Winner-Loser Gap in the 2021 Canadian Federal Election

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Abstract

This study explores the causal impact of election outcomes on voters' satisfaction with democracy during the period of the 2021 Canadian federal election. Employing a Double Debiased Machine Learning (DDML) framework, we estimate the average treatment effect of different party voters (specifically the Liberal or Conservative) on changes in democratic satisfaction. Using high-dimensional estimation, we applied Lasso, Ridge, and Random Forest learners to flexibly control for potential confounding variables. Our analysis reveals a clear divide between winners and losers: After the election, supporters of the Liberal Party reported an increase in satisfaction with democracy, while Conservative voters reported a decrease in satisfaction. These findings are mostly consistent with the model specification and also highlight the robustness of our estimates. This pattern is not only observed at the federal level but also among certain subgroups, such as university-educated respondents and those living in Ontario and the Prairies, while the effects are weaker or statistically insignificant among French-speaking voters in Quebec. By applying Double Debiased Machine Learning, we are able to provide casual-based evidence of the existence of the winning-loser gap within the Canadian federal election. This study provides a more solid statistical analysis of the winner-loser gap.

Keywords: Winner–Loser Gap; Democratic Satisfaction; Double Debiased Machine Learning; Canadian Federal Election; Causal Inference; Political Behavior; Subgroup Analysis.

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1 Introduction and Motivation

The relationship between electoral outcomes and voters' satisfaction with democracy has long been studied in detail by political scientists. A well-documented empirical pattern based on empirical works, often referred to as the winner-loser gap, suggests that voters who vote for the winning party tend to report relatively higher levels of satisfaction with democracy compared to those who vote for the losing party (Anderson and Roy, 2011; Blais and Gélineau, 2007).

Understanding these gaps is crucial, as the legitimacy and stability of the democratic system depend on the satisfaction of both winners and losers. As Anderson emphasizes in losers' consent: "if democratic procedures are to continue in the long run requires that losers must be able to accept losing and plan again next time" (Anderson, 2005). Thus, the winner-loser gap reflects not only simple satisfaction but also the long-term stability of democratic institutions.

Recent research has identified multiple factors that influence democratic satisfaction. First, voters may express higher satisfaction even if their party does not win the election, as long as it wins more seats than the previous election (Stiers et al., 2018). Second, the expectation of which party will win the election also plays a role (Lelkes, 2016). Third, broader contextual factors—such as economic expectations, educational attainment, perceptions of government responsiveness, and the presence of populist narratives during the election can significantly affect how satisfied individuals are with the functioning of democracy (Anderson and Roy, 2011; Gillies et al., 2023; Curini et al., 2012; Monsiváis-Carrillo, 2022).

Trust in democratic institutions also plays a critical role in shaping democratic legitimacy. Esaiasson, in his study of European elections, finds that losing voters may continue to support the political system if they believe the elections were fair and their interests were represented; such beliefs foster voluntary acceptance of electoral outcomes (Esaiasson, 2011). However, this acceptance is more fragile in emerging democracies, where institutional trust is typically weaker and concerns about systemic stability are more prevalent (Fahey et al., 2022). Moreover, this trust can be challenged by political polarization. In highly polarized media environments, losing voters are more likely to distrust democratic institutions (Lelkes, 2016).

Daoust et al. (2024) provides one of the few causal studies on the winner-loser gap, using a

regression discontinuity design (RDD) to estimate the effect of election outcomes on satisfaction with democracy. Drawing on survey data from European countries with highly uncertain post-election coalition outcomes, the study analyzes three cases: Norway (1997), the Netherlands (2012), and Iceland (2017). The uncertainty surrounding government formation created a quasi-random assignment to perceived "winner" or "loser" status. By comparing levels of satisfaction before and after coalition announcements, Daoust isolates the causal effect of electoral victory or defeat. Notably, the study finds no significant average treatment effect, suggesting that the winner-loser gap may stem more from symbolic affiliation or pre-election expectations than from actual outcomes.

This research is motivated by the need to move beyond correlational findings and toward a more robust causal understanding of how electoral outcomes shape satisfaction with democracy. In particular, we aim to investigate whether a causal winner-loser gap exists in the context of the 2021 Canadian federal election, and if so, what factors may shape or moderate its magnitude.

To address this question, we apply Double Debiased Machine Learning (DDML), a recently developed method that integrates machine learning and causal inference to estimate treatment effects in the presence of high-dimensional confounding. DDML offers several advantages over conventional regression approaches, particularly in survey research, where numerous covariates may interact in complex or nonlinear ways. The method uses machine learning algorithms to estimate nuisance functions—components of the model that are not of direct interest but are essential for isolating the causal effect. This approach reduces the risk of model misspecification and omitted variable bias while allowing for more flexible functional form assumptions.

By applying DDML to nationally representative post-election survey data, this study makes both substantive and methodological contributions. Substantively, we provide one of the first causal estimates of the winner-loser gap in the Canadian context. Methodologically, we demonstrate the applicability of machine learning–based causal inference tools in political behavior research, offering a framework for improving identification strategies in studies using high-dimensional survey data.

We used electoral outcomes as a treatment to determine how voter's satisfaction of democracy changed based on whether their preferred party won or lost. Our results suggest a small but consistent and statistically significant average treatment effect of approximately +0.2 for voters who supported the winning party and –0.2 for those who supported the losing parties at the federal

level. However, this effect of supporting a winning party is statistically significant only for Liberal voters in Quebec.

Furthermore, treatment effect estimates from DDML-Ridge and DDML-Random Forest are similar in magnitude, supporting the robustness of our findings. In contrast, estimates from DDML-Lasso and post-Lasso OLS are somewhat larger, which may be attributed to the instability of Lasso-based variable selection, as discussed earlier. Nevertheless, the direction of the effects remains consistent across all models, further reinforcing the reliability of our results.

2 Data and the Empirical Context

This study draws on data from the 2021 Canadian Election Study (CES) (Stephenson et al., 2022). The dataset comprises a rolling cross-section campaign survey with 20,968 respondents and a post-election survey with 15,069 respondents. Our primary dependent variable is the change in respondents' satisfaction with democracy, calculated as the difference between their post-election and pre-election responses to the same question. The original survey item is measured on a four-point ordinal scale ranging from 1 (not at all satisfied) to 4 (very satisfied). For the purposes of this analysis, we treat the variable as continuous to facilitate statistical modeling.

The conceptual clarity of "satisfaction with democracy" as a measure remains debatable. Because it relies on natural language, the measure is inherently imprecise and open to varied interpretations, unlike clearly defined mathematical or formal indicators. According to Canache, Mondak, and Seligson, responses to such questions can reflect various constructs: "support for political authorities, regime support, support for democracy as a form of government, or combinations of these" (Canache et al., 2001). Thus, the question may best be interpreted as a general indicator of systemic support. According to Esaiasson "despite its conceptual heterogeneity, the satisfaction with democracy item exhibits strong inter-item correlations with other measures of system support." (Esaiasson, 2011). Therefore, satisfaction with democracy remains a valid variable to capture the winner-loser gap.

After initial data cleaning, over 900 variables remained. Due to resource constraints, we focused on a subset informed by prior literatures. The groundwork for our variable selection is inspired by

Blais and Gélineau (2007) study, which estimated the Canadian winner–loser gap using the CES 1997. Following their approach, we prioritized demographic variables as well as those related to political attitudes, satisfaction, political interest, and vote intentions.

We also include variables related to finances, economic outlook, and education, as individuals' evaluations of past and future economic conditions may function both as mediators and moderators in the satisfaction with democracy. Anderson and Roy (2011), using CES 2006 data, find that perceptions of both retrospective and prospective economic conditions significantly influence democratic satisfaction. Voters who supported a losing party but maintained a positive economic outlook may still report satisfaction with democracy. Conversely, even voters aligned with the winning party may express dissatisfaction if they hold pessimistic views about the economy. Moreover,Anderson and Roy (2011) note that evaluations of the national economy are shaped by a combination of personal predispositions, information exposure, and local economic conditions—all of which are influenced by educational background.

The 2021 Canadian federal election reflected a rise in populist sentiment, driven by pandemic-related restrictions and economic uncertainty. Public health measures such as lockdowns and vaccine mandates, combined with inflation reaching 3.4 percent — the highest since 1991—fueled growing dissatisfaction with the political establishment (Statistics Canada, 2022). The People's Party of Canada (PPC), led by Maxime Bernier, gained support by rejecting public health mandates and framing the federal government as overreaching (Gillies et al., 2023). Its vote share increased from 2 percent in 2019 to 5 percent in 2021, signaling a rise in protest voting (Elections Canada, 2020, 2022) While Canadian media is less polarized than in the United States, the cultural and media proximity between the two countries allowed American populist narratives—such as distrust in elites and institutions—to influence Canadian discourse. This was reflected in the PPC's rise, the growing populist tone in Conservative Party messaging, and the emergence of the Freedom Convoy, which protested vaccine mandates and broader federal authority.

In this context, we include variables capturing attitudes toward vaccine mandates, populist sentiment, and Group Thermometer scores to examine how emotional and ideological divisions shape trust in democracy. Both populism and vaccine-related controversies challenge liberal democratic legitimacy by undermining trust in institutions. Following Fahey et al. (2022), we argue that pop-

ulism, regardless of electoral success, may lower democratic satisfaction among those who reject anti-elite narratives. Likewise, debates over COVID-19 vaccination reflected broader tensions over state power and individual freedom, making them central to understanding shifts in democratic trust during the election.

Furthermore, we incorporate Group Thermometer scores to capture affective polarization — that is, how warmly or coldly respondents feel toward various political and social groups. Existing research shows that democratic satisfaction is shaped not only by institutional performance but also by emotional attitudes toward political opponents. When populist movements gain traction, those with strong negative feelings toward such groups may experience declining trust in democracy, and Group Thermometers provide a quantifiable method to test this mechanism.

Therefore, we include five broad groups comprising 55 control variables.

3 Methodology

We estimate the average treatment effect (ATE) of supporting a winning versus losing party in the 2021 Canadian federal election on voters' satisfaction with democracy using the Double Debiased Machine Learning (DDML) framework. We apply Lasso, Ridge regression, and Random Forest to flexibly adjust for high-dimensional covariates. As a robustness check, we also estimate OLS using only the variables selected by Lasso to assess stability and interpretability.

To define treatment status, we consider two comparisons:

(1) Define Liberal supporters as the treatment group and supporters of other parties (Green, Conservative, NDP, Bloc Québécois) as the control group to estimate the Average Treatment Effect (ATE) on changes in satisfaction with democracy following the election victory.

(2) Define Conservative supporters as the treatment group and supporters of other parties (Liberal, Green, NDP, Bloc Québécois) as the control group to estimate the ATE on changes in satisfaction with democracy following the election loss.

3.1 DDML-modeling

The model for DDLM as following:

3.2 DDML Modeling

We estimate the causal effect of supporting a winning political party on changes in democratic satisfaction using the Double Debiased Machine Learning (DDML) framework. The model is specified as follows:

$$Y_i = \theta \cdot D_i + g(X_i) + \varepsilon_i$$

$$D_i = m(X_i) + v_i$$

Where:

- Y_i: Change in democratic satisfaction for individual i.
- D_i: Treatment indicator.
- X_i: Vector of 55 control variables.
- $g(X_i)$, $m(X_i)$: Nuisance functions estimated via machine learning.
- θ: Average treatment effect of supporting the winning or losing party.

The DDML procedure consists of three main steps:

1. **Estimate Outcome Model:** Use machine learning (Lasso, Ridge, or Random Forest) to estimate $\hat{g}(X_i)$, the predicted change in satisfaction. Then compute the residualized outcome:

$$\tilde{Y}_i = Y_i - \hat{g}(X_i)$$

2. **Estimate Treatment Model:** Use the same method to estimate $\hat{m}(X_i)$, the predicted probability of treatment. Then compute the residualized treatment:

$$\tilde{D}_i = D_i - \hat{m}(X_i)$$

3. **Final Regression:** Regress the residualized outcome on the residualized treatment using OLS:

$$\tilde{Y}_i = \hat{\theta} \cdot \tilde{D}_i + \text{error}$$

The coefficient $\hat{\theta}$ gives the estimated causal effect.

3.3 The Advantage of DDML

DDML works with machine learning methods such as Lasso, Ridge regression, and random forest to remove the effects of confounding high-dimensional covariates in the treatment variables. Lasso, Ridge, and Random Forest each have their own unique strengths - Lasso helps with covariate selection, Ridge helps with multicollinearity testing, and Random Forest helps with detecting complex nonlinear patterns. By combining these methods within a double debiased machine learning (DDML) framework, we exploit their complementary strengths to validate more reliable estimates of treatment effects, under high dimensionality or nonlinear assumptions.

It is worth noting that the validation procedure failed to converge to the stable penalty parameter (Lambda) of Lasso, so all penalty parameters of DDML-Lasso in this study were set manually. After we manually tested the minimum penalty parameter for which Lasso worked stably, we found it to be 0.025, and for two specific subgroups (Ontario, Prairies) 0.05 was used.

The instability observed in the Lasso selection may be due to the fact that most variables are correlated with the outcome, while no variable is clearly uncorrelated. Therefore, Lasso may not be able to scaling those same variables down to zero. This will further cause the DDML-Lasso variable selection process to become unstable.

3.4 Post-Lasso OLS model

Furthermore, we estimate a post-Lasso OLS model using only the variables selected by Lasso. This checks whether the treatment effect remains consistent and improves interpretability.

$$Y_i = \beta_0 + \theta \cdot D_i + \gamma' X_i + \varepsilon_i$$

Here, Y_i and D_i are the same outcome and treatment variables as in DDML. The intercept β_0 shows the baseline change in democratic satisfaction for voters not in the treatment group (e.g., NDP or Green voters). X_i includes the covariates selected by Lasso.

3.5 Sub-groups analysis

We analyze subgroup heterogeneity by dividing the sample by income, age, education, gender, region, and COVID-19 satisfaction. This helps us understand how the treatment effect varies across important social and political groups.

Income and age are the only continuous variables in our subgroup analysis. We remove outliers in income using the IQR method and classify respondents into lower, middle, and upper income groups based on the sample distribution. Age is grouped according to Statistics Canada's standard age categories.

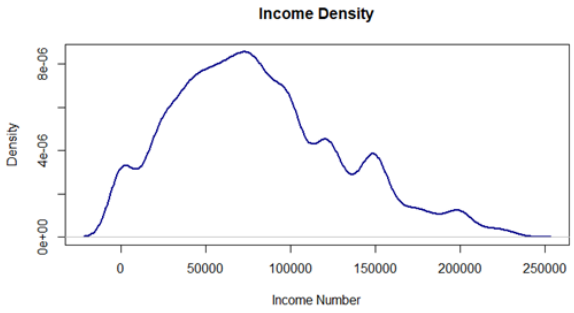

Figure 1: income density distribution

Figure 2: income histogram distribution

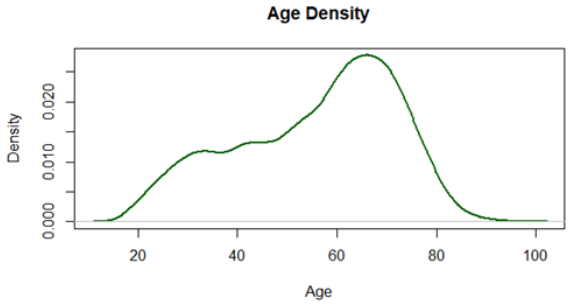

Figure 3: Age density distribution

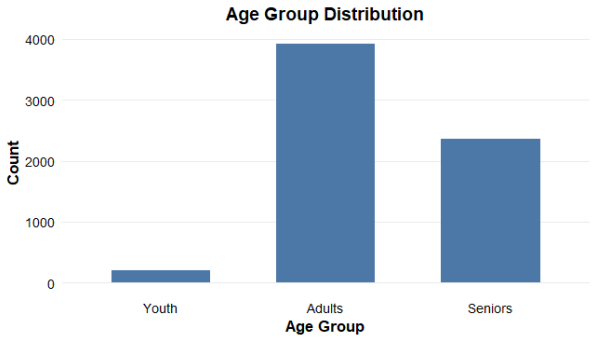

Figure 4: Age histogram distribution

As shown in Figures 2 and 4, most respondents are in the middle-income group and are over 60 years old. Due to the small number of upper-income respondents, we exclude this group from the final subgroup analysis. The classifications for age and income are presented in Table 1 and Table 2.

Group	Age
Children	00–14 years
Youth	15–24 years
Adults	25–64 years
Seniors	65 years and over

Table 1: Age group classification

Class	Income Amounts
Lower Class	$0 – $53,359
Middle Class	$53,359 – $106,717
Upper Middle Class	$106,717 – $235,675
Upper Class	$235,675 and up

Table 2: Income group classification

4 Results

Our findings indicate a statistically significant winner-loser gap in satisfaction with democracy following the 2021 Canadian federal election. On average, voters who supported the winning party experienced an increase of approximately 0.2 points on a total scale of satisfaction change [-3,+3], as the single scale pre- and post-election satisfaction to be [1,4], while those who supported losing parties experienced a corresponding decrease of approximately 0.2 points. Although the effect size appears modest, it is statistically robust and consistent across models, representing approximately 7% of the total variation in satisfaction.

4.1 Double Debiased Machine Learning (DDML) Estimates

Table 3 reports the estimated ATE for Liberal voters (winners). All models have statistically significant positive effects, with estimates ranging from 0.145 for post-Lasso OLS to 0.769 for DDML-Lasso. The Ridge and Random Forest models provide more conservative estimates but confirm the robustness of the positive treatment effect.

Method	Estimate	Std. Error	t-value	p-value
DDML - Lasso	0.769***	0.104	7.420	1.17e-13
OLS	0.145***	0.022	6.528	7.18e-11
DDML - Random Forest	0.197*	0.099	1.995	0.046
DDML - Ridge	0.346***	0.047	7.418	1.19e-13

Table 3: Treatment Effect Estimates: Liberal Voters (Winners)

Table 4 presents the ATE estimates for conservative voters (losers). Across all models, we find a negative and statistically significant effect on democratic satisfaction, ranging from -0.10 for Post-Lasso OLS to -0.154 for DDML-Lasso, confirming the existence of a loser effect.

Method	Estimate	Std. Error	t-value	p-value
DDML - Lasso	-0.154***	0.027	-5.760	8.41e-09
OLS	-0.100***	0.021	-4.645	3.46e-06
DDML - Random Forest	-0.152**	0.057	-2.688	0.007
DDML - Ridge	-0.149***	0.028	-5.334	9.63e-08

Table 4: Treatment Effect Estimates: Conservative Voters (Losers)

Therefore, as shown in Table 3 and Table 4, there is a clear, consistent, and statistically significant divergence in changes in democracy satisfaction between election winners and losers, confirming the presence of a winner–loser gap.

4.2 Regional Heterogeneity: Quebec Subgroup Analysis

To explore regional variation, we conducted subgroup analyses for French-speaking voters in Quebec. Among Liberal voters in Quebec (Table 5), we observe consistently positive effects, with statistical significance in the OLS model ($p < 0.05$) and marginal significance in the DDML-Lasso and Ridge models. This suggests a localized winner effect.

Method	Estimate	Std. Error	t-value	p-value
DDML - Lasso	0.282.	0.170	1.663	0.096
OLS	0.133*	0.067	1.974	0.049
DDML - Random Forest	0.205	0.143	1.439	0.150
DDML - Ridge	0.190.	0.099	1.923	0.055

Table 5: Treatment Effect Estimates: Quebec Liberal Voters

In contrast, Table 6 shows no statistically significant effects among Bloc Québécois supporters. Estimates are consistently close to zero and insignificant across all models, suggesting that their satisfaction with democracy was largely unaffected by the election outcome.

Method	Estimate	Std. Error	t-value	p-value
DDML - Lasso	-0.031	0.081	-0.385	0.700
OLS	-0.003	0.056	-0.052	0.959
DDML - Random Forest	-0.057	0.106	-0.543	0.587
DDML - Ridge	-0.040	0.069	-0.590	0.555

Table 6: Treatment Effect Estimates: Quebec Bloc Québécois Voters

4.3 Summary

Overall, the findings show a clear democratic satisfaction change for liberal voters in Quebec, the effects are robust in both the DDML specification and the traditional OLS estimation, whereas Bloc quebec voter doesn't show significance. We can further conclude Quebec's heterogeneity that regional political identity may affect this relationship largely, with Liberal voters feeling a winner effect while Bloc Québécois voters are indifferent.

4.4 Subgroup Performance

We further investigate heterogeneity in treatment effects across demographic, attitudinal, and regional subgroups. The subgroups analyzed include:

- **Income**: Lower / Middle / Upper Middle Class
- **Age**: Youth / Adults / Seniors
- **Education**: Less than High School / High School / College or Technical / University
- **Gender**: Men / Women
- **Region**: Atlantic / British Columbia / Quebec / Ontario / Prairies
- **COVID Satisfaction**: Very / Fairly / Not Very / Not at All Satisfied

We estimate DDML treatment effects within each subgroup. If the direction, significance, and magnitude align with the overall pattern observed in earlier models, we consider the subgroup a representative case for interpreting the treatment effect.

Subgroup	Estimate (Con)	Estimate (Lib)	Std. Err. (Con)	Std. Err. (Lib)
Age – Adults	-0.157***	0.756***	0.034	0.131
Age – Seniors	-0.145**	0.761***	0.045	0.176
Age – Youth	-0.245	0.859	0.183	0.630
COVID – Fairly satisfied	-0.187***	0.719***	0.051	0.176
COVID – Not very satisfied	-0.107**	0.623***	0.039	0.156
COVID – Not at all satisfied	-0.104	0.301.	0.083	0.179
COVID – Very satisfied	-0.377*	0.541*	0.148	0.260
Education – College/Technical	-0.065	0.388*	0.051	0.184
Education – High School	-0.190*	0.896**	0.083	0.318
Education – ¡ High School	-0.423.	1.619.	0.221	0.853
Education – University	-0.174***	0.820***	0.035	0.136
Gender – Men	-0.141***	0.692***	0.036	0.133
Gender – Women	-0.161***	0.816***	0.041	0.162
Income – Lower Class	-0.171**	0.796***	0.054	0.203
Income – Middle Class	-0.146***	0.710***	0.041	0.156
Income – Upper Middle Class	-0.145**	0.767***	0.049	0.193
Region – Atlantic	0.120	0.102	0.128	0.515
Region – British Columbia	-0.049	0.308	0.082	0.318
Region – Ontario	-0.177***	0.609***	0.040	0.105
Region – Prairies	-0.246***	0.831***	0.060	0.137
Region – Quebec	-0.059	0.274.	0.053	0.154

Table 7: Subgroup Treatment Effects on Democratic Satisfaction: Conservative and Liberal Voters

The results show that the gap between winners and losers is clear in most subgroups. Adults, seniors, men, women, and university-educated voters show statistically significant and shares the same direction, indicating high reliability. In contrast, young people and voters with lower quality schooling have weaker or more unstable statistical performance, probably due to smaller sample sizes or higher response heterogeneity.

Regional differences are also obvious, Ontario and the Prairies show strong significance, while Quebec and British Columbia have lower to non-significance. This suggests that regional backgrounds may influence reactions to election results.

Together, these findings confirm generalizable treatment effects while revealing meaningful heterogeneity across groups.

5 Discussion

This study provides new evidence on the winner-loser gap in democratic satisfaction using data from the 2021 Canadian federal election. Our findings are consistent with earlier findings (Anderson, 2005; Blais and Gélineau, 2007). We observed a statistically significant winner-loser gap. Voters who supported the winning party have a positive Average Treatment Effect (ATE) on change in satisfaction with democracy, and voters who supported the losing party have a negative ATE on

change in satisfaction with democracy.

Furthermore, our subgroup analyses are consistent with Anderson and Roy (2011) findings. They argue that political satisfaction is shaped by both partisanship and expectations about government responsiveness. Specifically, the winner–loser gap is larger in the Prairies than in Ontario. This may reflect long-term structural grievances and disappointment with the election result. Such differences could be related to Western alienation. (DeWiel, 2005) study based on CES 2000 shows that dissatisfaction with democracy grew in the West after federal elections. These factors may worsen the negative reaction among Conservative voters when their party loses.

In contrast to the strong regional divide between Ontario and the Prairies, our analysis does not find a statistically significant winner-loser gap among Quebec French voters. This may reflect a weaker engagement with federal politics. Future research could extend our findings on different CES datasets and construct a time series data graph for political scientists and government agencies to use.

This study has several limitations due to the rolling sample design with a modular structure used by the Canadian National Election Study 2021.

First, rolling sample design may contaminate the answer for "satisfaction of democracy". Prior research by Blais and Bodet (2006) suggests that voters dynamically update their expectations about electoral outcomes throughout the campaign, based on polling data, past results, and personal preferences. However, whether these changing expectations affect satisfaction with democracy remains debated. On the one hand, Blais and Gélineau (2007), using CES 1997 data, found limited evidence that expectations influence democratic satisfaction. On the other hand, more recent research on the 2016 U.S. election suggests that expectations do influence satisfaction with democracy in a polarized environment (Spina, 2025). Therefore, with the survey data collected on different days, we may see that the voters' answers to the "satisfaction of democracy" question may also change every day.

Secondly, such rolling sample design may also violate the Independent and identically distributed (i.i.d.) requirements needed for DDML. CES 2021 used a rolling sample design, stratified quotas, and changing daily targets over time. These features suggest that responses from different days may

come from different subpopulations with different distributions. As a result, The i.i.d. assumption may not hold.

Thirdly, the model structure of CES design further limits this analysis. In both pre and post-election surveys, respondents were randomly assigned to different question modules with different sets of questions. Such a design reduces the sample size and may increase the stochastic disturbance (random error) of interactions between variables that appear in different modules. Importantly, the DDML package does not support the incorporation of the sample weight used by the CES dataset. Therefore, our estimates may not be representative of the Canadian population.

Finally, DDML assumes no perfect multicollinearity among covariates and that treatment assignment is unconfounded given the observed variables. These assumptions may be difficult to meet with CES 2021 data, which includes many overlapping attitudinal measures (e.g., values, trust, efficacy). While we aimed to avoid including highly correlated variables, some overlap may still remain due to the mixed nature of the covariate set. In addition, unobserved confounders—such as media exposure or deeper political motivations—may bias causal estimates if they affect both treatment and outcome but are not included in the model.

Our study suggests that democratic satisfaction is also impacted by the election outcome, political identity, education, age, and region. In these groups, Liberal voters report higher satisfaction with democracy, while Conservative voters report lower satisfaction. As political polarization grows and global populist trends spread, understanding the causes of this divide is important. Reducing the winner-loser gap is key to protecting the long-term legitimacy of democratic institutions.

6 Conclusion

This paper estimates the causal effect of election outcomes on democratic satisfaction in Canada using Double Debiased Machine Learning (DDML). We find a clear winner-loser gap: voters who supported the winning Liberal Party became more satisfied with democracy, while Conservative voters became less satisfied.

Methodologically, the use of DDML shows that machine learning can improve causal inference in political survey research. Our results are consistent across different model types, which supports

their robustness. However, the rolling, simple, and modular structure of CES 2021 brings the unique challenges of potation, violating DDML's independent and identically distributed assumptions.

Our study is limited to only CES 2021. Future research should explore applying DDML in comparative cross-national analysis or expanding analysis into different CES datasets to determine whether similar results exist in other democracies.

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