ford who had

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[1]Rana and Perrella provide an excellent summary of the online campaign that targetted Liberal leader Kathleen Wynne (2021).

a tumultuous term of office featuring accusations of sexual assault, physical fights on the floor of city council, associations with purported gangsters and videotaped recordings of him consuming crack cocaine Doolittle (2014). All of this developed after having built a reputation as a populist politician whose profited from a reputation of being outside elite and regular circles of political participation. While Doug Ford lacked his brother's substance abuse and crudity, he very much represented the populist strain and railed against elites in politics as much as his brother did.

All this is to say that the Ontario 2018 election featured an incumbent government that had built up many reasons for voters to harbor strong feelings against it with two political party leaders with unique sets of traits and ideologies that meant that it was a campaign likely to feature a polarized electorate with voters holding strong opinions about out-partisans.

4 Data and Methods

4.1 The 2018 Ontario Post Election Study

The Laurier Institute for the Study of Public Opinion and Policy commissioned an online consumer sample of voters from SSI with quotas established to match the sample to the population on age, education and gender. It was fielded between the dates of May 28-June 07, 2018. The initial sample size was 2327. We removed 62 respondents who did not consent to the survey, and 562 respondents who straightlined on any of five batteries of questions.[2] We also removed 187 who did not respond to a question on social media usage, one of our key variables of interest. This left 1516 respondents.

As an initial validation strategy, we show the distribution of respondent vote intention over the whole period compared with the final vote results in (see Table 1). Although our sample

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[2] For each battery, the we measured the intra-rater variability using the `careless` package in R. Subsequently, ay respondent with an IRV of 0 on any of the four batteries was excluded from the study.

overreresented NDP voters (42% of those with a committed vote intention compared to 34% in the final election, this is not perhaps unreasonable. The NDP did in fact lead during a two-week period in the election campaign and 16% of the respondents in the OPES were undecided.

Table 1: Vote intention of all respondents.

Party	OPES	Election
Liberal Party of Ontario	12%	20%
Progressive Conservative Party of Ontario	24%	40%
New Democratic Party of Ontario	29%	34%
Green Party of Ontario	4%	5%
Undecided	13%	NA
NA	19%	NA

4.2 Independant Variables

In order to test the relationship between social media usage and affective polarization we created two main independent variables, `primary media` source and `social media usage`. The first variable measures what news sources respondents used to receive information about the 2018 Ontario election. The 2018 Ontario Election Study asked respondents "What is/are your primary source(s) of information about the 2018 Ontario provincial election?" and provided respondents with the options to select "Television," "Radio," "Print Newspaper," "Online Newspaper," "Other online news source," "Your Facebook Feed," "Your Twitter feed," "none," or "other". Those who responded that they **only** received news from Radio, Television, and/or print newspaper were coded as legacy media users. Respondents who **only** selected that they received news from online newspapers and/or other online news sources were coded as online media users. Individuals who who **only** selected that they received news about the

2018 Ontario election from their Facebook or Twitter feed were coded as Social media users. Finally, respondents who selected sources from multiple categories were coded as mixed media users.

Our other `social media` variable measures how often respondents use social media *in general* and does not explicitly capture respondent usage of social media for news about politics or the 2018 election campaign. Respondents who stated that used social media asked "How often do you use social media?" are could respondent with options from "several times a year" to "several times a day." We coded individuals who said they not use social media as "never" using social media, those who responded that they us use social media "several times a year" to "several times a month" as using social media "less than once a week", those who use social media and left the other categories as they were in the original variable. In some analyses, we reduced this variable further, grouping individuals who use social media once a month or less are coded as rarely using social media and those who use social media more than once a month are coded as using social media often.

Table 2 shows the distribution of respondents on these variables.

Table 2: Cross-tabulation of primary source of election news by frequency of general social media usage. Spearman's Rho correlation coefficient is 0.24

	Legacy	Mixed	Online	Social_Media	Total
Social_Use2					
Never	172 (31%)	112 (14%)	26 (19%)	0 (0%)	310 (20%)
Less than once a week	17 (3.1%)	20 (2.6%)	3 (2.2%)	0 (0%)	40 (2.6%)
About once a week	23 (4.1%)	24 (3.1%)	3 (2.2%)	0 (0%)	50 (3.3%)
Several times a week	50 (9.0%)	46 (5.9%)	7 (5.1%)	2 (4.3%)	105 (6.9%)
About once a day	116 (21%)	141 (18%)	31 (23%)	6 (13%)	294 (19%)

Table 2: Cross-tabulation of primary source of election news by frequency of general social media usage. Spearman's Rho correlation coefficient is 0.24

	Legacy	Mixed	Online	Social_Media	Total
Several times a day	177 (32%)	433 (56%)	66 (48%)	39 (83%)	715 (47%)
Unknown	0 (0%)	1 (0.1%)	1 (0.7%)	0 (0%)	2 (0.1%)
Total	555 (100%)	777 (100%)	137 (100%)	47 (100%)	1,516 (100%)

One immediate pattern that emerges is that respondents report general social media patterns that are very different from patterns of news consumption via social media. Only 3% respondents report using social media as their primary source of news about the election while 85% report using social media in general at least once a day.

4.3 Polarization Variables

4.3.1 Affective polarization

We measure affective polarization using two commonly using the measure developed by Wagner (2021) to measure affective polarization in multi-party democracies. It creates an individual affective polarization score for each respondent based on the *spread* of party-like scores for each of Ontario's four major political parties. Like scores for the parties are drawn from feelings thermometers that ask respondents to rate the parties on a scale from 0 to 5 (See the Supplemental Materials for full question wordings). Formally the Weighted Affective Polarization (WAP) equation measured spread is:

$$Spread_i = \sqrt{\sum_{p=1}^{P} v_p(like_{ip} - \overline{like_i})^2}$$

where v_p is the vote share of each party measured as proportion with a range of 0 to 1, and the mean affect scores weighted by party using the following equation:

$$\overline{like_i} = \sum_{p=1}^{P}(v_p * like_{ip})$$

The WAP scores are then used in OLS regression with the independent variables discussed above to determine understand the relationship between social media usage, political interest and affective polarization.

4.3.2 Policy polarization

In order to measure policy polarization we create ideological distributions based on 12 policy issues.[3] All the measures were re-coded so that 0 indicates the most left-wing position and 1 indicates the most right-wing position.

Measuring voters' polarization this measure, however, requires a different measure than for affective polarization because there are more than two parties. Following Lelkes (2016) we generate bimodality coefficients for respondents' policy attitudes for each category of our independent variables of interest. These are derived using the formula below.[4]

$$BC = \frac{s^2 + 1}{k + 3 * \frac{(n-1)^2}{(n-2)(n-3)}}$$

Here, s represents the skewedness of the distribution, k represents the distributions excess kurtosis, and n refers to the sample size. A BC of 0 indicates a unimodal distribution and a

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[3]Factor analysis revealed that these 11 items measure three distinct ideological constructs. However, for the sake of parsimony we only present a global measure of respondent policy polarization, summed from scores on all 11 items. CLARIFY IF WE RAN THE REGRESSIONS ON THE SEPARATE POLICY ITEMS.

[4]The BC is calculated using the `bimodality_coefficient` function from the `mousetrap` package in `R` (Wulff et al., 2023).

BC of 1 indicates a distribution is considered **completely** bimodal. A distribution is typically considered bimodal when $BC \geq 0.55$ (Pfister et al., 2013). To put these in context, Figure 1 shows theoretical distributions that are unimodal, somewhat bimodal, and completely bimodal. In order to measure the relationship between social media usage and ideological polarization using the BC we calculate the BC for the ideological distributions of individuals who primarily receive news from legacy media, online media sources, social media, and those who primarily use a mix of the three. Additionally, we compare the BC for those who use social media regularly and those who do not. We then compare the bimodality coefficients by primary media source and for those who use social media often and those who use social media rarely.
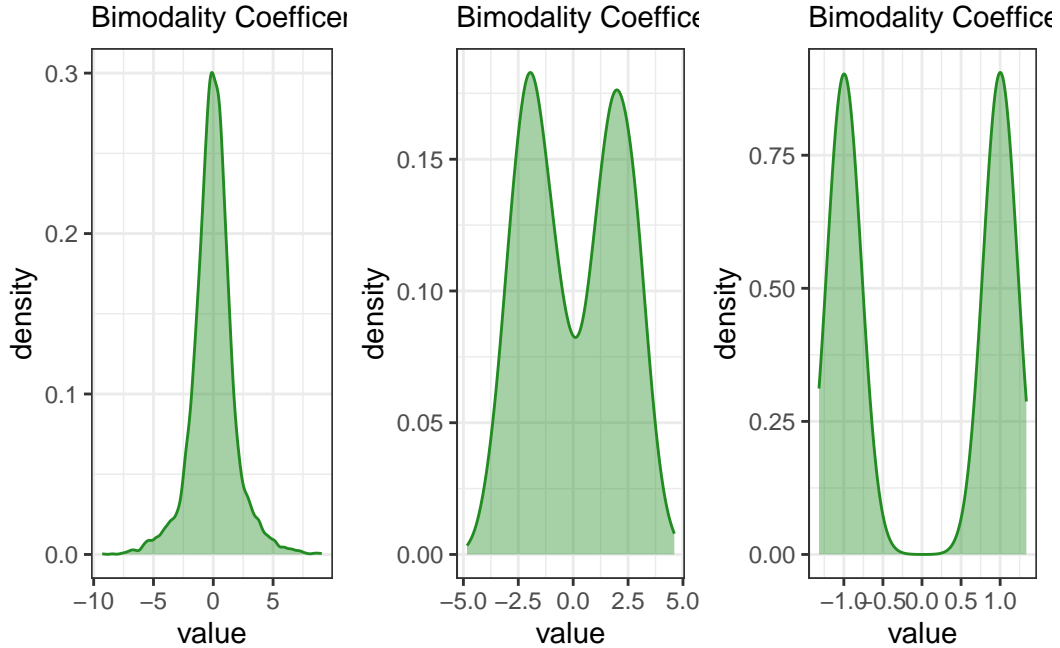

Figure 1: Theoretical distibutions representing various levels of bimodality

4.3.2.1 Distinctiveness Coefficent

As noted by Lelkes (2016) the bimodality coefficient can be used to examine polarization in the mass electorate but it cannot be used to examine the difference between two groups. Therefore another measure is needed to examine the overlap between two ideological distributions.

In addition, we also use the distinctiveness coefficient first used to measure levels of polarization which is typically referred to as the overlap coefficient (OVL) Levendusky & Pope (2011). This measure compares the overlap of the ideological distributions of two groups using the following formula:

$$OVL = \int_{-\infty}^{+\infty} |f(x) - g(x)| dx$$

where $f(x)$ is the probability density function (PDF) of one ideological distribution and $g(x)$ is the PDF of another (Pastore & Calcagnì, 2019).[5]

We compare the distributions of those who voted for the Liberal and NDP parties (left-leaning parties) to those who voted for the Conservative Party (right-leaning party) for those primarily receive news from legacy media, online media sources, social media, and those who primarily use a mix of the three and for those who use social media regularly and those who use social media rarely.

5 Results

5.1 Media Consumption and Affective Polarization

Table 3: Summary of weighted affective polarization by media use

Characteristic	N = 1,516
Primary_media	
Legacy	0.45 (0.10)
Mixed	0.46 (0.11)
Online	0.43 (0.10)
Social_Media	0.43 (0.11)
Social_Use2	

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[5]We calculate the the OVL using the `overlap` function from the `overlapping` package in R (Pastore et al., 2022).

Table 3: Summary of weighted affective polarization by media use

Characteristic	N = 1,516
Never	0.45 (0.10)
Less than once a week	0.45 (0.10)
About once a week	0.43 (0.12)
Several times a week	0.44 (0.10)
About once a day	0.45 (0.10)
Several times a day	0.46 (0.11)
Unknown	2
Vote	
Liberal	0.45 (0.09)
Conservative	0.49 (0.09)
NDP	0.47 (0.09)
Green	0.38 (0.11)
Unknown	377

First, we examine levels of affective polarization by `social media usage`, `primary media` source, and party affiliation. Table 3 displays the mean levels of affective polarization and standard deviations of the WAP scores for these groups. These results indicate that those who use social media several times a day have the highest WAP scores with those who use social media several times a week have the lowest WAP scores with a difference of 0.014 between the group with the highest and lowest scores. When examining vote choice in the 2018 Ontario election supporters of the Conservative Party had the highest WAP scores and supporters of the Green Party had the lowest levels of affective polarization. For vote choice there is 0.106 point difference between those with the highest average levels of affective polarization and those with the lowest levels. Finally, for primary media source those who only used legacy media or who had a mixed media diets to receive news about the 2018 Ontario election had the highest average affective polarization scores (0.45 and 0.46 respectively) and those who only used social media had the lowest average levels of affective polarization (0.43).

WE HAVE TO SAY SOMETHING ABOUT THE SCALE OF THIS MEASURE HERE.

However, Table 3 also shows a curious relationship between affective polarization and social media usage in that those who only used social media to receive news about the 2018 election had fairly low levels of affective polarization, however, those who reported using social media multiple times a day had one of highest levels of average affective polarization equal to those who only received news about the 2018 Ontario from legacy media sources. We investigate this further in the following sections.

This weak relationship is also evident in more complex models. Figure 2 visualizes coefficients from ordinary least squares (OLS) regression models with WAP scores as the dependent variable and social media usage as the independent variable. In all these models the dependent variable is standardized with a mean of 0 and a standard deviation of 1 and all the continuous independent variables are scaled from 0 to 1. Therefore, the coefficients represent the change in the dependent variable correlated with a full change in the independent variable.

First we estimate a model with only `primary media` as an independent variable. In this model respondents who received their news through social media or online platforms are very slightly less polarized than legacy media consumers, while respondents with a mixed media diet are slightly more polarized. We extend this with a series of models adding a additional control variables each time. We note two major findings. First, political interest is a much more significant predictor of affective polarization than media consuption is, with polarization increasing between 1 and 1.5 standard deviations from the least interested to the most interested respondent. Second, contrary to has been shown about polarization by age CHECK SOME OTHER SOURCES, here age is negatively related to polarization. We return to this below.

We then re-estimate the same models that we estimated above using social media usage as the primary independent variable (See Figure 3). In these models using social media more than never is not significantly correlated with levels of affective polarization.

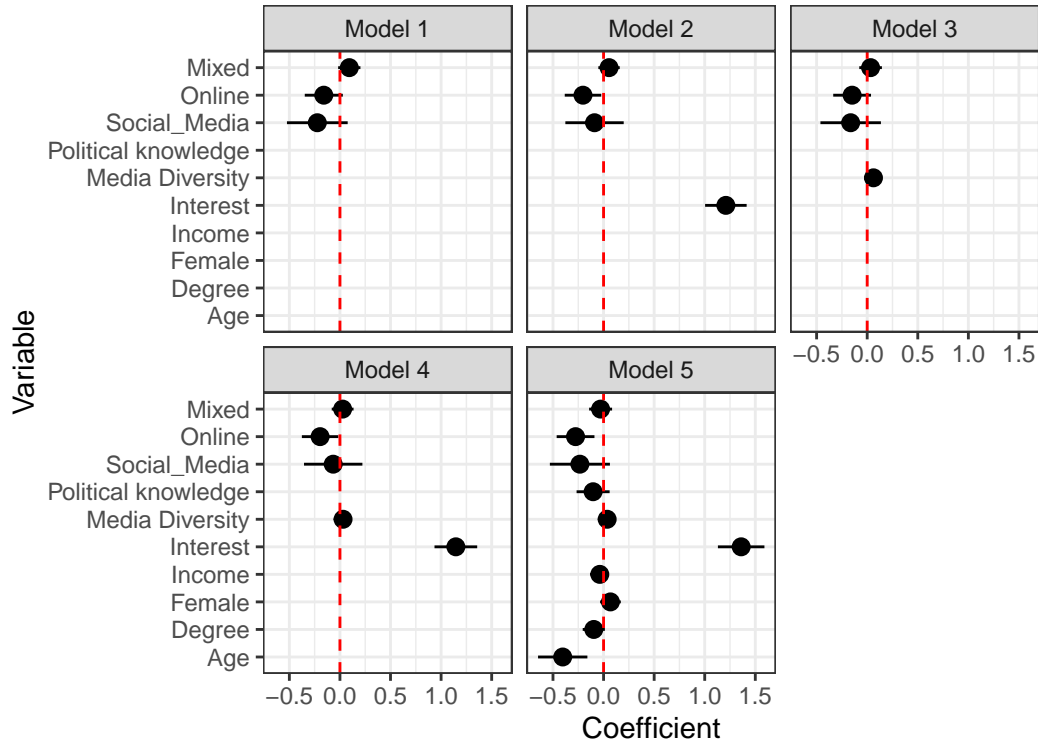When we compare polarization to social media usage in general, we find that interest in

Figure 2: OLS Regression Models for Weighted Affective Polarization Scores by Media Consumption of Campaign News and Control Variables

politics is a similarly strong predictor of polarization. However, we also find a small, albeit stable curvilinear relationship where polarization decreases for moderate users of social media vis-a-vis those who reported never using social media, but increases for the heaviest users.
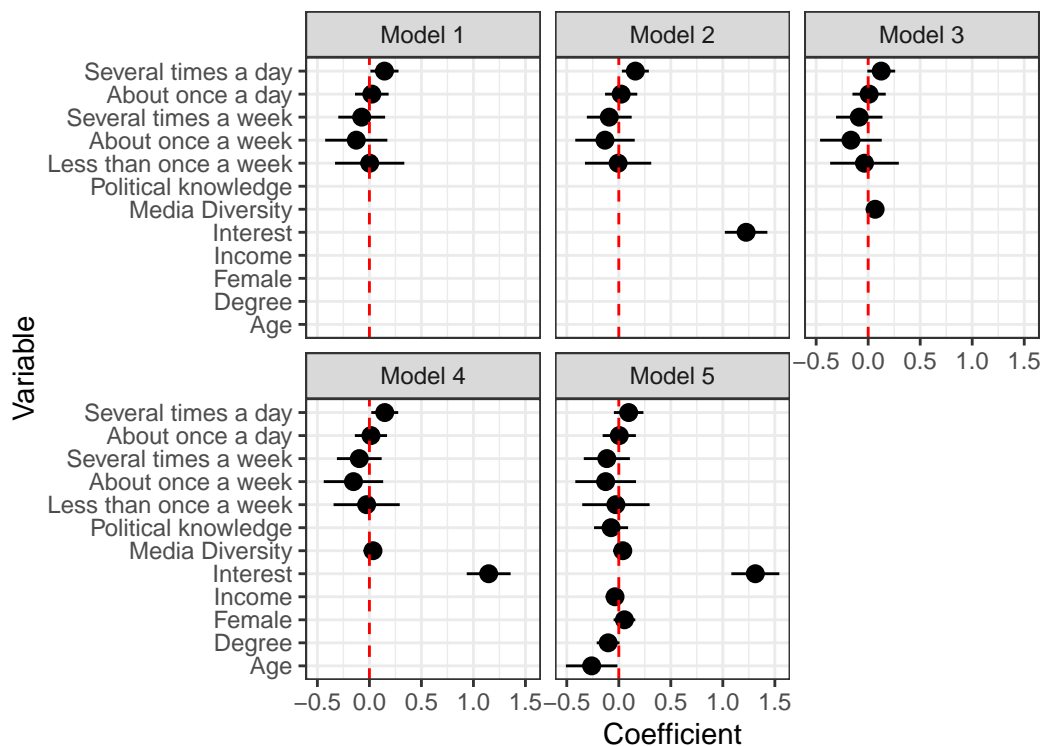

Figure 3: OLS regression models coefficients for weighted affective polarization scores by social media usage and control variables. "Never" using social media is the reference category for self-reported social media usage.

It is worth noting that the positive relationship between political interest and affective polarization is somewhat at odds with Dubois and Blank's Dubois & Blank (2018) that interest in politics moderates the likelihood of citizens being in an echo chamber. The standard story about polarization echo chambers and polarization, which is *not* what Dubois and Blank find, is that high levels of interest would lead to selective exposure to similar views and increased polarization. Our initial results about the relationship between political interest and polarization fit that story. However, it is not clear whether and how these *interact* with media consumption. In fact, we do find a significant *negative* interaction between political interest

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and social media usage that is more compatible with what Dubois and Blank find. Specifically, heavy users of social media in general who are interested in politics tend to have lower levels of polarization than people with similar levels of political interest but who never use social media at all. The full table is in the appendix and here, Figure 4 visualizes the effects.
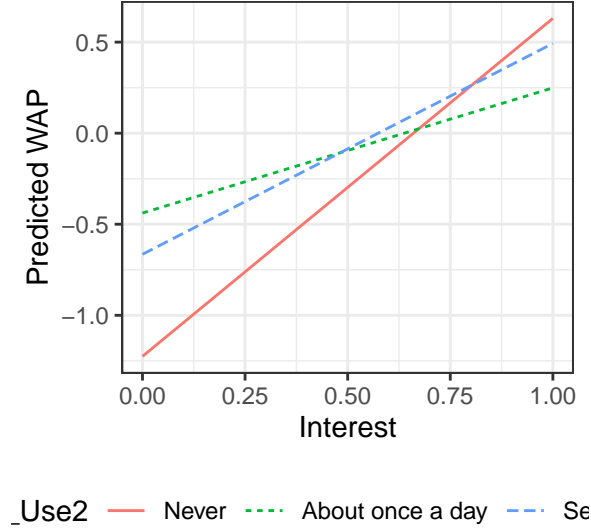

Figure 4: Predicted values of affective polarization by selected levels of social media use and interest in politics.

As a last analysis, we also investigate the negative relationship we have found between age and levels of polarization. Specifically, we fit a regression with age transformed into a polynomial term.

$$Y_i = \beta_0 + \beta_1 (Age)_i + \beta_2 (Age)_i^2 + \beta_3 (Interest)_i + \gamma \boldsymbol{M_i} + \varepsilon_i$$

Where Y_i is and individual's level of affective polarization and $\boldsymbol{\beta M}$ is matrix of coefficients for the primary media source variables. Figure 5 reports predicted levels of affective polarization for individuals aged 18 to 100 that received news about the 2018 Ontario election exclusively from legacy news sources, online news sources, social media news sources, and a mix of news sources. These results indicate that there is a non linear relationship between age and levels of affective polarization. Specifically, as individuals get older they become less affectively

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polarized until they reach 65 when they start becoming more affectively polarized. This partially reflects earlier findings by Boxell et al. in the United States that polarization is primarily a phenomenon of older voters (Boxell et al., 2017).
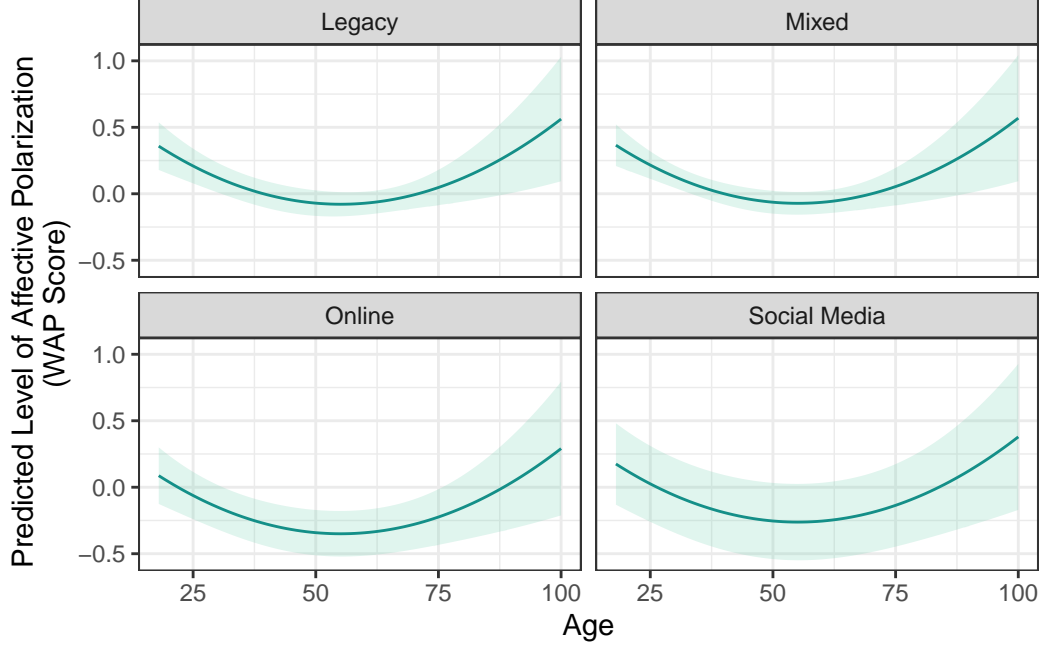

Figure 5: Predicted Levels of Affective Polarization by Age

5.2 Media Consumption and Policy Polarization

To investigate the relationship between media consumption and *policy polarization*, we first calculate the mean policy positions of individuals by primary media source, social media usage, and vote choice in the 2018 election. To reiterate, these run from 0 to 11, with 0 being left-wing and 11 being right-wing. The results are in Table 4 and show that those who report getting news about the provincial from legacy media exclusively are the most conservative (5.56) while those who report getting news only from social media are the most liberal (5.04). A similar pattern holds for self-reports of social media usage in general. Respondents report never using social media are the most conservative while those who are the most frequent users of social

media are the most left-wing.

Table 4: Summary of ideology by media consumption and vote choice.

Characteristic	N = 1,516
Primary_media	
Legacy	5.58 (1.47)
Mixed	5.21 (1.69)
Online	5.39 (1.85)
Social_Media	4.87 (1.37)
Social_Use2	
Never	5.71 (1.67)
Less than once a week	5.40 (1.44)
About once a week	5.43 (1.69)
Several times a week	5.63 (1.42)
About once a day	5.50 (1.62)
Several times a day	5.09 (1.62)
Unknown	2
Vote	
Liberal	4.75 (1.08)
Conservative	6.69 (1.56)
NDP	4.56 (1.36)
Green	5.01 (1.46)
Unknown	377

To assess the level of polarization by media consumption, we calculated bimodality coefficients for individuals who received news about the 2018 Ontario election exclusively from social

Table 5

media, online media sources, legacy media sources and a mix of media sources. The raw distributions of policy attitudes are in Figure 6 and the corresponding bimodality coefficients are in Table 5. Overall there is not really any evidence of significant bimodality in any of these distributions; Ontario voters were not overly polarized by policy issues in the 2018 election campaign. They are also comparable to the degrees of bimodality (Merkley, 2022) found using Canada Election Study data. Moreover, none of these distributions surpass the threshold of 0.55 to be considered bimodal. That said, it is noteworthy that bimodality differed by media consumption pattern. We find a linear reduction in bimodality from online media consumption to legacy media and social media consumption of news about the campaign.
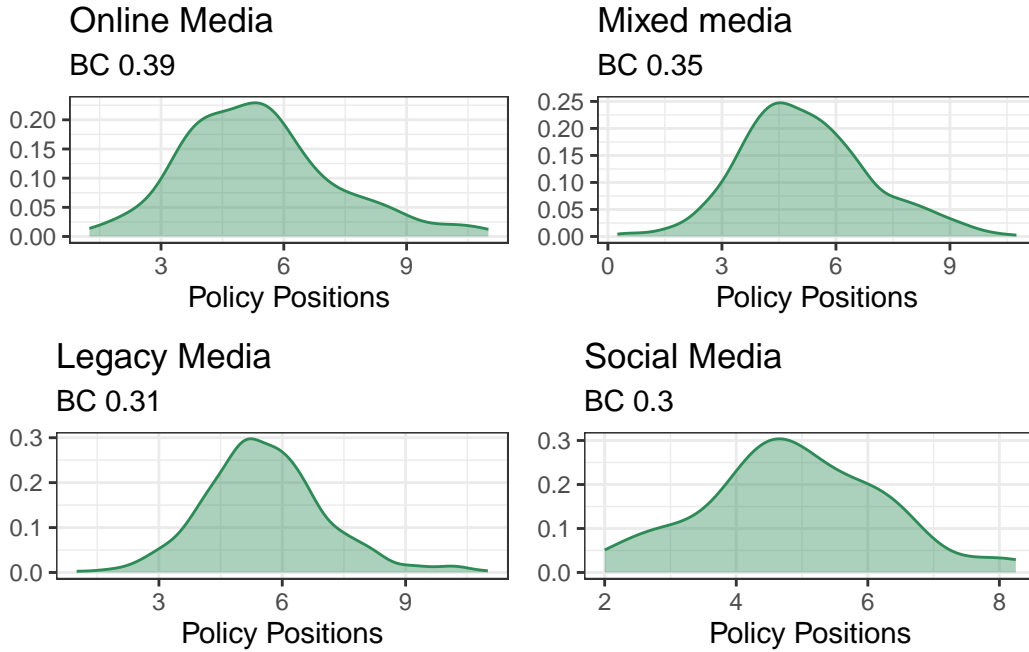

Figure 6: Probability distributions of policy positions by primary media source

When we partial these results out by political interest, it becomes apparent that this increased bimodality associated with consuming news strictly online is real but affects those who report

low levels of political interest in the election. We show this in Table 6 which calculates bimodality coefficients by those with high (low) levels of political interest, defined as the average level of political interest, +/- 1 standard deviation. These findings are parallel to the findings in Figure 4 that showed that social media usage moderated the relationship between political interest and polarization. Here, however, it is online news consumption about a provincial election campaign that does the moderating. These findings are in line with Merkeley (2022) who found larger rates of ideological polarization for those with high levels of political interest than for those with low levels of political interest although there was a greater *increase* amongst those with low levels of political interest. Our data here may help explain Merkeley's observation as more and more are consuming news through strictly online news media.

Table 6: Policy polarization bimodality coefficients by media consumption and political interest.

Interest	Bimodality
Legacy	
Low	0.28
High	0.58
Mixed	
Low	0.39
High	0.40
Online	
Low	0.56
High	0.60
Social_Media	

Low	0.29
High	NaN

Second, we calculated bimodality coefficients by self-reported social media usage which are reported in Table 7. Here, however, there is minimal evidence of any polarization.

Table 7

Social_Use2	Bimodality
About once a day	0.35
Never	0.33
Less than once a week	0.33
Several times a day	0.33
About once a week	0.29
Several times a week	0.27

As a last measure, we also estimated the overlap coefficients for the policy position distributions of for people who exclusively receive news from social media, online news sources, legacy news sources, and a mix of news sources. For these analyses, the measure runs in the opposite direction to the bimodality coefficient; a larger overlap coefficient indicates that the distributions overlap more and distribution of policy attitudes are *less* polarized. The plots presented in Figure 8 indicate that individuals who primarily use online media are the most polarized (OVL 0.45) and those who primarily use social media were the least polarized (OVL 0.74).

Finally, we calculated the overlap coefficient for individuals who use social media often and those who use social media rarely. The results presented in Figure 9 contradict the results from the bimodality coefficients. These results indicate that individuals who rarely use social media are less polarized (OVL 0.57) than individuals who use social media often (OVL 0.47).
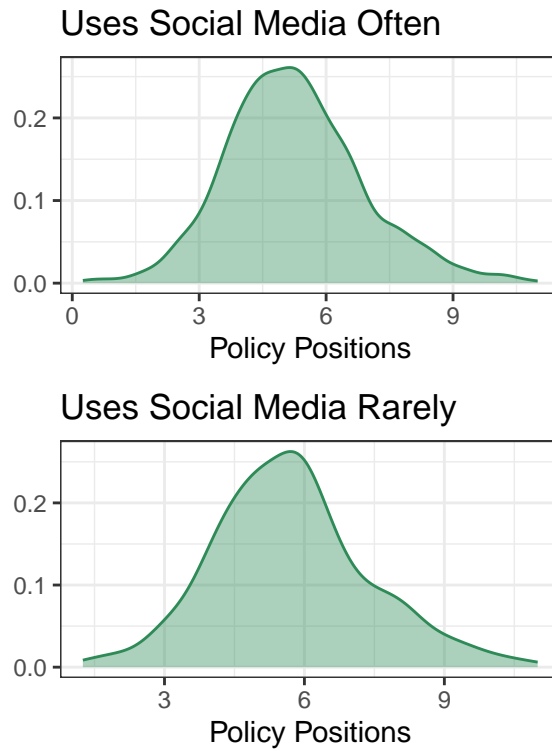
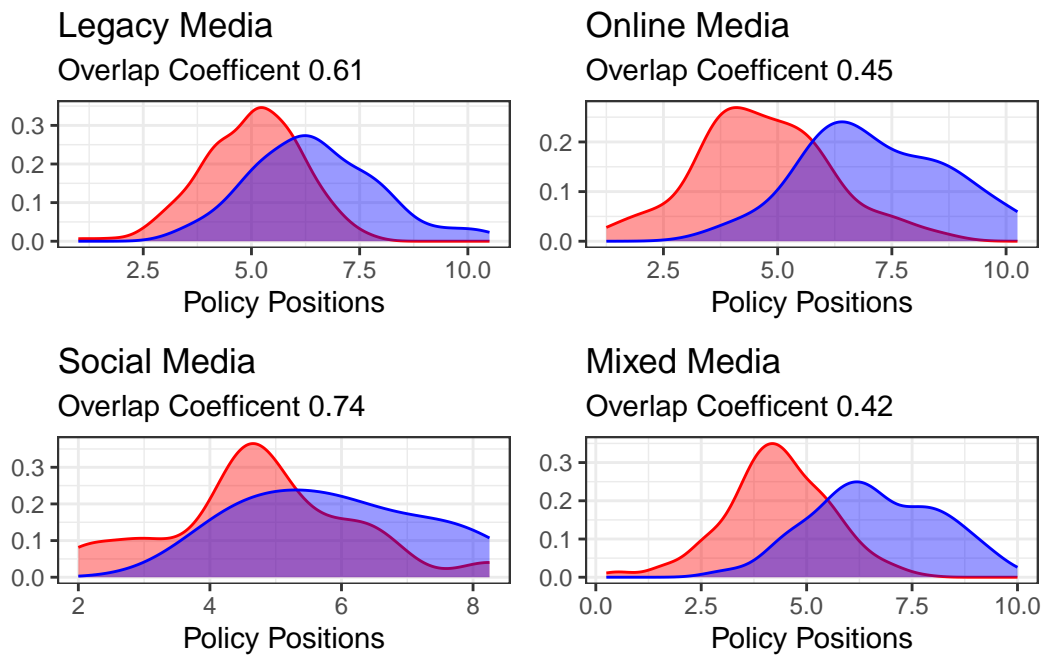Figure 7Bimodality Coefficents and policy position distributions by social media usage

Figure 8Overlap coefficents by primary media source for news about the provincial election.

Uses Social Media Often

Overlap Coefficent 0.47

Uses Social Media Rarely

Overlap Coefficent 0.57
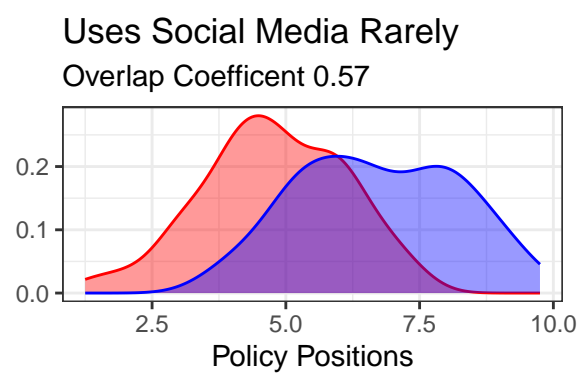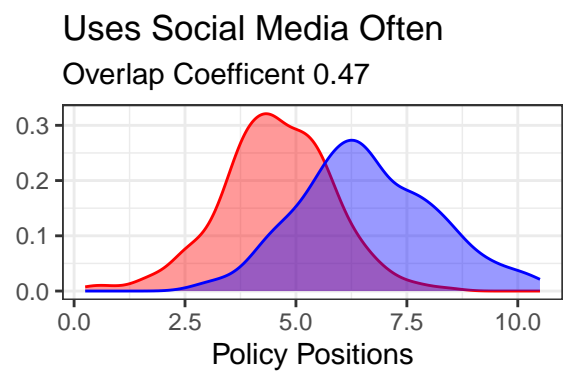
Figure 9Overlap Coefficents by Social Media Usage

Overall, the results presented in this section provide mixed results on the relationship between social media usage and both affective and policy polarization. In terms of policy polarization, the results indicate that individuals who use social media or online news sources as their primary news source are less affectively polarized. Furthermore, these results indicate that whether an individual regularly uses social media is not significantly related to their level of affective polarization. The results from the bimodality coefficients and the overlap coefficients for individuals' primary media source lead to similar conclusions. Specifically, they indicate that using social media is correlated with less policy polarization. However, the overlap coefficients for level of social media usage indicate that individuals who use social media more often have higher levels of policy polarization. Therefore, in order to better understand these results seemingly contradictory results in this section the next section further investigates the relationship between political interest, social media usage and levels of affective polarization.

6 Discussion

Overall this analysis has demonstrated limited evidence of polarization - affective or policy-based - a sample of Ontario voters during the 2018 provincial election. Voters who consumed online news were slightly less affectively polarized than voters who consumed legacy news media about the campaign while there was weak albeit consistent evidence that self-reported frequent use of social media was positively related to rates of affective polarization. However, both of these were dwarfed by the effects of interest in politics. Reflecting findings by Dubois and Blank that interest in politics reduced the likelihood that voters might find themselves in an echo chamber, our results also show that political interest moderated the relationship between political social media usage and affective polarization.

They support recent findings that indicate that online news audiences are not always more polarized than legacy news audiences in all countries. Similar to individuals in Poland, Czechia,

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Finland, and Italy offline polarization appears to be higher than online polarization in Canada (Fletcher et al., 2020).

However, the picture was somewhat different for policy polarization. In this regard, we found that voters who consumed news about the election campaign from online news sources were more polarized than voters who consumed legacy media, although by most standards, it did not meet a bimodal distribution. The source of this increased polarization appeared to come from voters who were the least interested in politics. This pattern was evident with two different measures of polarization.

While this observation is consistent with a moderating role for political interest Dubois and Blank found, it is also somewhat disconcerting. Dubois and Blank (2020) found that for respondents with no interest at all, diverse media diets were inversely related to the likelihood that respondents were in an echo chamber. She did not specifically test whether that lead to polarized attitudes or not. It bears emphasizing this is entirely consistent with what we know about a fairly standard Converse-Zaller model of attitude formation where low information voters are the most responsive to exposure of fragments of information.

It is also consistent with the pattern Merkeley observed in the Canada Election Studies. This study potentially adds to that finding emphasizing the way in which online media and digital journalism in particular might be responsible for any observed increases in policy polarization in Canada.

7 Conclusion

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